



INSIGHTSIAS

SIMPLIFYING IAS EXAM PREPARATION

GSAT-7R SATELLITE

GSAT-7R, also called CMS-03, is a next-generation military communication satellite developed by ISRO to replace the aging GSAT-7A.

INSIGHTS CURRENT AFFAIRS

OCTOBER 2025

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GENERAL STUDIES – 1

Topics: Women and women related issues.

SON META PREFERENCE: SEX-DETERMINATION RACKETS

Context: Fresh crackdowns in Karnataka–Andhra, Haryana–U.P., Gujarat, and Delhi exposed cross-border sex-determination rackets despite three decades of the [PCPNDT Act, 1994](#).



About Son Meta Preference: Sex-Determination Rackets

- **What it is?**
 - Covert networks linking agents, clinics, and pharmacies to offer **illegal foetal sex tests** and **sex-selective abortions**, often moving across district/State borders to evade oversight.
- **Current Trends and Data:**
 - The **sex ratio at birth (SRB)** continues to fall — Delhi's declined from 933 (2020) to 920 (2024).
 - **SRS 2023 data:** India's SRB improved slightly to **917 females per 1,000 males** (2021–23), but remains below the natural ratio of 952.
 - **CRS 2023 report:** India's overall SRB is **928 females per 1,000 males**, with Arunachal Pradesh (1085) highest and Jharkhand (899) lowest.
 - Roughly **3.5% of girls are still "missing" at birth**, translating to over 800,000 female fetuses annually.

Law and Policy:

1. **PCPNDT Act, 1994 (amended 2003):** Prohibits both pre- and post-conception sex selection, regulates diagnostic equipment, and mandates strict record-keeping and appeal against acquittals to deter malpractice.
2. **MTP Act (1971; amended 2021):** Legalises

abortion under medical or humanitarian grounds but criminalises terminations linked to sex determination, reinforcing reproductive rights with ethical limits.

3. **Drugs & Cosmetics Act/Rules:** Controls the sale and distribution of abortion-inducing drugs, targeting unlicensed over-the-counter sales that often facilitate illegal sex-selective terminations.
4. **ART Act, 2021 & Surrogacy Act, 2021:** Govern assisted reproduction and surrogacy, explicitly banning embryo sex selection and introducing registration norms for IVF clinics and gamete banks.
5. **Schemes/Advocacy:** Initiatives like [Beti Bachao Beti Padhao](#), conditional cash transfers, and digital monitoring aim to shift cultural attitudes and promote birth registration transparency.

Failure of Implementation:

- **Weak enforcement cadence:** District and State committees meet irregularly; inspections are infrequent, allowing sex-determination centres to resume operations unnoticed.
- **Poor prosecution quality:** Weak investigation and lack of mandatory appeals after acquittals result in low conviction rates and repeated legal impunity.
- **Medical complicity & shielding:** Medical associations defend errant members; violations are minimised as clerical errors, reducing [accountability in the healthcare](#) system.
- **Tech leapfrogging:** Newer tools like NIPT and portable ultrasounds outpace regulatory reach, enabling discreet and undetectable sex selection practices.
- **Market leakage:** Illegal sale of abortion kits and informal referral networks thrive in rural and border regions where enforcement capacity is weakest.

Social Implications:

- **Skewed births:** Persistently low female-to-male ratios expose a deep-rooted "son preference," especially in families with prior daughters.
- **Violence continuum:** [Gender bias](#) begins before birth and extends through discrimination, neglect, and violence across a woman's life cycle.
- **Economic roots:** Patriarchal inheritance, dowry burdens, and undervaluation of women's labour perpetuate the notion of daughters as economic liabilities.
- **Trust deficit:** Surveillance-heavy enforcement targeting women, not clinics, alienates communities and undermines faith in public health systems.
- **Demographic distortions:** A surplus of men intensifies marriage imbalances, human trafficking, and social unrest, threatening long-term demographic stability.

Way Ahead:

- **Enforcement first:** Time-bound monthly inspections, decoy operations, and asset-freezes for repeat clinics; mandatory appeal filing dashboards.

- **Data fusion:** Link PCPNDT–CRS–SRS–[HMIS](#); run anomaly flags (ultrasound density vs births; geographic clustering).
- **Tech safeguards:** Licence NIPT with strict indications, tamper-evident logs, and audit trails; geotagged ultrasound use; surprise e-forensics of clinic devices.
- **Supply-side choke:** Strict e-pharmacy controls; track abortion-drug wholesale/retail flows; prosecute illegal OTC sales.
- **Community & incentives:** Scale community vigilance, cash transfers for girl-child outcomes, property rights for daughters, and school-to-skilling pipelines.
- **Medical ethics:** Mandatory ethics CME, blacklists, and naming-and-shaming of convicted providers; tie compliance to clinic empanelment and insurance payouts.
- **Messaging 2.0:** Move from posters to [behavioural nudges](#)—norms-based campaigns featuring local influencers and fatherhood champions.

Conclusion:

Sex-determination rackets endure because culture, markets, and weak enforcement intersect. Laws exist; credible, continuous implementation and economic empowerment of girls must follow. India can bend the curve only by choking supply, shifting norms, and valuing daughters in law, assets, and life.

Topics: Population and associated issues, poverty and developmental issues.

ELDERLY IN INDIA

Context: A recent PIB release, underscored India's accelerating [demographic transition](#) towards an ageing population, projected to reach 230 million by 2036.



About Elderly in India:

Current Data and Statistics

- India's elderly population (60+) is expected to **rise from 100 million in 2011 to 230 million by 2036, forming 15% of the total population.**
- As per **LASI 2021**, elderly constitute **12% of the population**, projected to reach **319 million by 2050.**
- **Sex ratio among elderly:** 1,065 females per 1,000 males; **58% of elderly are women**, 54% of whom are widows.
- **Kerala** will have the highest elderly share (23% by 2036); **Uttar Pradesh** will see the fastest growth in elderly numbers.
- The **dependency ratio** stands at **62 dependents per 100 working-age individuals**, highlighting rising [socio-economic pressure](#).

Importance of the Elderly in India:

- **Social Capital:** Elderly hold deep cultural, moral, and familial wisdom, anchoring intergenerational values and traditions.
- **Economic Contributors:** They drive the emerging "**silver economy**", creating demand for healthcare, housing, and financial products.
- **Knowledge Reservoir:** Their experience enriches governance, education, and community leadership roles.
- **Demographic Imperative:** Addressing ageing is critical for sustainable development, social cohesion, and healthcare equity.
- **Moral Obligation:** Welfare of elders aligns with **Article 41** (Right to work, education, and public assistance) and the [Directive Principles of State Policy](#).

Government Initiatives for the Elderly:

1. **Atal Pension Yojana (APY):** Provides guaranteed pension (₹1,000–₹5,000/month) to unorganised workers; **8.27 crore subscribers (2025).**
2. **Atal Vayo Abhyuday Yojana (AVYAY):** Umbrella programme ensuring social inclusion, care, and empowerment of senior citizens.
3. **Integrated Programme for Senior Citizens (IPScC):** Funds **696 old age homes** and mobile medical units nationwide.
4. **Rashtriya Vayoshri Yojana (RVY):** Provides assistive devices like hearing aids, wheelchairs, and dentures to poor elderly.
5. **SAGE & SACRED Portals:** Promote **elderly care start-ups** and **re-employment opportunities** for citizens aged 60+.
6. **National Programme for Health Care of the Elderly (NPHCE):** Delivers geriatric healthcare at primary and tertiary levels across **713 districts.**
7. **Elderline:** Helpline for grievance redressal, counselling, and emergency support.
8. **Indira Gandhi National Old Age Pension Scheme (IGNOAPS):** Monthly pension for BPL elderly aged 60+ and 80+.

9. **Maintenance and Welfare of Parents and Senior Citizens Act (2007 & Amendment 2019)**: Legal obligation on children to maintain elderly parents and ensure a life of dignity.

Challenges Faced by the Elderly:

- **Health Insecurity**: India faces inadequate geriatric care infrastructure, with rising cases of chronic diseases like diabetes and dementia, and limited mental health support or specialised hospitals for the elderly.
- **Economic Vulnerability**: Pension coverage remains narrow, forcing many seniors—especially widowed or rural women—to depend on family or informal work for survival amid rising healthcare and living costs.
- **Social Isolation**: Urban migration and the decline of joint families have eroded traditional [caregiving systems](#), leaving many elderly emotionally neglected and socially disconnected.
- **Digital Divide**: Limited access to smartphones, internet, and digital literacy excludes older adults from telemedicine, online banking, and government welfare platforms.
- **Infrastructure Gaps**: Urban spaces remain unsafe and unfriendly to seniors, with poor accessibility in transport, lack of ramps, handrails, and emergency response systems tailored to their needs.

Way Ahead:

- **Strengthen Silver Economy**: Encourage public-private partnerships for innovation in eldercare technology, insurance models, and retirement homes to convert ageing into an economic opportunity.
- **Integrated Policy Framework**: Promote coordination among ministries of Health, Social Justice, Finance, and Housing to ensure unified implementation of elderly welfare policies.
- **Expand Geriatric Healthcare**: Establish geriatric wards in district hospitals and enhance telemedicine under Ayushman Bharat for affordable and accessible senior healthcare.
- **Enhance Social Security**: Universalise pension schemes and expand formal caregiver training through the National Institute of Social Defence to professionalise elderly care.
- **Promote Digital Inclusion**: Launch nationwide programs for senior citizens to learn e-governance tools, digital payments, and [telehealth services](#), bridging the digital literacy gap.
- **Community Engagement**: Foster intergenerational initiatives like *Naitik Patam* in schools and communities to cultivate [empathy](#), family bonding, and respect for the elderly.

Conclusion:

India's ageing population marks both a social responsibility and an economic opportunity. Empowering the elderly through **care, inclusion, and dignity** will define

the nation's moral and developmental maturity. A future-ready India must treat its seniors not as dependents—but as **active partners in the journey to Viksit Bharat 2047**.

DEMOGRAPHIC MISSION

Context: Prime Minister of India in his Independence Day 2025 address, announced the launch of a high-powered Demographic Mission to counter illegal infiltration and address emerging [demographic challenges](#).



About Demographic Mission: What it is?

- The **Demographic Mission** is a proposed national initiative aimed at monitoring, managing, and analysing India's demographic transformations — including fertility, mortality, migration, and population distribution — to ensure balanced growth, national security, and sustainable development.

Aim:

- To curb [illegal infiltration](#) and protect border regions from demographic shifts.
- To promote a holistic understanding of India's population dynamics, integrating social, economic, and human development indicators.
- To build a comprehensive demographic intelligence system for evidence-based policymaking and inclusive governance.

Features:

- Establishment of a **high-powered national commission** for demographic assessment and migration management.
- Use of **data analytics, satellite mapping, and census digitisation** for real-time demographic monitoring.
- Focus on **education, health, skill-building, ageing, and mobility** as human capability parameters.
- Integration of **border security concerns with socio-economic planning**.

Need for a Holistic Demographic Mission:

- **Demographic Transition**: India, as the world's most populous nation, is at a turning point — with [declining fertility](#), regional population imbalance,

and a growing elderly population.

- **Migration Dynamics:** Internal and cross-border migration are reshaping labour markets and regional identities; this requires inclusive and rights-based policy responses.
- **Human Capital Development:** Unequal access to education, health, and skills threatens India's demographic dividend potential.
- **Security Dimension:** Illegal infiltration and changing population profiles in border areas pose national security and social stability risks.
- **Policy Integration:** Demographic awareness is crucial for resource allocation, infrastructure planning, and social protection systems.

Challenges Associated

- **Data Deficiency:** Lack of updated and integrated demographic data hampers precise policy formulation.
- **Political Sensitivities:** Demographic debates risk communal or regional polarisation, especially on migration and population growth.
- **Administrative Overlaps:** Coordination issues among ministries of home, health, labour, and rural development may delay implementation.
- **Rights of Migrants:** Balancing security concerns with constitutional rights of internal migrants remains a delicate task.
- **Ageing and Social Security:** Rising life expectancy demands sustainable pension and healthcare frameworks beyond state dependency.

Way Forward:

- **Comprehensive Demographic Mapping:** Integrate data from Census, NFHS, NPR, and digital platforms for unified planning.
- **Migration Policy Framework:** Enact a [National Migration Policy](#) ensuring both mobility rights and host-home coordination.
- **Human Capability Focus:** Align demographic planning with education, skill development, and healthcare infrastructure.
- **Community Sensitisation:** Promote public awareness and academic engagement to depoliticise demographic discourse.
- **Institutional Strengthening:** Establish a National Institute for Demographic Research and Policy (NIDRP) to guide [data-driven governance](#).

Conclusion:

India's demographic mission must evolve beyond security concerns into a comprehensive population management framework rooted in inclusion and sustainability. Recognising shifting age structures, migration patterns, and human capabilities is vital to harness the [demographic dividend](#) responsibly. A balanced, rights-based, and data-driven mission will shape India's future as a secure, equitable, and demographically resilient nation.

[Topics: Urbanization, their problems and their remedies.](#)

URBAN PLANNING IN INDIA

Context: There is urgent need to rethink India's urban planning framework, which remains restricted to land-use regulation, arguing that cities must be transformed into economic growth hubs to achieve [Viksit Bharat @2047](#).



About Urban Planning in India:

Data and Statistics on Urban India:

- As of **Census 2011**, **31% of India's population** lived in urban areas — expected to rise to **50% by 2047**.
- Urban areas contribute nearly **63% of India's GDP** today, projected to reach **75% by 2047** (NITI Aayog, 2023).
- India has over **4,000 statutory towns** and **53 metropolitan cities** ([Census 2011](#)), yet most remain **poorly planned**.
- The **World Bank (2024)** estimates that India needs **\$840 billion in urban infrastructure investment** over the next 15 years to sustain growth.

Current Approach to Urban Planning

- **Land-Use Centric Model:** India's urban planning remains limited to zoning and physical layouts, a colonial legacy of sanitary reforms rather than modern economic design.
- **Master Plan Limitations:** Current Master and Development Plans rely on population projections and infrastructure needs but ignore economic growth, environment, and social equity.
- **Restricted Jurisdiction:** Planning is confined to municipal boundaries, neglecting regional linkages, [peri-urban areas](#), and urban-rural economic integration essential for holistic growth.

Weaknesses Identified:

- **Absence of Economic Vision:** Cities lack long-term strategies linking urban form to industrial, service, and employment generation goals.
- **Reactive, Not Strategic:** Plans merely respond to unplanned expansion rather than proactively directing urban growth and investments.
- **Resource Myopia:** There is no systematic budgeting or management for finite resources like water, energy, and waste, making cities ecologically unsustainable.

- **Climate Blindness:** Planning frameworks omit climate adaptation and emission reduction, despite rising risks of heatwaves, floods, and pollution.
- **Administrative Fragmentation:** Weak coordination among local bodies, development authorities, and state agencies hampers integrated implementation.

Need for Economic Vision–Based Urban Planning

- **Economic Blueprint First:** Every city must begin planning from an **economic base**, identifying core growth sectors like manufacturing, innovation, and logistics.
- **Evidence-Driven Projections:** Population, housing, and land demand should stem from realistic economic and employment forecasts, not outdated demographic trends.
- **Cities as Growth Hubs:** Urban areas must evolve into “**economic engines**” driving competitiveness, entrepreneurship, and sustainable livelihoods.
- **Integrated Planning Approach:** Climate action, mobility, and resource management should form core pillars of every city’s master and regional plans.

Way Forward:

- **Integrate Economic & Spatial Planning:** Merge urban land-use and economic strategies to ensure cities align with regional industrial and service growth goals.
- **Adopt Climate-Resilient Frameworks:** Embed low-carbon mobility, energy efficiency, and disaster preparedness into planning blueprints.
- **Strengthen Urban Governance:** Grant greater fiscal and functional autonomy to ULBs and improve vertical coordination with state agencies.
- **Reform Laws & Education:** Modernize outdated Town Planning Acts and train planners in multi-disciplinary fields like economics, environment, and digital design.
- **Promote Regional & Tier-2 City Growth:** Prioritize industrial corridors, satellite towns, and smaller urban centers to decongest metros and ensure balanced growth.

Conclusion:

India’s urban planning must evolve from **land-use control to economic and environmental strategy**. Cities are not just habitats but **growth engines** and climate battlegrounds. A visionary, integrated planning approach is essential to build resilient, inclusive, and globally competitive cities for Viksit Bharat 2047.

URBAN FISCAL ARCHITECTURE IN INDIA

Context: India’s municipalities, which contribute nearly two-thirds of the national GDP, control less than 1% of total **tax revenue**. A recent analysis highlights how over-centralisation

of taxes post-GST has crippled city finances.



About Urban Fiscal Architecture in India:

Structural Flaw in Urban Fiscal Architecture:

1. **Revenue–Responsibility Mismatch:** Cities generate 66% of GDP but get <1% of tax revenue, creating an unsustainable fiscal gap.
Eg: Municipal corporations depend on state and central transfers for over 75% of their annual budgets (CAG, 2024).
2. **Over-centralisation of Tax Powers:** Major local taxes—**octroi, entry tax, surcharges**—were absorbed into the **GST regime**, weakening local fiscal control.
Eg: The loss of octroi in Maharashtra reduced Mumbai’s municipal income by **~₹7,000 crore annually** post-GST.
3. **Dependence on Grants and Schemes:** Municipalities rely on AMRUT, Smart Cities Mission, and State Finance Commissions, leading to tied and unpredictable funding.
Eg: Over **70% of Smart City funds** remain centrally monitored with limited city-level discretion.
4. **Weak Fiscal Autonomy:** Urban bodies cannot revise property or professional taxes without state approval, restricting dynamic revenue mobilisation.
Eg: In Gujarat, local bodies need **state clearance for tax revisions**, delaying fiscal decisions.
5. **Inversion of Democracy:** Fiscal powers are centralised while service delivery is decentralised—cities must fund housing, waste management, and climate adaptation without control over income.
Eg: Bengaluru faces a **₹3,000 crore gap annually** between assigned duties and available municipal resources (NITI Aayog, 2023).

Causes of Losing Revenue Autonomy:

1. **Post-GST Revenue Loss:** The 2017 GST subsumed **19% of traditional municipal revenue sources**, erasing city-specific tax flexibility.

Eg: Octroi, which once contributed ~30% of Mumbai's budget, was abolished overnight.

2. **Bypassing Municipal Compensation:** Compensation for GST loss flows to **states, not ULBs**, widening the fiscal gap.

Eg: No structured mechanism exists for **direct municipal GST compensation**, despite recommendations by the Fifteenth Finance Commission.

3. **State Control Over Tax Instruments:** States retain authority over **valuation norms, rates, and collection** for property taxes.

Eg: Kerala municipalities require State Finance Department sanction to alter tax slabs.

4. **Administrative Weakness:** Low digitalisation and outdated records reduce tax collection efficiency.

Eg: Property tax coverage averages only **60–65%** of potential properties in Tier-II cities (MoHUA 2024).

5. **Lack of Fiscal Federalism Enforcement:** The 74th Constitutional Amendment remains weakly implemented in terms of **financial devolution**.

Eg: Only 10–12 States have established State Finance Commissions regularly, leading to uneven fiscal decentralisation.

Municipal Bonds: Promise and Pitfalls of Local Finance

1. **Policy Hype vs. Fiscal Reality:** NITI Aayog and the Union Ministry of Housing promote **municipal bonds** as the new frontier of local finance. However, **only 40+ cities** have issued bonds so far, with limited success.

Eg: Pune's 2017 municipal bond worth ₹200 crore was pioneering, but similar initiatives stagnated due to weak balance sheets.

2. **Flawed Credibility Assessment:** Creditworthiness is judged narrowly by "own revenue" indicators, ignoring steady intergovernmental grants and shared taxes.

Eg: When **credit rating agencies** classify grants as "non-recurring," they reinforce the false narrative that cities depend on charity rather than constitutional entitlement.

3. **Ideological Bias of Self-Reliance:** Global institutions like the **World Bank** and **ADB** push property tax and user charges as the only sustainable revenue models.

4. **Need for Governance-Linked Credit Ratings:** City creditworthiness should factor in transparency, audit compliance, and citizen participation, not just revenue figures.

The Constitutional and Comparative Context:

Aspect	India	<u>Scandinavian</u> Model
Tax Powers	Highly centralised; GST subsumed local taxes	Municipalities can levy income taxes directly
Revenue Predictability	Dependent on transfers and grants	Stable, predictable, and localised
Citizen Accountability	Indirect; limited visibility on spending	Citizens directly see how local taxes are used
Fiscal Equity	Wide inter-city disparity	Shared ecosystem ensures efficiency and fairness

Roadmap for Reforming Urban Fiscal Federalism:

1. **Recognise Shared Taxes as City Income:** Include **grants and GST compensation** in municipal balance sheets to improve creditworthiness.
Eg: 16th Finance Commission can institutionalise formula-based transfers to ULBs.
2. **Reform Credit Rating System:** Incorporate **governance capacity, transparency, and citizen participation** as rating parameters.
Eg: A governance-weighted index by RBI can replace current revenue-only metrics.
3. **Create a Dedicated Urban Fiscal Fund:** Establish a "**Municipal Financing Authority**" to pool pension, insurance, and DFI capital for low-cost loans.
Eg: Modeled on the **Swedish Kommuninvest**, which funds over 90% of local projects.
4. **Legally Guarantee Fiscal Transfers:** Amend State Acts to ensure **predictable, untied grants** to **ULBs** under Article 280(3)(bb).
Eg: Tamil Nadu has begun releasing **devolution funds directly** to ULBs through a transparent digital dashboard.
5. **Empower Cities for Borrowing:** Allow ULBs to use a portion of GST compensation or State revenue share as bond collateral.
Eg: Such securitisation could enable Tier-II cities to attract private and multilateral financing.

Conclusion:

India's urban future depends on fiscal decentralisation and justice. Empowering municipalities with predictable, independent, and equitable revenues will restore the true spirit of the **74th Amendment**. Cities must be recognised not as cost centres but as economic engines of national growth.

Topics: [Effects of Globalization](#)

DOPAMINE OVERDOSE — MODERN LIFESTYLES ARE REWIRING OUR BRAINS

Context: Neuroscientists and mental health experts are warning of a “dopamine overdose” epidemic as modern lifestyles—dominated by social media, instant gratification, and digital hyper-stimulation—are reshaping the brain’s reward system, causing rising anxiety, depression, and [attention disorders](#) among youth.



About [Dopamine Overdose — Modern Lifestyles Are Rewiring Our Brains](#)

What is Dopamine?

- **Dopamine** is a **neurotransmitter**, often called the “**feel-good chemical**”, that transmits signals between nerve cells to regulate **pleasure, motivation, learning, and movement**.
- It is released during rewarding experiences—like eating, achieving goals, or receiving praise—activating the brain’s **mesolimbic reward pathway** (from the ventral tegmental area to the nucleus accumbens).

Its Role in the Brain:

1. **Feel-Good Neurotransmitter:** [Dopamine](#), often called the “**pleasure chemical**,” regulates motivation, reward, and mood. It is released when people eat, achieve goals, or experience appreciation.
2. **Neural Reward Pathway:** It primarily functions through the **mesolimbic pathway**—from the **ventral tegmental area (VTA)** to the **nucleus accumbens**—reinforcing pleasurable actions.
3. **Basis of Motivation:** Dopamine drives us to repeat behaviours that lead to pleasure, helping humans

learn, focus, and build habits.

4. **Addiction and Imbalance:** Excessive dopamine release—triggered by [drugs or artificial stimuli](#)—causes receptor desensitization, pushing individuals toward higher levels of stimulation.
5. **Modern Disruption:** When dopamine levels are chronically elevated, the brain’s baseline satisfaction drops—resulting in **boredom, low motivation, and emotional fatigue** in everyday life.

Technology as the New Dopamine Driver:

1. **Digital Stimulation:** Every **notification, like, or scroll** triggers a micro-release of dopamine, making users crave constant engagement.
Eg: MIT research (2023) found average smartphone users check their phones **150 times a day**, mirroring compulsive behavioral loops.
2. **Algorithmic Manipulation:** Social media platforms are designed with **intermittent reward systems**—the same mechanism used in casinos—to maximize user time and ad revenue.
Eg: Former Google ethicist Tristan Harris called this “[behavioral engineering for attention addiction](#).”
3. **Neural Overlap with Drug Use:** fMRI studies show **social media use activates the same brain regions as cocaine**—notably the nucleus accumbens and ventral striatum.
Eg: A 2022 Nature Communications study found **similar neural signatures** between digital stimuli and substance highs.
4. **Rise in Digital Dependency:** Prolonged exposure to dopamine-triggering content leads to **reduced impulse control** and [heightened anxiety](#).
Eg: Pew Research (2024) noted that **63% of adults** report anxiety when separated from their phones—signs of digital withdrawal.
5. **Teenage Vulnerability:** Adolescents face greater risks due to neural plasticity and emotional immaturity, leading to long-term changes in attention and mood.
Eg: American Psychological Association (2023) found that teens using social media over **3 hours/day** had **60% higher rates of depression**.

Impact on Youth and Mental Health:

1. **Neurochemical Desensitization:** Continuous exposure to high dopamine stimuli **reduces receptor sensitivity**, making real-life pleasures feel dull.

Eg: A Stanford Medicine study (2023) confirmed dopamine receptor downregulation in teens with heavy screen exposure.

2. **Shorter Attention Spans:** Constant digital multitasking fragments focus, leading to [attention deficit-like symptoms](#).

Eg: Microsoft's attention study (2023) reported that average attention spans dropped to **8.25 seconds**, lower than that of a goldfish.

3. **Emotional Instability:** Overstimulation from social media fuels mood swings, envy, and emotional exhaustion, lowering emotional intelligence.

Eg: [UNICEF](#) (2024) found that **43% of adolescents** experience mood fluctuations linked to online comparison culture.

4. **Rising Anxiety and Depression:** High dopamine cycles create withdrawal symptoms when offline, mimicking **clinical dependency**.

Eg: WHO's 2023 Global Health Report recorded a **28% rise in teenage depression** attributed to digital overstimulation.

5. **Reduced Real-world Motivation:** With easy access to artificial rewards, young people increasingly find **study, sports, and relationships** less stimulating.

Eg: A Cambridge University survey (2024) showed that 52% of youth struggle to stay motivated without digital input.

Path to Recovery – Rebalancing the Brain

1. **Dopamine Fasting:** Taking breaks from digital stimuli helps the brain **reset its reward baseline** and restore natural pleasure response.

Eg: Silicon Valley professionals practice dopamine fasts—disconnecting from tech for 24–48 hours weekly.

2. **Mindful Engagement:** Activities like **yoga, meditation, and journaling** release dopamine steadily and reduce dependency on quick highs.

Eg: Harvard Mind-Body Institute (2022) found 27% stress reduction among participants practicing mindfulness for 15 minutes daily.

3. **Physical Movement:** Regular exercise triggers **natural dopamine and endorphin release**, enhancing mood stability.

Eg: A Lancet study (2022) found that 45 minutes of daily physical activity lowers depression risk by 30%.

4. **Meaningful Human Connection:** Real-world

interactions—friendships, family time, and empathy—stimulate **sustainable dopamine** and [oxytocin](#) release.

Eg: A Yale University neuroscience report (2024) noted that face-to-face interactions outperform digital ones in elevating long-term well-being.

5. **Sleep and Nutrition Balance:** Adequate rest and nutrient-rich diets stabilize neurotransmitter production and [mental equilibrium](#).

Eg: WHO guidelines suggest 7–9 hours of sleep and diets rich in tyrosine (bananas, almonds, dairy) to support dopamine health.

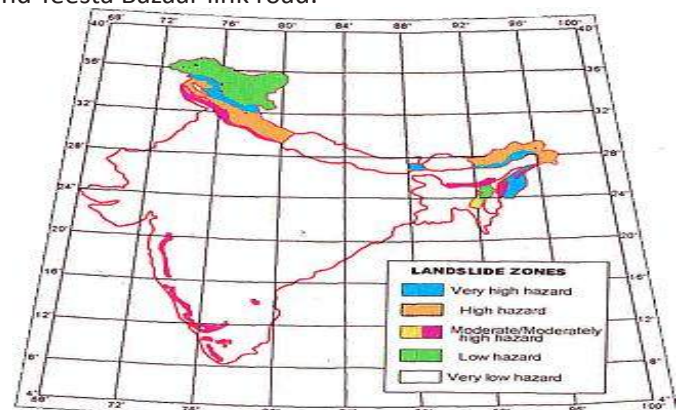
Conclusion:

The modern dopamine economy—driven by algorithms, instant gratification, and digital excess—has turned pleasure into dependence. Restoring balance demands **mindful consumption, physical vitality, and human connection**. True happiness lies not in chasing endless stimuli but in retraining the brain to value depth over dopamine.

Topics: Important Geophysical phenomena such as earthquakes, Tsunami, Volcanic activity, cyclone etc., geographical features and their location- changes in critical geographical features (including water-bodies and ice-caps) and in flora and fauna and the effects of such changes.

LANDSLIDES

Context: Heavy rainfall triggered multiple landslides in Darjeeling and Kalimpong, killing at least 14 people and destroying vital infrastructure including the Dudhia bridge and Teesta Bazaar link road.



About Landslides:

What it is?

- A landslide is the **downward movement of rock, debris, or soil** along a slope under gravity.

- It occurs when the **shear stress exceeds the shear strength** of slope materials, often due to **heavy rainfall**, [earthquakes](#), deforestation, or human activity.
- These events disrupt slope stability and can destroy **roads, settlements, and infrastructure**, especially in hilly terrains.

India's Vulnerability:

- Nearly **13% of India's land area (0.42 million sq. km)** is landslide-prone, as per the Geological Survey of India (GSI).
- High-risk zones include the **Himalayas, Northeastern hills, Western Ghats, Nilgiris, and Eastern Ghats**.
- The **Northeast alone accounts for 42%** of the total hazard zone due to **fragile geology, steep gradients, heavy monsoons, and unregulated construction**.
- India's **tectonic activity and population pressure** amplify the frequency and intensity of slope failures.

About Darjeeling Landslide:

- **Geographical Reasons:**
 - Darjeeling, in the **Eastern Himalayas**, sits on **young, unconsolidated rock strata** prone to erosion and slope failure.
 - The region receives **intense monsoon rainfall**, causing water saturation and loss of soil cohesion.
 - Unscientific construction, **deforestation, road cutting, and hydropower tunneling** have degraded natural drainage and slope stability.
 - The district's **seismic vulnerability** adds to the cumulative risk of recurrent landslides.
- **Historical Record:**
 - Darjeeling has a **century-long record** of catastrophic landslides — major events occurred in **1899, 1934, 1950, 1968, 1975, 1980, 1991, 2011, and 2015**.
 - The **1968 floods** were among the worst, killing over **1,000 people** and reshaping the region's terrain.
 - The **2023 Sikkim GLOF** disaster caused ₹25,000 crore in damage, illustrating how **hydro-climatic hazards are now linked across Himalayan states**.
 - These recurring events show a pattern of **high exposure and weak mitigation** in the region.

Current Concern:

- **Rapid urbanization** and expansion of **roads, hotels, and hydropower projects** have far exceeded the area's carrying capacity.
- Encroachments along **rivers and jhoras (mountain streams)** have blocked natural drainage, increasing

waterlogging and slope pressure.

- Frequent slope collapses now threaten **key infrastructure like bridges, highways, and rail lines** that connect the [Siliguri Corridor](#) ("Chicken's Neck"), a strategic link to the Northeast and Bhutan.
- Hence, Darjeeling's ecological fragility has evolved into a **national security concern**, demanding integrated Himalayan policy and sustainable planning.

NDMA Guidelines on Landslides:

- **National Landslide Risk Management Strategy (2019):** Focuses on **vulnerability mapping, hazard zonation, and early warning systems** using IMD rainfall forecasts and ISRO terrain data.
- **Zonation Maps:** [Landslide Hazard Zonation](#) (LHZ) maps at **1:50,000 scale** identify risk-prone zones for planning and regulation.
- **Mitigation Measures:** Recommend slope stabilization through vegetation, bio-engineering, drainage improvement, retaining walls, and relocation from chronic slide zones.
- **Institutional Coordination:** NDMA collaborates with **GSI, NRSC, DST, and CSIR** to develop real-time data-sharing and GIS-based monitoring.

Way Ahead:

- **Scientific planning:** Enforce hill zone building codes and prohibit construction in high-risk slopes and drainage corridors.
- **Early warning expansion:** Extend rainfall-linked landslide forecasting systems (tried in Kerala, Sikkim, Uttarakhand) across all Himalayan states.
- **Eco-restoration:** Promote afforestation, jhora rejuvenation, and slope bio-engineering to stabilize fragile hills.
- **Institutional reform:** Establish a **Himalayan Disaster Research and Management Centre** in Darjeeling for coordinated response and capacity building.
- **Strategic integration:** Treat the Darjeeling–Sikkim belt as a **national security-sensitive eco-zone** under the [Act East Policy](#) framework.

Conclusion:

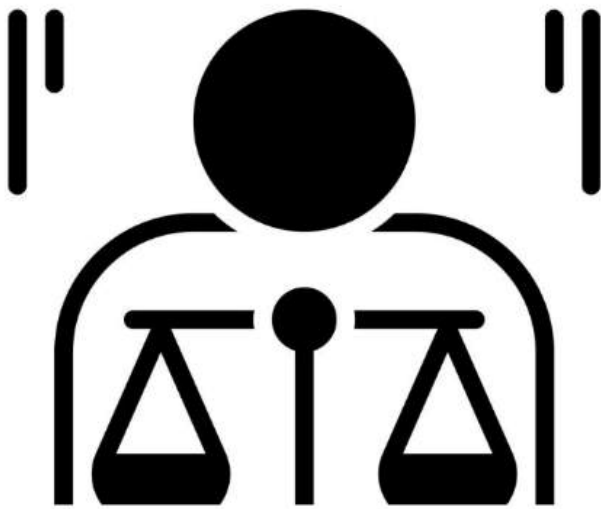
The Darjeeling disaster is a reminder that the Himalayas are ecologically fragile yet geopolitically crucial. Sustainable planning, scientific monitoring, and community-based preparedness must replace ad-hoc development. India's mountain policy must blend **ecological prudence with strategic foresight** to safeguard both lives and national interests.

GENERAL STUDIES – 2

Topics: Indian Constitution- historical underpinnings, evolution, features, amendments, significant provisions and basic structure; Comparison of the Indian constitutional scheme with that of other countries.

THE CONTOURS OF CONSTITUTIONAL MORALITY

Context: The concept of constitutional morality has resurfaced in debates on democratic conduct and judicial propriety, with recent judgments and political actions testing the balance between constitutional conventions and [popular morality](#).



About The Contours of Constitutional Morality:

What it is?

- Constitutional morality refers to **the ethical compass that guides the functioning of constitutional institutions and actors**, ensuring that power is exercised with restraint, fairness, and fidelity to constitutional values rather than personal or political gain.

Features:

- Adherence to Rule of Law:** All authority must operate within constitutional boundaries and principles of legality.
- Institutional Propriety:** Public officials must follow conventions that preserve institutional dignity and independence.
- Respect for Dissent:** Encourages tolerance and debate as democratic virtues.
- Accountability:** Every exercise of power must be morally and legally justifiable.
- Spirit over Text:** It demands fidelity not just to constitutional provisions but to their ethical intent.

Evolution of the Idea:

- Ancient Roots:** In Indian philosophy, Dharma integrated law and morality, reflected in works like the Tirukkural emphasizing Aram (virtue).
- Western Origin:** Historian **George Grote (1846)** coined “constitutional morality” as reverence for constitutional forms amid political contest.
- Ambedkar’s Vision:** Borrowing from Grote, Ambedkar asserted that democracy requires cultivated morality, not mere legal compliance — “[Democracy in India](#) is only a top-dressing on an undemocratic soil.”
- Judicial Revival:** Supreme Court judgments like *Manoj Narula* (2014), *Sabarimala* (2018), and *Navtej Johar* (2018) elevated it as a **moral standard for governance and rights adjudication**.

Dimensions of Constitutional Morality:

- Institutional Dimension:** Ensures that organs of state — legislature, executive, and judiciary — act within their constitutional roles with mutual respect and restraint.
- Judicial Dimension:** Judges interpret laws not merely by textual fidelity but by moral reasoning rooted in constitutional ethos.
- Legislative Dimension:** Lawmakers must prioritize deliberation, accountability, and inclusivity over populism.
- Citizen Dimension:** [Civic morality](#) — respect for diversity, rule of law, and rational debate — is vital for a living constitution.

Challenges to Constitutional Morality:

- Majoritarian Populism:** Societal morality often overrides constitutional ethics, threatening minority rights.
- Erosion of Conventions:** Political disregard for norms weakens institutional balance.
- Judicial Overreach:** Excessive moral interpretation risks undermining separation of powers.
- Public Ignorance:** Lack of civic constitutional education prevents moral internalization.
- Partisan Bureaucracy:** Executive loyalty often drifts from the Constitution to political masters.

Way Forward:

- Civic Constitutionalism:** Integrate constitutional literacy into education and public discourse.
- Ethical Leadership:** Political parties must institutionalize integrity in appointments and decision-making.
- Institutional Ethics Committees:** Regularly monitor adherence to conventions across constitutional offices.
- Judicial Sensitivity:** Courts should maintain moral guidance without usurping legislative prerogatives.
- Citizen Engagement:** Encourage participatory

democracy anchored in equality, empathy, and dialogue.

Conclusion:

Constitutional morality is the **soul of the Republic**, transforming a legal text into a moral covenant. As Ambedkar envisioned, democracy survives not by law alone but by the moral discipline of its citizens and leaders. When law aligns with conscience, the Constitution becomes not a parchment promise but a living testament to justice and equality.

Topics: Appointment to various Constitutional posts, powers, functions and responsibilities of various Constitutional Bodies.

UPSC AT 100: GUARDIAN OF MERITOCRACY AND NATION-BUILDING

Context: The **Union Public Service Commission (UPSC)** marked its **centenary on 1 October 2025**, completing 100 years since its establishment in 1926.

- It celebrates its legacy as the guardian of meritocracy and impartial civil service recruitment in India.



About UPSC at 100: Guardian of Meritocracy and Nation-Building

Historical Evolution of UPSC:

- Colonial Origins:** The Government of India Act, 1919 first proposed a central recruitment body, and in 1926, the Public Service Commission was set up under the Lee Commission (1924) to ensure impartiality.
Eg: Sir Ross Barker became the first Chairman.
- Federal Public Service Commission (1935):** The Government of India Act, 1935 elevated it, granting Indians greater authority in administrative recruitment under colonial rule.
- Post-Independence Transition (1950):** Articles 315–323 of the Constitution transformed it into the Union

Public Service Commission, giving it constitutional autonomy for impartial selection.

- Present Role:** Now UPSC conducts a wide range of exams for **civil, engineering, medical, forest, defence, and statistical services**, shaping the backbone of Indian governance.

Core Principles of UPSC:

- Meritocracy:** Selection is based solely on ability and performance, eliminating privilege and patronage.
Eg: Success stories like Ira Singhal (2014 topper) from small-town India showcase inclusivity.
- Fairness:** Equal access is provided across caste, gender, and language, making UPSC exams socially equitable.
Eg: Candidates may write Mains in any of the **22 scheduled languages**, ensuring linguistic justice.
- Integrity:** The Commission maintains independence from politics, ensures confidentiality, and resists malpractice.
Eg: Anonymous evaluation of scripts across 48 subjects safeguards neutrality.
- Efficiency in Complexity:** UPSC handles **10–12 lakh prelim applicants annually** across 2,500+ centres with smooth logistics and strict timelines.

Contributions to Nation-Building:

- Ensuring Administrative Continuity:** UPSC officers have led governance during wars, reforms, disasters, and pandemic crises, ensuring institutional stability.
- Inclusivity in Governance:** Recruitment now spans rural, semi-urban, and marginalised groups, strengthening social representation.
Eg: DoPT data shows over 60% of recent successful candidate's hail from rural backgrounds.
- Professionalising Civil Services:** UPSC inculcates neutrality, probity, and efficiency, crucial for effective democratic governance.
- Reinforcing Federalism:** By selecting for **All-India Services** (IAS, IPS, IFS), UPSC ensures Union–State administrative balance.

Recent Reforms:

- Technological Integration:** Introduced online portals and biometric/face-recognition tools to reduce impersonation and fraud.
- PRATIBHA Setu:** Connects interview-qualified candidates with alternate career opportunities, reducing wasted human capital.
- AI-enabled Recruitment:** Plans to use Artificial Intelligence for efficient screening, evaluation, and fraud detection.
- Digital Inclusivity:** Special arrangements for differently-abled candidates make exams more accessible and fairer.

Challenges Ahead:

- **Changing Skill Demands:** Future governance requires officers skilled in **AI, cybersecurity, data, and climate governance**, beyond traditional administration.
- **Equity Concerns:** High coaching costs and urban bias may erode the level playing field intended by UPSC.
- **Exam Overload:** With a **1:1000 selection ratio**, aspirants face intense financial, psychological, and social pressure.
- **Evolving Public Expectations:** Citizens now expect **faster, tech-enabled, transparent governance**, demanding upgraded skills.

Way Forward:

- **Curricular Updates:** Civil service training must include **digital governance, climate change, and global affairs** for relevance.
- **Inclusive Support:** Expand rural outreach, financial scholarships, and digital learning to ensure equal opportunity.
- **Continuous Training:** Strengthen **Mid-Career Training Programmes (MCTPs)** to reskill officers in emerging challenges.
- **Strengthening Ethics:** Deepen integration of **values** like empathy, integrity, and accountability into training and service culture.

Conclusion:

The UPSC at 100 is more than an exam body — it is the guardian of India's meritocracy. By nurturing competent, diverse, and ethical officers, it has steered the nation through wars, reforms, and crises. As India moves toward [Viksit Bharat 2047](#), UPSC must adapt while upholding its core values of fairness, integrity, and trust.

Topics: Statutory, regulatory and various quasi-judicial bodies.

LOKPAL

Context: The Lokpal of India, the nation's apex [anti-corruption ombudsman](#), is under scrutiny after data revealed a sharp fall in complaints—from 2,469 in 2022-23 to only 233 in 2025—even as it faced criticism for issuing a tender to procure seven BMW cars.

Fading engagement

Complaints to the Lokpal have nosedived over the years, with 90% of them being made in the first few years of its establishment.

Year	Complaints registered	Preliminary inquiry ordered	Prosecution sanction granted
2019-20	1,427	6	0
2020-21	110	28	0
2021-22	2,258	53	0
2022-23	2,469	43	0
2023-24	166	32	3
2024-25	292	78	4
2025-26	233	49	0
Total	6,955	289	7

Source: <https://lokpal.gov.in/>

Mandate of Lokpal

It has the jurisdiction to investigate corruption allegations against: • Prime Minister • Union Ministers • Members of Parliament • Senior government officials

Concerns raised by activists

No annual reports have been uploaded since 2021-22

Most complaints are being dismissed on technicalities

The Lokpal was created after a massive public campaign to ensure an independent authority could investigate big-ticket corruption involving top officials

ANJALI BHARDWAJ
RTI activist

About Lokpal:

What it is?

- The Lokpal of India is an independent statutory body established under the [Lokpal and Lokayuktas Act, 2013](#), to inquire into allegations of corruption against public functionaries, including the Prime Minister, Ministers, MPs, and government officials.

History:

- Conceived after public movements like [India Against Corruption \(2011\)](#) led by Anna Hazare.
- The **Act came into force on 16 January 2014**, institutionalising a national-level ombudsman after decades of demand for a central anti-corruption authority.
- The first Lokpal was constituted in **March 2019**, marking a major step in India's fight for transparent governance.

Members and Composition:

- **Chairperson:** Former Supreme Court Judge **Justice A.M. Khanwilkar** (as of 2025).
- **Members (7 total):** Includes four judicial and three [non-judicial members](#) such as former Chief Justices and senior administrators.
- **Appointment:** Made by the **President of India**, on the recommendation of a **Selection Committee** comprising the **Prime Minister, Speaker of Lok Sabha, Leader of Opposition, Chief Justice of India**, and an eminent jurist.

Functions and Powers:

- **Inquiry and Investigation:** Lokpal can independently investigate corruption cases under the [Prevention of Corruption Act, 1988](#), ensuring accountability of even the highest offices of governance through impartial inquiries.
- **Jurisdiction:** Its authority extends to the **Prime Minister, Union Ministers, MPs, and officials (Groups A–D)**, including bodies funded or aided by the government, ensuring that no public servant is beyond scrutiny.
- **Supervisory Role:** Lokpal exercises **superintendence over the CBI** in referred cases, empowering it to direct investigations and maintain oversight over central agencies for impartiality.
- **Prosecution Powers:** It can **sanction prosecutions, order asset attachments, and recommend suspensions or transfers**, ensuring tangible punitive action against corruption.
- **Quasi-Judicial Authority:** Armed with **civil court powers**, it can summon witnesses, demand documents, and issue orders—granting it judicial credibility in its anti-corruption mandate.

Success of Lokpal So Far:

- **Complaint Record:** Since its inception, Lokpal received **6,955 complaints**, but only **289 led to preliminary inquiries**, reflecting underutilization and procedural inefficiency.
- **Prosecution Progress:** Only **seven cases have reached the prosecution stage**, indicating a severe gap between complaint registration and actionable justice.
- **Institutional Growth:** Creation of a **Prosecution Wing in 2025** finally operationalized a crucial arm for independent legal action, marking an overdue but vital reform.
- **Transparency Deficit:** Non-publication of **annual reports since 2021–22** reveals weak accountability and institutional inertia in maintaining **public trust**.

Challenges to Lokpal:

- **Low Public Engagement:** The steep drop in complaints from **2,469 (2022–23)** to **233 (2025)** highlights public disillusionment and declining credibility.
- **Institutional Delays:** A **12-year delay** in setting up the prosecution wing exposes bureaucratic apathy and lack of political urgency in empowering Lokpal.
- **Procedural Rigidities:** Overly technical complaint formats lead to dismissals on formality grounds, deterring genuine **whistleblowers** and victims of corruption.
- **Transparency Deficit:** Failure to disclose outcomes or publish reports weakens citizen oversight and makes Lokpal appear opaque and unaccountable.
- **Perception of Extravagance:** The **BMW car procurement controversy** contradicts its ethos of ethical austerity and public accountability, eroding moral legitimacy.

Way Ahead:

- **Digital Transparency:** Develop a **real-time complaint dashboard** to enable citizens to track case status, enhancing accountability and data openness.
- **Ethical Prudence:** Adopt **frugal institutional conduct**—eschewing luxury spending—to restore public trust in its moral and **ethical authority**.
- **Institutional Strengthening:** Ensure **autonomy and adequate staffing** of inquiry and prosecution

wings, enforcing strict time-bound investigation norms.

- **Public Awareness:** Simplify complaint procedures and **integrate anti-corruption literacy** into public campaigns to boost **citizen participation**.
- **Legislative Review:** Amend the law to **mandate annual reporting and parliamentary oversight**, strengthening institutional independence and transparency.

Conclusion:

Lokpal was envisioned as the moral sentinel of India's democracy, guarding citizens from abuse of power. Yet, its current inertia reflects lost public faith and institutional drift. Reviving Lokpal requires both **ethical restraint** and **systemic reform**—so that justice is not just promised but visibly pursued

RTI AT 20: TRANSPARENCY ON DECLINE

Context: The Right to Information (**RTI Act, 2005**) has completed 20 years, but investigative reports and activists warn that it stands hollowed out by institutional capture, vacant posts, and the new Digital Personal Data Protection Act (**DPDPA, 2023**).



About RTI at 20: Transparency on Decline

About RTI Act:

Enacted under the **UPA government in June 2005**, the *Right to Information Act* empowers every Indian citizen to seek information from public authorities for a nominal fee of ₹10, ensuring **transparency, accountability, and participatory democracy**.

Key Features:

- **Three-tier structure:** Establishes a clear hierarchy — Public Information Officers (PIOs) at departments, First Appellate Authorities for appeals, and **Central & State Information Commissions (CIC/SIC)** for oversight, ensuring checks at every level.
- **Mandatory disclosure:** Section 4 mandates proactive

publication of budgets, decision-making processes, and expenditure details to prevent information hoarding and reduce RTI burden.

- **Time-bound response:** Information must be provided within **30 days** (or **48 hours** for urgent life or liberty matters), making RTI a time-sensitive accountability tool.
- **Penalty provision:** Section 20 empowers Commissions to levy **up to ₹25,000 fines** for unjustified denial or delay, designed as the Act's chief deterrent against bureaucratic evasion.
- **Citizen-Legislator parity:** Unique clause ensures **no information denied to Parliament can be denied to citizens**, symbolizing the equality of democratic participation.

Performance of RTI So Far:

Successes:

- **Empowerment of citizens:** The RTI Act has democratized information by allowing ordinary citizens to question public authorities. Over **2.5 crore RTI applications** have been filed since 2005, strengthening grassroots democracy.
- **Exposing corruption:** It has unveiled major scandals like the **2G Spectrum scam**, **Commonwealth Games scam**, **Adarsh Housing scam**, and irregularities in **MNREGA and PDS**, enhancing public accountability.
- **Strengthening governance:** RTI applications have forced transparency in administrative decisions, tendering, and fund utilization—leading to better compliance with service delivery standards.
- **Landmark CIC rulings:** Orders bringing **political parties**, the **PMO**, **RBI**, and even the **CJI's office** under RTI set global precedents for transparency in democratic institutions.
- **Public participation:** The law fostered **citizen-bureaucracy engagement** and empowered marginalized communities to access entitlements like pensions, ration cards, and housing benefits.

Challenges to RTI in India:

- **Institutional paralysis:** Chronic vacancies, especially at CIC/SIC levels, have made hearings stretch into **decades (Telangana's backlog = 29 years)**, defeating the Act's purpose.
- **Political interference:** Appointments increasingly serve as **post-retirement sinecures**, making Commissioners reluctant to challenge the executive.
- **Non-enforcement of penalties:** With barely **1.2% penal actions**, officials ignore deadlines and denials without consequence, normalizing opacity.
- **Legal dilution:** The **RTI (Amendment) Act, 2019** removed fixed tenure and salary parity with Election Commissioners, letting the **Centre control pay and tenure**, weakening autonomy.
- **DPDPA, 2023 impact:** Its **Section 44(3)** amends RTI's Section 8(1)(j), imposing a blanket ban on "personal

information" disclosure—erasing the citizen's right to hold officials accountable.

- **Executive opacity:** Key datasets—on **unemployment, COVID deaths, and crime**—are routinely withheld, earning India the label "**No Data Available government**" (SNS, 2025).
- **Judicial deference:** Courts increasingly "nudge" instead of direct the government, reflecting a **softened stance** that undermines RTI enforcement.

Way Ahead:

1. **Immediate appointments:** All vacancies in CIC/SICs must be filled within fixed timelines as per **SC's 2019 judgment**, ensuring continuity and credibility.
2. **Institutional autonomy:** Restore **fixed tenure and pay parity**, so Commissioners function without fear or favour, similar to Election Commissioners.
3. **Balance privacy & transparency:** Revisit **DPDPA's Section 44(3)** through wide consultation to safeguard the constitutional right to know while respecting genuine privacy.
4. **Digital integration:** Implement **nationwide RTI portals** for e-filing, online hearings, and public dashboards to reduce pendency and promote accessibility.
5. **Public vigilance & judicial assertiveness:** Civil society, media, and the judiciary must collectively defend RTI's independence as a **core democratic value**.

Conclusion:

At 20, the RTI stands as a **litmus test of India's democracy**—alive but weakened by neglect and capture. Its revival demands not new laws but renewed commitment to citizen empowerment, institutional autonomy, and the moral right to question power—the true essence of a participatory republic.

Topics: Government policies and interventions for development in various sectors and issues arising out of their design and implementation.

DIGITAL EXAMS: A SUSTAINABLE ALTERNATIVE TO OUTDATED PAPER-BASED TESTING

Context: A recent analysis highlighted how digital examinations can replace traditional paper-based tests in India's higher education system, offering a sustainable, cost-effective, and transparent alternative aligned with the goals of Digital India and **NEP 2020**.



About Digital Exams: A Sustainable Alternative to Outdated Paper-Based Testing

Key Data & Statistics

- **Scale of Examinations:** Over **4.3 crore** students in Indian higher education appear for nearly **100 crore exams annually**, generating massive paper consumption.
- **Environmental Impact:** Each tree yields about **8,000 sheets of paper**—the current system leads to **millions of trees being cut down** every year for exam use.
- **Carbon and Resource Cost:** Transitioning even **50% of exams online** could save lakhs of trees and prevent thousands of tonnes of CO₂ emissions annually.
- **Financial Efficiency:** Universities spend crores annually on printing, logistics, and storage; digital exams reduce **operational costs by 30–40% while** delivering results faster and more transparently.

Environmental Imperative:

- **Deforestation and resource depletion:** Millions of trees are cut down each year to sustain the paper demand of India's examination system. A single tree produces around **8,000 sheets of paper**, illustrating the enormous ecological cost of manual evaluation.
- **Energy and emissions:** Transporting and storing answer sheets involves significant **fuel consumption and carbon emissions**. Shifting to digital formats can save **lakhs of trees** and prevent **thousands of tonnes of CO₂** annually.
- **Sustainable Development Goals (SDGs):** Transitioning to digital exams directly supports SDG 12 (Responsible Consumption) and SDG 13 (Climate Action) by promoting eco-efficient processes.

Economic and Administrative Advantages:

- **Cost-effectiveness:** Digital exams eliminate recurring expenses on paper, printing, and logistics, offering long-term savings for educational institutions.
- **Operational efficiency:** Automated evaluation and digital marking enable faster, more reliable results, reducing delays and human errors.
- **Infrastructure optimization:** The removal of warehouses, transport security, and paper handling lowers administrative overheads, freeing resources for academic improvement.

- **Transparency and accountability:** Digital systems ensure traceable workflows, reducing opportunities for malpractice in [exam processing](#) and evaluation.

Societal and Educational Benefits:

- **Student-centric reforms:** Digital exams allow timely feedback, easy re-evaluation, and performance analytics, empowering learners to improve continuously.
- **Equity and inclusion:** Online platforms with multilingual and accessible interfaces ensure participation across regions, aligning with NEP's inclusivity vision.
- **Recruiter confidence:** Standardized, digital evaluation data enhance employability by offering reliable, skill-based performance indicators.

Global Best Practices and Lessons:

- Countries across **Europe and East Asia** have successfully implemented **digital assessment ecosystems**, citing benefits in efficiency, cost reduction, and inclusivity.
- Scandinavian nations have pioneered **AI-based evaluation platforms**, ensuring objectivity and instant feedback.
- For India, with its massive scale, these models provide **proof of feasibility** and highlight opportunities for indigenous innovation.

Challenges in Transition:

- **Digital Divide:** Unequal access to reliable internet and devices may disadvantage rural or underprivileged students.
- **Capacity Building:** Faculty need training in digital pedagogy and examination software.
- **Data Security:** Safeguarding sensitive exam data from cyber threats requires robust cybersecurity protocols.
- **Policy Harmonization:** Coordination between UGC, AICTE, and state universities is essential to standardize digital testing frameworks.

Way Forward:

- **Phased Implementation:** Start with pilot projects in selected departments or universities before nationwide rollout.
- **Incentivizing Early Adopters:** Provide grants or carbon credits to institutions adopting sustainable digital examination models.
- **Public-Private Partnerships:** Collaborate with [EdTech firms](#) to build secure, scalable, and user-friendly exam platforms.
- **Infrastructure Development:** Invest in broadband connectivity, cloud storage, and cybersecurity frameworks for educational institutions.
- **Capacity Building:** Introduce faculty training modules and student orientation for smooth transition to [e-assessments](#).

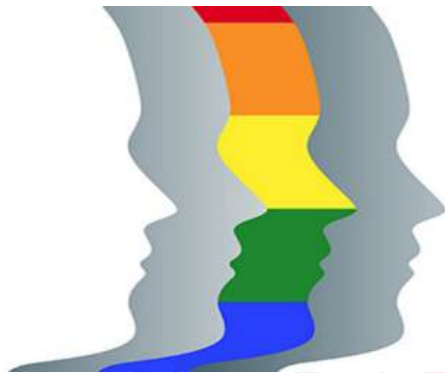
Conclusion:

Digital examinations mark a transformative shift toward sustainability, efficiency, and transparency in education. They can save millions of trees, cut emissions, and reduce costs while strengthening academic credibility. The move from paper to pixels is key to building a greener and future-ready India.

Topics: Welfare schemes for vulnerable sections of the population by the Centre and States and the performance of these schemes.

GENDER-AFFIRMING CARE (GAC)

Context: A recent article highlights the urgent need for Gender-Affirming Care (GAC) in India, emphasizing its crucial role in improving [mental health](#) and dignity for transgender and gender-diverse individuals.



About Gender-Affirming Care (GAC):

- **What It Is?**
 - **Definition:** GAC refers to a range of medical, psychological, and social interventions that help individuals align their gender identity with their body and societal recognition.
 - **Its Forms:**
 - **Social Interventions:** Use of correct names, pronouns, and recognition in schools, workplaces, and documentation ensures identity validation.
 - **Psychological Support:** Includes counselling and peer support networks to address gender dysphoria and mental health challenges.
 - **Medical Care:** Involves Gender-Affirming Hormone Therapy (GAHT) and surgeries to modify secondary sexual characteristics when desired.
 - **Legal and Institutional Support:** Integration of affirming practices in healthcare and education systems ensures dignity and inclusion.
- E.g. The World Health Organization ([WHO](#))

classifies gender-affirming care as medically necessary, not elective or cosmetic, due to its direct impact on wellbeing.

Need for Gender-Affirming Care in India:

- **High Mental Health Burden:** Over 31% of trans persons have attempted suicide, with nearly half before age 20 (India Mental Health Survey, 2024).
- **Proven Health Benefits:** Access to GAC reduces depression and suicidal ideation and improves overall psychological wellbeing (JAMA Network Open, 2023).
- **Constitutional Right to Dignity:** Under Article 21, every person has the right to live with dignity — which includes access to appropriate healthcare.
- **Bridging Social Exclusion:** GAC enables social validation and self-acceptance, reducing stigma and workplace discrimination.
- **Public Health Priority:** Recognized globally as a life-saving medical necessity, its inclusion in public health policy ensures equality under [Transgender Persons \(Protection of Rights\) Act, 2019](#).

Barriers to Gender-Affirming Care in India

- **Limited Medical Infrastructure:** Few trained endocrinologists and absence of standardized national treatment protocols.
- **Financial Constraints:** Gender-affirming surgery costs ₹2–8 lakh, and GAHT costs ₹50,000–70,000 annually, making it inaccessible for most.
- **Policy Gaps:** *Ayushman Bharat TG Plus* is under-implemented, with low awareness and limited hospital participation.
- **Social Stigma and Discrimination:** Widespread prejudice in hospitals, workplaces, and families prevents individuals from seeking care.
- **Unsafe Alternatives:** Lack of formal services forces many to self-medicate using unprescribed hormones, leading to kidney and cardiovascular damage.
E.g. Reports from Hyderabad and Mumbai show multiple cases of hormone misuse due to the **absence of supervised GAC clinics**.

Consequences of Lacking GAC:

- **Severe Mental Health Impact:** Denial of care fuels depression, anxiety, and suicidal behaviour; trans persons are 4–6 times more likely to attempt suicide.
- **Social Isolation:** Exclusion from education and jobs perpetuates poverty and homelessness among transgender communities.
- **Health Risks from Self-Medication:** Unregulated hormone intake causes organ failure and hormonal imbalance.
- **Data Erasure in Policy:** Lack of transgender-specific data in NFHS and NSSO excludes them from government health schemes.
- **Violation of Human Rights:** Denial of GAC

undermines [constitutional equality](#) and bodily autonomy, reinforcing structural discrimination.

E.g. Studies by **TISS (2023)** reveal that 65% of trans youth face rejection from healthcare providers due to gender bias.

Way Forward:

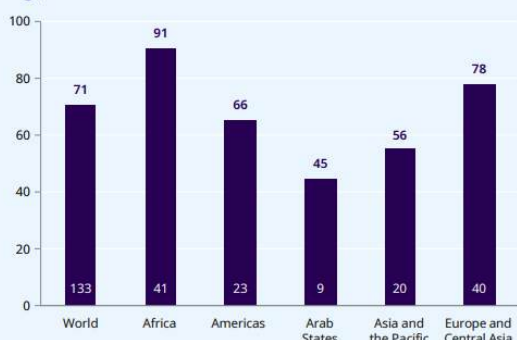
- **Integrate GAC into Public Health:** Include GAC under Ayushman Bharat and ensure free or subsidized services in government hospitals.
 - **Training and Sensitization:** Introduce [gender-sensitivity](#) modules for doctors, nurses, and psychologists in medical curricula.
 - **Community Partnerships:** Collaborate with trans-led NGOs for outreach, peer counselling, and local healthcare facilitation.
 - **Legal and Policy Reform:** Enforce inclusive insurance policies and create national GAC guidelines for uniform care standards.
 - **Data and Research Investment:** Conduct nationwide surveys on transgender health to inform evidence-based policymaking.
 - **Awareness Campaigns:** Promote public understanding of GAC to combat myths and reduce societal stigma.
- E.g.** Tamil Nadu's state-run gender clinics and Kerala's Transgender Cell serve as models for integrated healthcare delivery.

Conclusion: Gender-affirming care is not a privilege but a medical and human right essential for mental and physical wellbeing. India must act urgently to make GAC accessible, affordable, and dignified through an inclusive, rights-based [public health approach](#). True mental health equity will be achieved only when every individual, regardless of gender identity, can live and heal with dignity.

THE STATE OF SOCIAL JUSTICE 2025

Context: The International Labour Organization (ILO) released its landmark report *The State of Social Justice: A Work in Progress (2025)* ahead of the Second World Summit for Social Development marking 30 years since the 1995 Copenhagen Summit.

► **Figure 1.24. Share of countries where the right to work is in the constitution, 2024 (percentage)**



About The State of Social Justice 2025:

Key Summary of “The State of Social Justice 2025”

- **Purpose:** Evaluates 30 years of global progress since the 1995 Social Development Summit and assesses ongoing deficits in justice, equality, and inclusion.
- **Four Foundational Pillars:**
 1. **Fundamental human rights and capabilities** — ensuring freedoms, equality, and social protection.
 2. **Equal access to opportunities** — removing barriers to education, employment, and fair wages.
 3. **Fair distribution** — equitable sharing of economic growth benefits.
 4. **Fair transitions** — managing environmental, digital, and demographic changes inclusively.
- **Global Progress:**
 1. Extreme poverty fell from 39% (1995) to 10% (2025).
 2. Child labour (5–14 years) declined from 250 million to 106 million.
 3. Working poverty dropped from 28% to 7%.
 4. Over 50% of the global population now covered by some form of **social protection**.
- **Persistent Inequalities:**
 1. **Top 1%** control 20% of global income and 38% of wealth.
 2. **Gender wage gap:** Women earn **78% of men's wages**; at current pace, it will take **50–100 years** to close.
 3. **55%** of income inequality determined by country of birth, showing global location bias.
- **Erosion of Trust:** Confidence in governments, unions, and businesses has declined since 1982 due to perceptions of unfair reward systems and widening inequality.

Trends and Progress in India:

- **Poverty Reduction:** Multidimensional poverty in India fell from **29% (2013–14)** to **11% (2022–23)**, aligning with ILO's global progress theme.
- **Education Gains:** Secondary completion rate reached **79% (2024)**; female literacy at **77%**—reflecting major strides in human capability building.
- **Social Protection:** Schemes such as **PM-KISAN**, **Ayushman Bharat**, and **e-Shram** have expanded inclusion, covering over **55 crore unorganised workers**.
- **Labour Market:** Despite reforms, **informality** persists—over **80%** of India's workforce remains outside formal contracts, reflecting the global trend of limited improvement in job quality.
- **Gender Gaps:** Female labour participation stands at **37% (PLFS 2024–25)**, still below the global average, mirroring ILO's findings on structural inequality.

Improvements So Far:

- **Human Development:** Increase in literacy, skill training (PMKVY, Skill India), and access to healthcare.
- **Child Labour Reduction:** Strengthened monitoring through NCLP and education incentives.
- **Social Security:** Growth in pension and maternity schemes under the **Social Security Code, 2020**.
- **Digital Empowerment:** Initiatives like **Jan Dhan–Aadhaar–Mobile (JAM)** have reduced leakages and enhanced equity in resource delivery.

Challenges Identified by ILO:

- **Stalled Inequality Reduction:** The wealth gap has widened; redistribution remains weak.
- **Informal Economy:** 58% of global workers are informal, with limited access to labour rights and protection.
- **Gender and Birth Inequality:** 71% of income outcomes depend on birth circumstances; gender gap remains static.
- **Declining Trust in Institutions:** Public disillusionment with fairness and accountability threatens democracy.
- **Transition Risks:** **Digital divide**, climate job losses, and ageing populations may deepen inequality

ILO Recommendations:

1. **Embed Social Justice in All Policies:** Integrate equity considerations in finance, trade, climate, and health governance.
2. **Rebuild Trust in Institutions:** Strengthen transparency, accountability, and inclusive dialogue.
3. **Invest in People:** Expand access to education, skills, and lifelong learning to close digital and gender gaps.
4. **Strengthen Social Protection:** Universal coverage, portable benefits, and fair minimum wages.
5. **Promote Fair Transitions:** Ensure climate and digital transitions create decent work and protect displaced workers.
6. **Global Cooperation:** Reinforce multilateralism to address global inequality and migration fairly.

Conclusion:

The ILO's State of Social Justice 2025 underscores a paradox — while humanity is richer and more educated than ever, **inequality** and mistrust erode the gains. For India and the world, the way forward lies in **embedding fairness in all transitions**, ensuring that growth translates into **shared dignity, inclusion, and institutional trust** — the true pillars of social justice.

THE TRANSFORMATION OF GIRLS' EDUCATION

Context: The Beti Bachao, Beti Padhao (BBBP) scheme has completed a decade, showing measurable progress in

improving the sex ratio at birth and girls' education outcomes across India.



About The Transformation of Girls' Education: Changing Mindset on Girl Education:

- **From Neglect to Aspiration:** The shift from "*Beti padhegi toh kya karegi?*" to valuing education shows society recognising daughters as assets.
- **Leadership Influence:** Campaigns like *Kanya Kelavani* and *BBBP* turned girls' education into a mass movement backed by political will.
- **Community Awareness:** Awareness drives, village rallies, and women's conferences have normalised girls attending school.
- **Symbolic Actions:** Leaders auctioning gifts or contributing funds signalled that educating girls is a public priority, not a private burden.
- **Cultural Change:** Education now equated with dignity, safety, and empowerment, influencing parental choices across rural and **urban India**.

About Beti Bachao, Beti Padhao (BBBP):

- **Objective:** To prevent female foeticide and promote education of the girl child through a multi-ministerial effort (WCD, Health, HRD).
- **Impact:**
 - Sex ratio at birth improved from **919 (2015–16) to 929 (2019–21)**.
 - **20 out of 30 States/UTs** now perform above the national average.
 - Enhanced awareness: surveys in MP show **89.5% people aware** of BBBP, with 63.2% motivated to send daughters to school.

Societal and Demographic Ripple Effect:

- **Fertility Transition:** With education, women delay marriage and childbirth, lowering India's TFR to 2.0 (**NFHS-5**).
- **Health Outcomes:** Educated women access institutional deliveries and healthcare, reducing IMR from 49 (2014) to 33 (2020).
- **Workforce Entry:** Higher literacy enables women's participation in STEM, healthcare, and entrepreneurship, diversifying the economy.
- **Breaking Patriarchy:** Visible success stories—fighter pilots, CEOs, ISRO scientists—reshape gender roles

for future generations.

- **Demographic Dividend:** Female education aligns with demographic stability, creating healthier families and controlled population growth.

Long-Term Transformation & Multiplier Effect:

- **Educated Mothers' Advantage:** Mothers with schooling ensure better nutrition, learning, and health outcomes for children.
- **Generational Change:** One educated girl influences her siblings and children, creating an intergenerational cycle of progress.
- **Economic Multiplier:** Women in the workforce contribute to household income and national GDP growth simultaneously.
- **Community Leadership:** Educated women take leadership roles in Panchayats, SHGs, and civil society, ensuring inclusive development.
- **Positive Feedback Loop:** Education → empowerment → healthier families → stronger economy → progressive society ensures sustainable reform.

Conclusion:

The transformation of girls' education marks a **deep social reform**, going beyond enrolment numbers to reshape mindsets. It drives healthier families, stronger economies, and a more participatory democracy by unlocking women's potential. Truly, **educating a girl is educating an entire society**, securing a just and progressive future.

Topics: Issues relating to development and management of Social Sector/Services relating to Health, Education, Human Resources.

EMERGENCY CARE NEEDS TO BE PRIORITISED

Context: The recent stampede in Karur, Tamil Nadu, highlighted gaps in India's emergency response system, sparking renewed calls to treat emergency medical care not merely as a service, but as a constitutional duty ensuring every citizen's **right to life**.



About Emergency Care Needs to Be Prioritised:

Evolution of Emergency Care:

- Modern emergency medicine evolved from **wartime trauma management** during the World Wars, where organised triage and rapid evacuation became critical.
- The **industrial revolution** and advances in **trauma and cardiovascular medicine** led to structured ambulance systems with life-support capability.
- Over time, the focus expanded from mere transport to **on-site stabilisation**, giving rise to paramedic-led and doctor-led mobile emergency units.
- India's **108 Emergency Response System**, introduced under the **National Health Mission (NHM)**, institutionalised public access to emergency transport.
- The concept evolved globally into the **"Golden Hour"** and later the **"Platinum Ten Minutes"**, emphasising response speed as a determinant of survival.

Constitutional Imperative:

- The **Right to Life** under **Article 21** of the Indian Constitution inherently guarantees **access to timely emergency medical care**.
- The State is ethically bound to ensure **unobstructed emergency access** during mass gatherings and disasters.

Science of Timely Intervention:

- **Acute illnesses and trauma** cause rapid circulatory collapse; immediate diagnosis and treatment can reverse these life-threatening disturbances.
- The **"Golden Hour"** represents the crucial 60 minutes post-injury when intervention can prevent irreversible organ damage.
- The evolved **"Platinum Ten Minutes"** standard stresses that medical help—not just transport—should reach the victim within 10 minutes.
- Modern ambulances act as **mobile ICUs**, equipped with oxygen supply, defibrillators, ECG, airway management tools, and telemedicine links.
- Timely, skilled intervention transforms outcomes, reducing preventable deaths from strokes, **heart attacks**, and trauma.

Existing Initiatives:

- The **108 Ambulance Service**, a public-private partnership, operates over **10,000 ambulances**, serving **7–9 million patients annually**.
- Tamil Nadu leads with an **average response time of 10 minutes 14 seconds**, close to the Platinum Ten benchmark.
- The **National Ambulance Code (AIS-125)** sets standards for design, safety, and equipment across vehicle categories.
- The **Motor Vehicles (Amendment) Act, 2019**, mandates right of way for ambulances and penalises

obstruction.

- **NHM support** enables State-level flexibility in managing emergency systems and training first responders.

Challenges in Emergency Systems:

- **Fragmented services:** Wide disparities exist between States and private providers, leading to uneven quality.
- **Skill shortage:** Lack of certified emergency medical technicians and high attrition rates weaken continuity.
- **Infrastructure gaps:** Many ambulances lack advanced life support systems and telemedicine integration.
- **Poor coordination:** Weak linkages between call centres, hospitals, and ambulance teams delay response.
- **Accountability vacuum:** Absence of a **National Emergency Regulatory Authority** results in inconsistent standards and oversight.

Policy Reforms and Recommendations:

- **Constitute a National Emergency Services Regulatory Authority** to standardise training, operations, and equipment across States.
- **Integrate technology** through AI-based dispatch systems, [GPS tracking](#), and real-time data sharing with hospitals.
- **Introduce national certification and pay parity** for paramedics to improve retention and professionalism.
- **Expand air and [drone ambulances](#)** for remote access and organ transport logistics.
- **Mandate emergency access protocols** for public gatherings and urban infrastructure planning.
- **Promote PPP models** for integrated emergency networks linking urban and rural areas.

Conclusion:

A nation capable of **robotic surgeries** and **organ transplants** must not lose lives to delayed ambulances or disorganised response systems. Emergency medical care must evolve from fragmented services into a right-based, standardised national mission. Recognising it as a constitutional and moral duty is essential to ensure that every citizen receives help when every second counts.

Topics: Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests.

Context: The European Union and India, under the New Strategic EU–India Agenda (2025) adopted in October, agreed to link the Indian Carbon Market (ICM) with the EU's Carbon Border Adjustment Mechanism ([CBAM](#)).



About [The EU–India New Strategic Agenda 2025](#): What It Is?

- The **EU–India New Strategic Agenda (2025)** is a forward-looking framework jointly adopted by the [European Union](#) (EU) and **India**, outlining a comprehensive roadmap to strengthen cooperation for the next decade.
- It builds upon the **2020 EU–India Strategic Partnership: A Roadmap to 2025**, expanding collaboration into emerging areas like green transition, digital governance, defence, and global connectivity.

Objective:

The primary goal of the agenda is to elevate the EU–India relationship into a transformative global partnership by:

1. Promoting **sustainable prosperity and climate action** through joint [clean energy transitions](#).
2. Enhancing **strategic autonomy and security cooperation** in the Indo-Pacific and beyond.
3. Deepening **technological and digital collaboration** to shape ethical and inclusive innovation.
4. Strengthening **people-to-people ties**, education, and mobility for mutual growth.
5. Establishing **institutional and regulatory frameworks** for equitable global governance and trade.

Key Features of the EU–India New Strategic Agenda (2025)

- **Five-Pillar Structure:** The agenda is structured around **five key pillars** — (i) Prosperity & Sustainability, (ii) [Technology & Innovation](#), (iii) Security & Defence, (iv) Connectivity & Global Issues, and (v) Enablers across pillars — ensuring holistic engagement across economic, political, and social dimensions.
- **Carbon Market Linkage:** A landmark feature is the decision to link India's Carbon Credit Trading Scheme (ICM) with the EU's [Carbon Border Adjustment Mechanism](#) (CBAM), enabling carbon price deductions at EU borders — a milestone in North–South climate cooperation.
- **Green Partnership Expansion:** Focus on renewable energy, green hydrogen, sustainable finance, and

THE EU–INDIA NEW STRATEGIC AGENDA 2025

carbon neutrality pathways through technology transfer and co-investment.

- **Digital and Technological Cooperation:** Includes joint initiatives in semiconductors, [5G/6G standards](#), AI ethics, quantum computing, and data protection frameworks aligned with privacy and transparency principles.
- **Defence and Maritime Security Cooperation:** Establishes a Security and Defence Partnership, promoting joint naval exercises, cybersecurity collaboration, and maritime domain awareness in the Indo-Pacific.
- **Connectivity and Global Gateway Projects:** Supports infrastructure connectivity through the EU's Global Gateway Initiative and India–Middle East–Europe Economic Corridor ([IMEC](#)) to enhance regional trade and supply chain resilience.

Significance of the EU–India Carbon Market Linkage:

- **Trade Relief for Exporters:** Deductions of Indian carbon prices from EU border levies will prevent double taxation under CBAM.
- **Climate Cooperation:** It aligns India's [Carbon Credit Trading Scheme](#) (CCTS) with EU's Emissions Trading System (ETS), promoting credible carbon pricing.
- **Model for Global South:** Sets a precedent for equitable North–South carbon market cooperation in line with climate justice.
- **Strategic Trust:** Reinforces EU–India partnership in sustainable trade, energy transition, and technology exchange.

Challenges to India's Carbon Market:

- **Institutional Weakness:** India's CCTS lacks legally binding emission caps and independent verification systems, unlike the EU's mature ETS.
- **Price Disparity:** Indian carbon prices (€5–10/tonne) are far lower than EU's (€60–80/tonne), risking non-recognition of Indian credits.
- **Policy Contradiction:** Linking with CBAM, which India previously opposed as protectionist, raises political and legal tensions at [WTO](#).
- **Sovereignty Risks:** CBAM indirectly allows EU oversight over India's domestic carbon pricing policy.
- **Industrial Resistance:** Indian industries may resist dual compliance burdens, lobbying to weaken carbon norms domestically.

Way Ahead:

- **Institutional Strengthening:** Establish independent [carbon regulators](#) and enforce compliance-grade emission caps.
- **Price Alignment:** Negotiate a floor carbon price and sectoral contracts aligning with CBAM benchmarks.
- **Technical Collaboration:** EU to provide capacity-building support and knowledge-sharing for verification and reporting systems.

- **Legal Clarity:** Develop a bilateral CBAM adjustment protocol to prevent trade disputes and protect exporters.
- **Political Diplomacy:** Use the linkage to champion a fair carbon transition framework for developing countries within [WTO norms](#).

Conclusion:

The EU–India carbon linkage represents a bold experiment in green diplomacy, offering India a chance to align climate ambition with trade advantage. Yet, its success depends on trust, transparency, and parity in carbon governance. If operationalised effectively, it can redefine global climate cooperation between developed and developing economies.

INDIA–ASEAN SUMMIT 2025

Context: Prime Minister of India virtually addressed the [22nd India–ASEAN Summit](#) in Kuala Lumpur, reaffirming India's commitment to deepen cooperation in maritime security, digital inclusion, and resilient supply chains.

- He also announced that 2026 will be celebrated as the “[ASEAN–India Year of Maritime Cooperation](#).”



About India–ASEAN Summit 2025:

History of India–ASEAN Cooperation:

- **Early Engagement (1990s):** India's formal engagement with ASEAN began in 1992 as a Sectoral Dialogue Partner, which evolved into a Full Dialogue Partnership in 1996.
- **Act East Policy:** India's [Look East Policy](#) (1991) transitioned to Act East Policy (2014), strengthening strategic, economic, and cultural integration.
- **ASEAN Summits & Institutional Mechanisms:** India has been a regular participant in ASEAN Summits since 2002, and the partnership was elevated to a Comprehensive Strategic Partnership in 2022.
- **Free Trade Agreement (2009):** The [ASEAN–India FTA in Goods](#) (AITIGA) and later Services & Investment Agreements (2015) expanded bilateral economic ties.
- **Shared Heritage:** India and ASEAN share deep civilisational links through Buddhism, maritime trade routes, and cultural exchange dating back to

the Gupta and Srivijaya periods.

Opportunities in India–ASEAN Relations:

- **Maritime Security Cooperation:** Strategic alignment in the Indo-Pacific offers scope for joint patrols, maritime domain awareness, and naval exercises.
- **Economic Integration:** The review of AITIGA provides an opportunity to enhance market access, reduce non-tariff barriers, and boost regional trade.
- **Digital & Green Economy:** Collaboration in digital public infrastructure, renewable energy, and green technologies can drive [sustainable growth](#).
- **Connectivity & Infrastructure:** Projects like the India–Myanmar–Thailand Trilateral Highway and Kaladan Multi-Modal Transit Corridor strengthen physical and economic connectivity.
- **Cultural Diplomacy:** Shared values and heritage offer avenues for people-to-people exchange, tourism, and education partnerships.

Initiatives Taken So Far:

- **ASEAN–India Plan of Action (2026–2030):** Focuses on trade, investment, education, food security, and innovation.
- **ASEAN–India Trade in Goods Agreement (AITIGA):** Currently under review to increase economic synergy.
- **Maritime Cooperation:** Declaration of 2026 as ASEAN–India Year of Maritime Cooperation to deepen oceanic security and blue economy initiatives.
- **Financial & Developmental Assistance:** India's ₹500 crore [ASEAN–India Fund](#) supports connectivity, agriculture, and capacity building projects.
- **Cultural & Educational Ties:** Initiatives like ASEAN–India Network of Think Tanks (AINTT), ICCR scholarships, and digital education cooperation have expanded regional soft power engagement.

Challenges Associated:

- **Trade Imbalance:** ASEAN accounts for 11% of India's trade, yet imports far outweigh exports, reflecting limited value addition.
- **Slow Progress in AITIGA Review:** Protectionist tendencies and procedural delays hinder deeper integration.
- **China Factor:** ASEAN's economic dependence on China complicates India's strategic outreach in the [Indo-Pacific](#).
- **Connectivity Bottlenecks:** Delays in the [IMT Highway](#) and Kaladan project limit India's logistical advantage.
- **Divergent Priorities:** ASEAN's principle of neutrality and India's strategic tilt toward Quad sometimes lead to hesitation in collective alignment.

Way Ahead:

- **Accelerate Economic Integration:** Fast-track the AITIGA review and expand cooperation in services

and digital trade.

- **Enhance Maritime Presence:** Operationalise joint naval exercises and blue economy partnerships under the 2026 maritime framework.
- **Deepen Connectivity:** Expedite physical, digital, and energy connectivity corridors linking Northeast India with [Southeast Asia](#).
- **Institutional Strengthening:** Regular Track 1.5 and 2 dialogues to enhance strategic trust and policy coordination.
- **Balanced Diplomacy:** Maintain ASEAN centrality while ensuring inclusive Indo-Pacific cooperation that complements [Quad initiatives](#).

Conclusion:

India–ASEAN relations embody a civilisational continuum and strategic necessity in the Indo-Pacific century. To realise their full potential, both sides must move from dialogue to decisive action, aligning trade, security, and digital priorities. The “ASEAN–India Year of Maritime Cooperation 2026” should serve as a launchpad for a resilient, inclusive, and future-ready regional partnership.

INDIA AND THE MULTIPOLAR WEST: CHALLENGES AND OPPORTUNITIES

Context: India's foreign policy is adapting to the evolving “multipolar West,” marked by internal divisions among Western powers and [Europe's](#) pursuit of strategic autonomy.

- This shifting balance offers India new opportunities for global engagement and diversified partnerships.



About India and the Multipolar West: Challenges and Opportunities

Trends in a Changing West:

- **Rise of Strategic Autonomy:** Europe, led by Macron and von der Leyen, is pursuing defence, technological, and economic independence from the US.
- **Pluralisation of Power:** Western unity is giving way to multiple centres—US, EU, UK, Japan—each asserting distinct global roles.

- **Re-emergence of Middle Powers:** Nations like India, South Korea, and Australia are increasingly partnering with Europe on trade, tech, and security.

Causes of Internal Division Among the West:

- **US Nationalism:** Donald Trump's *America First* policy eroded trust, questioning NATO, trade pacts, and global commitments.
- **Divergent Threat Perceptions:** Europe prioritises Russia; the US and its Asian allies focus on containing China.
- **Economic and Technological Rivalries:** Disputes over data sovereignty, industrial subsidies, and AI regulations deepen trans-Atlantic rifts.
- **Cultural and Ideological Polarisation:** The American right's export of culture wars and waning faith in liberal norms unsettle European partners.

Implications of a Multipolar West:

- **Opportunities for India:** A fragmented West lets India build diverse partnerships with the EU, UK, and US simultaneously.
- **Weakening Collective Response:** Disunity could blunt Western resolve against authoritarian powers like China and Russia.
- **Rise of Regional Balancing:** Europe's self-reliance and *Indo-Pacific* outreach reshape global alignments and trade corridors.
- **Demand for Indian Agility:** To benefit from Western pluralism, India must reform internally—modernising its economy and diplomacy alike.

India's Expanding Role:

- **From Non-Alignment to Multi-Alignment:** India has shifted from neutrality to building flexible coalitions with diverse global powers to safeguard strategic autonomy.
- **Central to Europe's Indo-Pacific Vision:** The EU's 2025 Joint Communication identifies India as a pivotal Indo-Pacific partner in maintaining regional stability and open trade.
- **Deepening Economic Links:** New trade agreements with *EFTA*, the UK, and the EU reflect India's growing integration with European and Western markets.
- **Technological and Digital Collaboration:** Joint work on digital public infrastructure, green tech, and AI governance strengthens India's role in setting global standards.
- **Defence and Connectivity Cooperation:** Partnerships under the Global Gateway initiative enhance joint *defence production*, resilient supply chains, and maritime connectivity.

Opportunities and Risks for India:

- **Opportunities:**
 - **Diplomatic Flexibility:** A multipolar West allows India to engage bilaterally with several Western powers without aligning

exclusively with any one bloc.

- **Strategic Bridging Role:** India can act as a stabiliser between the US, Europe, and the Global South, enhancing its voice in global governance.
- **Economic Leverage:** Expanding Western diversification away from China creates new trade, investment, and technology opportunities for India.
- **Enhanced Global Visibility:** India's participation in multiple forums (G20, Quad, *EU-India dialogues*) boosts its reputation as a responsible middle power.
- **Risks:**
 - **Fragmented Western Unity:** Divisions among Western powers could reduce coordinated action on global challenges, weakening collective deterrence.
 - **Geopolitical Overstretch:** Managing simultaneous engagement with the US, EU, and Russia may strain India's diplomatic bandwidth.
 - **Domestic Readiness Gap:** Institutional delays, slow economic reforms, and bureaucratic inertia could prevent India from maximising external openings.

Key Takeaway:

- **Era of Opportunity:** A multipolar West provides India a rare moment to expand influence across trade, technology, and strategic domains.
- **Need for Internal Reform:** Success abroad must be matched by administrative efficiency, innovation, and institutional agility at home.
- **Pragmatic Diplomacy:** India's engagement strategy should remain flexible—partnership-driven, not alliance-bound.
- **Strategic Equilibrium:** Balancing ties with the US, Europe, and Global South is essential for preserving India's autonomy and credibility.
- **Vision Ahead:** By coupling external dynamism with internal modernisation, India can emerge as a **balancing power** shaping the future of global order.

Conclusion:

India's rise in a multipolar West hinge on balancing agility abroad with reform at home. By aligning strategic diplomacy with internal modernisation, India can transform this geopolitical flux into a lasting moment of global leadership.

THE NEW ARC OF INDIA-AUSTRALIA COLLABORATION

Context: India and Australia have elevated their defence engagement through the inaugural India-Australia Defence

Ministers' Dialogue (2025) in Canberra, signing multiple agreements on [maritime security](#), air refuelling, and submarine rescue cooperation.



About The New Arc of India–Australia Collaboration:

Background and Evolution:

- **Strategic Convergence:** India and Australia aligned over shared democratic ideals and a free [Indo-Pacific](#), collaborating through the Quad and regular ministerial dialogues to counter regional instability.
- **Operational Deepening:** Regular joint drills such as *Talisman Sabre*, logistics pacts, and air-refuelling frameworks improved coordination and interoperability between their armed forces.
- **Industrial and Logistics Convergence:** The relationship expanded toward joint ship repair, maintenance, and [defence manufacturing](#)—turning strategic dialogue into operational outcomes.

Key Agreements and Mechanisms:

- **Joint Maritime Security Collaboration Roadmap:** Enhances coordinated maritime surveillance, domain awareness, and interoperability across the Indo-Pacific region.
- **Mutual Submarine Rescue Support Arrangement:** Establishes a structured framework for underwater rescue operations and naval contingency management.
- **Air-to-Air Refuelling Agreement (2024):** Strengthens tactical endurance and enables longer joint missions through shared aerial refuelling capacity.
- **Annual Defence Ministers' Dialogue & Joint Staff Talks:** Creates institutional continuity for defence discussions and operational planning across political tenures.
- **Defence Industry Roundtables:** Encourages industrial linkages, co-production, and maintenance

collaboration between Indian and Australian defence sectors.

Drivers of Deepening Partnership:

- **Strategic Factors:** The Indo-Pacific's shifting power dynamics and China's assertive posturing have propelled India and Australia toward closer military cooperation.
- **Pragmatic Concerns:** Both seek to diversify security dependencies by building autonomous bilateral capabilities for [crisis management](#).
- **Industrial Synergy:** India's cost-efficient manufacturing complements Australia's advanced defence technology, creating a balanced industrial partnership.
- **Regional Context:** India's [Indian Ocean](#) presence and Australia's Pacific positioning make them natural anchors for a stable maritime security order.

Strategic and Industrial Significance:

- **Maritime Security:** Strengthened naval operations improve sea-lane protection and reinforce freedom of navigation across key routes.
- **Defence Production Linkages:** Joint development of equipment and repair infrastructure boosts regional [supply chain resilience](#).
- **Technological Complementarity:** Integrates India's scalable production with Australia's innovation-driven R&D base for advanced defence solutions.
- **Institutional Strengthening:** Annual dialogues and joint forums ensure stable defence engagement irrespective of political change.
- **Regional Balance:** Enhances [Quad cohesion](#) and supports a transparent, rules-based Indo-Pacific architecture.

Way Forward:

- **Operationalise logistics and ship-repair pacts:** Implement agreed maintenance facilities and naval cooperation mechanisms efficiently.
- **Expand information-sharing frameworks:** Build secure, classified networks for real-time maritime intelligence and situational awareness.
- **Launch joint defence R&D projects:** Cooperate in next-generation technologies such as drones, AI warfare, and cyber resilience.

- **Integrate with broader Quad initiatives:** Align bilateral efforts with collective Indo-Pacific security strategies for synergy.
- **Institutionalise defence industry linkages:** Foster private-sector partnerships for sustained co-production and long-term industrial depth.

Conclusion:

India–Australia defence cooperation has matured from symbolic diplomacy to **operational and industrial partnership**, building resilience in the Indo-Pacific. The collaboration now represents a **strategic fusion of geography, capability, and shared democratic vision**, reinforcing a stable, rules-based maritime order and paving the way for sustained regional security.

Topics: Effect of policies and politics of developed and developing countries on India's interests, Indian diaspora.

REVERSING THE BRAIN DRAIN

Context: The Government of India is planning a new scheme to attract Indian-origin researchers and scientists in [STEM fields](#) back from the United States amid tightening research policies under the Trump administration.



About Reversing the Brain Drain:

1. What is Brain Drain?

- “Brain drain” refers to the migration of [skilled professionals](#), scientists, and researchers from developing countries to advanced economies seeking better opportunities, funding, and research freedom.
- India has long been one of the largest exporters of talent, particularly in STEM,

medicine, and IT sectors.

2. Data and Statistics:

- According to **MEA (2024)**, over **13 lakh Indians renounced citizenship** between 2015–2024, many in high-skilled sectors.
- Nearly **1.6 lakh Indian students** are pursuing research or doctoral studies in the **U.S. alone (IIE, 2024)**.
- India spends only **0.65% of GDP on R&D**, compared to **2.7% in China** and **3.5% in the U.S.**, driving talent outflow.

Factors Contributing to Reverse Brain Drain:

1. **Policy Uncertainty in the U.S.:** Tightened immigration rules, funding cuts, and anti-science policies under the Trump administration are pushing Indian researchers to seek stability elsewhere.
2. **Growing Indian Research Ecosystem:** Expansion of AI Centres of Excellence, supercomputing infrastructure ([PARAM Siddhi](#)), and digital research platforms signal domestic readiness.
3. **Governmental Incentives:** Attractive repatriation packages, research grants, and startup support are emerging as strong pull factors.
4. **Emotional and Ideological Pull:** A renewed sense of national contribution and belonging motivates many to return and strengthen India's global scientific standing.
5. **State-Level Models:** Tamil Nadu's “Tamil Talents Plan” offers competitive pay, relocation allowance, and co-research collaborations, setting a model for other states.

Initiatives Taken by India:

1. National-Level Measures:

- Proposed **NRI Scientist Repatriation Scheme** offering **substantial set-up grants** and placements in **IITs and national labs**.
- **Startup India** and **Digital India** providing platforms for returnee entrepreneurs to establish deep-tech startups.
- **MeitY's INDIAai Mission** and **AI Ethics Frameworks** fostering an inclusive AI

ecosystem.

2. **Institutional Collaboration:**

- **CSIR and ICSSR** to co-host [Reverse Migration Roundtables](#) on global campuses.
- Creation of **AI Research Liaison Offices** to coordinate onboarding, intellectual property, and institutional fit.

3. **State-Level Efforts:**

- Tamil Nadu's "**Tamil Talents Plan**": Rs 100 crore budget for new research centres with IISc & TIFR collaboration; co-supervised PhDs and AI-focused labs.

4. **Research & Innovation Reforms:**

- Establishment of **AI Startup Landing Pads** in Bengaluru, Chennai, and Pune for repatriated founders.
- Simplification of **ethics clearances** and **funding mechanisms** for high-impact science.

Challenges Associated:

1. **Bureaucratic Red Tape:** Complex procurement rules, multi-layered file approvals, and tendering delays make researchers spend more time on paperwork than on innovation, stalling project timelines and dampening morale.
2. **Institutional Resistance:** Preferential grants and privileges for returnee scientists often breed discontent among existing faculty, leading to friction, hierarchy issues, and a loss of institutional cohesion.
3. **Cultural and Systemic Barriers:** Returnees face difficulty adjusting to rigid hierarchies, limited autonomy, and an administrative culture resistant to experimentation, which contrasts sharply with the flexible systems abroad.
4. **Infrastructure Deficits:** With India's R&D spending at only **0.65% of GDP**, access to world-class labs, data systems, and technical manpower remains limited, constraining advanced research capabilities.
5. **Quality of Life Concerns:** [Air pollution](#), lack of adequate housing, schooling difficulties, and inefficient civic services in metros make long-term relocation unattractive for scientists with families.

Way Ahead:

1. **Ease of Doing Research:** Establish a single-window digital portal for procurement, fund release, and hiring approvals to minimize bureaucratic lag and enable faster project execution.
2. **Autonomous Research Clusters:** Create independent, performance-based research centres with [flexible governance](#), global hiring, and direct funding autonomy to attract world-class talent.
3. **Institutional Reforms:** Implement transparent evaluation, merit-based promotions, and flexible tenure systems to encourage accountability and reduce gatekeeping in academia.
4. **Global Mobility Frameworks:** Introduce spouse work visas, fast-track research clearances, and [tax-neutral startup](#) repatriation policies to make India globally competitive for scientific talent.
5. **Increased R&D Spending:** Raise national R&D investment to **1.5% of GDP by 2030**, ensuring stable funding for universities, innovation hubs, and collaborative industry-academia ecosystems.

Conclusion:

Reversing India's brain drain demands more than symbolic incentives—it requires **systemic reforms in research governance and funding autonomy**. With bold state-led models like Tamil Nadu's and national missions like [INDIAai](#), India can become a true **destination for innovation and scientific excellence**. Only when **scale, self-respect, and scientific freedom** converge will the diaspora's best minds call India home again.

Topics: Important International institutions, agencies and fora, their structure, mandate.

INDIA'S EVOLVING ROLE IN UN PEACEKEEPING

Context: India hosted the [United Nations Troop Contributing Countries \(UNTCC\) Chiefs' Conclave](#) 2025 in New Delhi from October 14–16, 2025, marking the first time the Indian Army led such a global forum.



About India's Evolving Role in UN Peacekeeping:

UN Peacekeeping Forces and India's Contribution:

- The **United Nations Peacekeeping Force (UNPKF)** was established in **1948** to help countries torn by conflict transition to peace and stability. It operates under **Chapters VI and VII of the UN Charter**, focusing on monitoring ceasefires, protecting civilians, and rebuilding institutions.
- **India** has been one of the **largest and most consistent troop contributors**, deploying **over 3,00,000 personnel** across **50 missions**. Indian peacekeepers have served in **Congo, Lebanon, South Sudan, and Liberia**, earning **UN medals for valour**.
- India also pioneered the **first all-women police contingent** in **Liberia (2007)**, symbolising its commitment to gender inclusion and humanitarian service.

India's Moral and Strategic Vision:

- India sees peacekeeping as **"Seva" (service)**, grounded in **Vasudhaiva Kutumbakam** (the world is one family) and **Ahimsa** (non-violence).
- Its policy of **"No National Caveats"** ensures impartial action without prioritising national interest.
- Defence Minister **Rajnath Singh's "4 Cs"**—**Consultation, Cooperation, Coordination, and Capacity Building**—represent India's model for collective, equitable peace operations.
- Strategically, India advocates for **democratisation within the UN**, ensuring **troop-contributing countries (TCCs)** have a decisive say in mission planning.
- The vision merges **moral legitimacy with operational realism**, positioning India as a **reformer, not just a responder**.

Role of Technology in Peacekeeping:

- India promotes **technology as a moral multiplier**, using innovation to **save lives, enhance transparency, and reduce casualties**.
- Introduced the concept of a **UAS/C-UAS doctrine**—layered drone systems for reconnaissance, convoy

safety, and casualty evacuation.

- Advocates **AI-enabled logistics, data analytics, and real-time surveillance** for situational awareness.
- The **Defence Expo 2025** showcased **41 indigenous systems** under **Aatmanirbhar Bharat**, highlighting India's push for **self-reliant yet globally shared security tools**.
- Proposed creation of a **"BlueSky Peacekeeping Commons"**—a shared platform for **telemetry data, drone feeds, and TCC interoperability standards**.

Limitations of UN Peacekeeping Forces

- **Vague Mandates:** Missions often suffer from **ambiguous goals and political interference**, reducing operational clarity.
- **Resource Constraints:** Many missions face **inadequate funding, outdated equipment, and personnel shortages**.
- **Erosion of Neutrality:** Increasing engagement in **counterterrorism** or **political roles** undermines traditional neutrality.
- **Accountability Gaps:** Crimes against peacekeepers and abuse allegations remain weakly prosecuted, eroding credibility.
- **Evolving Warfare:** Hybrid, cyber, and drone-based threats have outpaced the adaptation of traditional peacekeeping frameworks.

Way Ahead:

- **Mandate Realignment:** Ensure **realistic, context-based goals** that prioritise civilian protection and host-nation consent.
- **Technological Modernisation:** Institutionalise **AI, UAS, and cyber-resilience** tools with strong ethical frameworks.
- **TCC Empowerment:** Involve troop contributors like India in **decision-making, training, and policy review processes**.
- **Gender and Regional Inclusivity:** Expand the role of **women peacekeepers** and **Global South partnerships** for legitimacy.
- **Accountability Mechanisms:** Establish **transparent audit systems, war-crime accountability, and peacekeeper welfare reforms**.

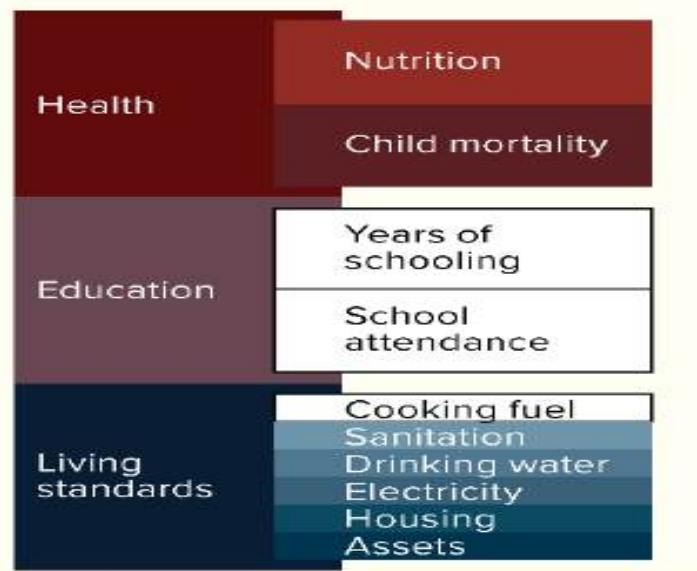
Conclusion:

India's approach to UN peacekeeping blends **morality with modernity**, viewing peace not as dominance but as duty. By promoting **democratic reforms, technological ethics, and South-led leadership**, India seeks to humanise global security. As the world's conflicts grow complex, India's blueprint shows that **credibility, compassion, and capability** are the true weapons of peace.

GLOBAL MULTIDIMENSIONAL POVERTY INDEX (MPI) 2025 REPORT

Context:

The United Nations Development Programme (UNDP) and the Oxford Poverty and Human Development Initiative (OPHI) released the Global [Multidimensional Poverty Index \(MPI\)](#) 2025 Report titled “Overlapping Hardships: Poverty and Climate Hazards”.



About [Global Multidimensional Poverty Index \(MPI\) 2025 Report](#):

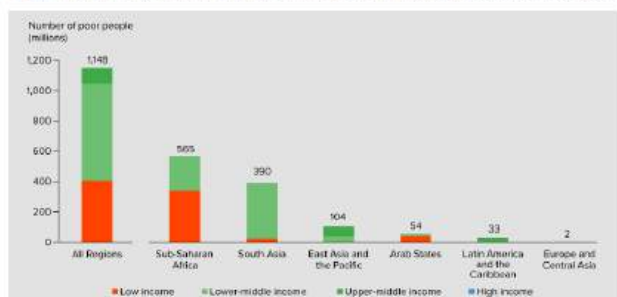
About MPI 2025 Report:

- **What it is?**
 - o The MPI is a **global measure of acute poverty** that captures multiple deprivations—health, education, and standard of living—beyond income poverty.
- **Published by:** Jointly produced by the **UNDP Human Development Report Office** and the **Oxford Poverty & Human Development Initiative (OPHI)** since 2010.
- **Launched in:**
 - o The global MPI was first introduced in the **2010 Human Development Report**, covering over **100 developing countries**.
- **Aim:**
 - o To assess who is poor, how they are poor, and how poverty overlaps with deprivations, thereby guiding evidence-based policymaking aligned with **SDG-1 (No Poverty)**.

Key Trends in the Global Multidimensional Poverty Index (MPI) 2025:

1. **Global Poverty Prevalence:** The 2025 MPI covers **109 countries** and finds that **1.1 billion people (18.3%)** live in acute multidimensional poverty, indicating persistent global deprivation despite [post-pandemic recovery](#) efforts.
2. **Severity of Poverty:** Nearly **43.6% of poor people** (about 501 million) are in severe poverty, meaning they are deprived in at least half of the MPI indicators, showing the depth of deprivation in vulnerable regions.
3. **Children Bear the Greatest Burden:** Though children constitute only **33.6% of the global population**, they represent **51% of all multidimensionally poor**, underscoring how child malnutrition and lack of schooling perpetuate [intergenerational poverty](#).
4. **Middle-Income Countries as Hidden Epicentres:** Surprisingly, **740 million poor people**—nearly two-thirds of the global poor—reside in **middle-income countries**, revealing the inadequacy of income-based classifications in capturing real deprivation.
5. **Regional Concentration of Poverty:** **Sub-Saharan Africa and South Asia** together account for **83% of global poverty**, with Sub-Saharan Africa alone home to **49.2%** of the world's poor, emphasizing geographical inequality.
6. **Rural Dominance in Poverty Distribution:** A staggering **83.5% of the multidimensionally poor** live in **rural areas**, even though these regions house just **55%** of the total population, highlighting infrastructure and service deficits.
7. **Climate-Poverty Nexus:** Nearly **80% of the world's poor** live in areas exposed to at least one [climate hazard](#) such as droughts, floods, or extreme heat, creating a “double burden” of deprivation and environmental risk.
8. **Stagnation in Post-Pandemic Progress:** The report notes **slowed poverty reduction** post-COVID-19, with many countries experiencing stagnant or reversed progress due to inflation, conflict, and climate disruptions.

Figure 1 Middle-income countries have high shares of people in poverty across regions and types of deprivation



India and the Global MPI 2025:

- **Massive Poverty Reduction:** India achieved a remarkable decline in multidimensional poverty from 55.1% (2005–06) to 16.4% (2019–21), lifting over 414 million people out of deprivation, marking one of the fastest reductions globally.
- **Child-Centric Poverty:** Despite broad progress, child poverty remains severe, particularly in nutrition, sanitation, cooking fuel, and housing, indicating persistent intergenerational deprivation challenges.
- **Climate Exposure:** Nearly 99% of India's poor live in climate-vulnerable regions, frequently exposed to heatwaves, floods, and air pollution, linking poverty eradication to environmental sustainability.
- **Policy Relevance:** India's MPI success reflects targeted welfare schemes like PM-Awas Yojana, Swachh Bharat Mission, Ujjwala, and Jal Jeevan, which directly address multidimensional deprivations in housing, sanitation, and energy.

Challenges Highlighted:

- **Rural–Urban Disparity:** More than 83% of the multidimensionally poor reside in rural areas, where gaps in healthcare, education, and infrastructure persist despite rapid urban growth.
- **Climate-Induced Vulnerability:** The poor face repeated climate shocks such as droughts and floods, undermining livelihoods and reversing development gains in climate-sensitive sectors.
- **Data Deficit:** Outdated and fragmented household-level data limit effective policy evaluation and hinder real-time monitoring of

SDG progress across states.

- **Gender and Child Deprivations:** Persistent gender inequality and child malnutrition restrict overall human development, with women and children bearing the heaviest poverty burden.
- **Limited Fiscal Capacity:** Many states struggle with budgetary constraints and limited fiscal autonomy, restricting long-term investments in social protection and climate adaptation.

Policy Reforms and Recommendations

- **Integrate Poverty and Climate Policies:** Adopt climate-resilient poverty strategies, combining green infrastructure, adaptive welfare, and disaster preparedness for vulnerable communities.
- **Localized Data Monitoring:** Develop district-level MPI dashboards to enable real-time data collection, evidence-based policymaking, and precise targeting of welfare interventions.
- **Invest in Green Livelihoods:** Expand eco-jobs in renewable energy, organic farming, and circular economy, linking sustainability with employment generation.
- **Global Financial Support:** Mobilize climate finance and concessional aid from global platforms to support developing nations managing dual crises of poverty and climate change.
- **Child- and Gender-Sensitive Interventions:** Strengthen programs focusing on nutrition, clean fuel, education, and maternal health, ensuring inclusive and intergenerational poverty reduction.

Conclusion:

The Global MPI 2025 underscores that poverty today is as much about climate vulnerability as deprivation itself. India's rapid poverty reduction offers hope, but the rising climate threat demands integrated, climate-resilient poverty policies. Future strategies must link social justice with environmental sustainability, ensuring no one is left behind in a warming world.

GENERAL STUDIES – 3

Topics: Indian Economy and issues relating to planning, mobilization of resources, growth, development and employment.

UNEMPLOYMENT OF THE EDUCATED IN INDIA

Context: India faces an alarming rise in educated unemployment, with recent reports showing graduates and postgraduates applying for low-skill jobs — such as sanitation and peon roles — reflecting a deep structural crisis in the [labour market](#).



About Unemployment of the Educated in India:

- **Severe Job Mismatch:** In 2024, over 46,000 graduates and postgraduates applied for sanitation jobs in Haryana, and 12,000 professionals competed for 18 peon posts in Rajasthan — showing the crisis of overqualification.
- **Campus Placement Collapse:** 2 out of every 5 [IIT graduates](#) in 2024 went unplaced, reflecting a sharp fall in high-skill job absorption across top institutes like IITs, NITs, and IIITs.
- **Educated Youth Form Two-Thirds of Unemployed:** Despite an official unemployment rate of 4–6%, 66% of India's unemployed are graduates or postgraduates, indicating structural weaknesses in job creation.
- **Corporate Job Cuts and Wage Stagnation:** Leading IT firms cut 64,000 jobs in FY24, while average graduate salaries remain ₹3–4 lakh per annum, stagnant for nearly a decade.

Major Causes:

- **Skill Mismatch:** 33% of graduates cite **skills not aligned with industry needs**, leading to unemployability.
Eg: Engineering colleges produce coders without practical digital project exposure.
- **Jobless Growth:** Economic growth hasn't created

adequate formal jobs; sectors like manufacturing have **low [employment elasticity](#)**.

Eg: Services contribute 54% to GDP but under 30% of jobs.

- **Institutional Disconnect:** Weak **industry-academia linkages**, lack of campus recruitment, and theoretical curricula limit employability.
Eg: 12% of job-seekers report no placement support.
- **Gender Disparity:** Educated women face **mobility, safety, and social constraints**, leading to over 30% unemployment among graduate.
Eg: Cultural bias restricts women from private-sector or night-shift jobs.
- **Regional and Sectoral Imbalance:** Youth crowd urban service sectors; rural areas lack skilled opportunities.
Eg: Educated unemployment in Bihar, Jharkhand exceeds 35%.

Economic and Social Consequences

- **Productivity Loss:** Educated but idle youth reduce national labour efficiency and innovation capacity.
Eg: GDP potential underutilised as millions remain unemployed.
- **Fiscal Strain:** More pressure on public job schemes and subsidies like [MGNREGA](#).
Eg: Welfare burden rises as skilled youth depend on government support.
- **Brain Drain:** Talent migrates abroad for better prospects, eroding India's demographic dividend.
- **Social Discontent:** Joblessness fuels mental health issues, crime, and protests. NCRB data (2023) shows 14,000 suicides among unemployed youth.
- **Wage Stagnation:** Oversupply of graduates keeps salaries flat — average fresh graduate earns ₹3–4 lakh/yr, unchanged for a decade.

Initiatives to Improve Employment in India:

1. **Atmanirbhar Bharat Rozgar Yojana (2020):** Incentivizes MSMEs to create formal jobs by reimbursing EPF contributions for new hires.
2. **Employment Linked Incentive (ELI) Scheme:** Scheme reward firms for net job creation in labour-intensive sectors; aims to generate 3.5 crore jobs.
3. **Start-Up & Stand-Up India (2016):** Promotes entrepreneurship and self-employment; over 1.3 lakh start-ups, 40% led by women/SC-ST, created lakhs of skilled jobs.
4. **Pradhan Mantri Kaushal Vikas Yojana (2015):** Offers short-term skill training and certification; trained 1.4 crore youth for emerging sectors like AI and green jobs.
5. **Pradhan Mantri Garib Kalyan Rojgar Abhiyaan (2020):** 125-day rural job drive post-COVID with ₹50,000 crore outlay, generating temporary employment in 116 districts.
6. **Aajeevika – NRLM (2011):** Empowers 8 crore rural women through SHGs, enabling microenterprises and income diversification in villages.

7. **PM SVANidhi Scheme (2020):** Provides collateral-free loans to 60 lakh urban street vendors, helping them restart businesses and enter the formal economy.

Way Forward:

- **Education–Industry Alignment:** Reform curricula to focus on applied skills, apprenticeships, and internships.
Eg: Revamp [NEP 2020](#)'s skill-integration modules.
- **Promote Labour-Intensive Sectors:** Incentivise manufacturing, renewable energy, healthcare, and rural enterprises for graduate employment.
- **Women-Centric Employment Policies:** Ensure safe workplaces, transport support, and flexible jobs to improve female participation.
- **Regional Diversification:** Strengthen [industrial clusters](#) in Tier-2/3 cities through state-level employment corridors.
- **Data Transparency and Labour Reform:** Update PLFS metrics, and promote Atmanirbhar Rozgar Yojana with measurable job outcomes.

Conclusion:

Educated unemployment in India is not merely a labour issue but a national developmental crisis. The disconnect between degrees and demand undermines the demographic dividend. Unless India realigns education with employability and creates inclusive, dignified jobs, it risks turning its [youth dividend](#) into a demographic liability.

EMPLOYABILITY IN CRISIS

Context: India faces an employability crisis, with only 42.6% of graduates deemed job-ready, exposing a widening gap between [academic learning](#) and industry needs.



About Employability in Crisis:

- **Definition:**
 - Employability refers to a graduate's ability to **acquire, apply, and adapt knowledge, skills, and mindset** to succeed in dynamic work environments.
- **Purpose:** It ensures individuals are **not only**

employable but sustainably productive, capable of continuous learning, unlearning, and relearning in fast-changing industries.

- **Key Features:**

- **Holistic Skillset:** Combines technical expertise with communication, teamwork, and problem-solving.
- **Adaptability:** Encourages flexibility in [new technologies](#) and workplace settings.
- **Lifelong Learning:** Promotes continuous upgrading of competencies.
- **Value Creation:** Ensures graduates contribute meaningfully to organizational goals.

Causes of Academia–Industry Divide:

- **Academic Side:**

- **Outdated Curriculum:** Most colleges teach content that fails to reflect evolving job roles, automation trends, and emerging technologies.
- **Theory-Heavy Learning:** Classroom teaching remains exam-focused, leaving little scope for hands-on projects or problem-solving exposure.
- **Lack of Soft Skills Training:** Students possess technical knowledge but lack confidence in communication, teamwork, and adaptability.

- **Industry Side:**

- **Expectation Mismatch:** Companies demand “plug-and-play” graduates but rarely invest in structured onboarding or mentorship.
- **Rapid Technological Shifts:** Skill requirements change faster than academic syllabi can adapt, creating a persistent [skill lag](#).
- **Weak Engagement:** Firms often view academia as outdated, leading to minimal collaboration in research, training, or course design.
- **Short-term Focus:** Corporates prioritise recruitment drives over long-term partnerships for sustainable skill ecosystem building.

Initiatives Taken:

1. **NEP 2020:** Promotes flexibility, experiential learning, and stronger academia–industry integration for holistic education reform.
2. **AICTE Internship Policy:** Mandates industrial exposure to enhance practical understanding and employability of engineering students.
3. **Skill India Mission:** Strengthens vocational training through sectoral skill councils aligned with market demands.
4. **NASSCOM FutureSkills PRIME:** Upskills youth in digital domains like AI, cybersecurity, and data analytics through certified programs.

Challenges Associated:

- **Curriculum Inertia:** Bureaucratic delays prevent quick updates in response to new-age skill requirements.
- **Fragmented Ecosystem:** Weak coordination between academia, government, and industry limits policy coherence.
- **Limited Faculty Training:** Educators often lack exposure to corporate trends, new technologies, and pedagogical innovation.
- **Urban-Rural Divide:** Rural and smaller institutions struggle with poor infrastructure and minimal corporate interface.
- **Underinvestment by Industry:** Private sector spends little on institutional collaboration or human capital development.

Way Ahead:

- **Curriculum Co-Design:** Regularly update syllabi with joint input from employers, universities, and policymakers.
- **Dual-Learning Model:** Integrate apprenticeships and live corporate projects into higher education frameworks.
- **Faculty Immersion:** Facilitate faculty internships and sabbaticals in industry for updated skill transfer.
- **Soft Skills & Ethics Labs:** Set up dedicated labs for communication, emotional intelligence, and workplace ethics training.
- **Data-Driven Tracking:** Monitor alumni career outcomes and skill growth to evaluate employability effectiveness.

Conclusion:

India's employability challenge is not a crisis of talent but of alignment. **Bridging academia and industry** through innovation, adaptability, and [shared accountability](#) can turn education into an engine of growth. True employability will emerge when learning mirrors life — dynamic, ethical, and ever-evolving.

TOWARDS A UNIFIED NATIONAL EMPLOYMENT FRAMEWORK

Context: India's employment challenge has re-emerged as a national priority as experts from the [Confederation of Indian Industry](#) (CII) called for a unified National Employment Framework to harness the demographic dividend and address the growing job-skill mismatch.



About Towards a Unified National Employment Framework:

Trends in Employment Opportunity:

- **Demographic advantage:** India will add **133 million workers by 2050**, forming nearly 18% of the global workforce.
- **Shift to informal and gig sectors:** Gig economy jobs could reach **9 crores by 2030**, but lack formal protections.
- **Urban job distress:** Automation and migration pressures have widened rural-urban employment disparities.
- **Female participation gap:** Female Labour Force Participation Rate remains **below 35% (PLFS 2024)** despite rising education levels.

Need for a Unified Employment Framework:

- **Fragmented approach:** Existing skilling, welfare, and job programmes function in silos, weakening coordination and policy outcomes.
- **Demographic urgency:** With India's workforce set to peak by 2043, delayed reforms may squander the demographic dividend opportunity.
- **Economic inclusivity:** A unified policy ensures job growth that is regionally balanced, gender-sensitive, and technology-driven.
- **Policy coherence:** It integrates trade, industrial, and labour policies toward common, measurable employment outcomes.

Initiatives Taken:

- **Skill India Mission & PMKVY:** Aims to skill 40 crore youth through short-term and industry-linked training programmes.
- **National Career Service Portal:** Provides a digital bridge between job seekers, employers, and career counsellors.
- **Production-Linked Incentive (PLI):** Encourages manufacturing-led job creation through performance-based sectoral incentives.
- **Labour Codes (2020):** Consolidates 29 labour laws to simplify compliance and improve worker protection.
- **Gig and Platform Worker Schemes:** Expands social security and welfare coverage to informal and gig economy workers.

Challenges Involved:

- **Graduate unemployment:** Academic curricula remain disconnected from the practical skill needs of modern industries.
- **Implementation delays:** Labour reforms and skill programmes face uneven execution across states and sectors.
- **Regional disparity:** Job growth is concentrated in metros, widening economic inequality in backward regions.
- **Gender gap:** Societal barriers and lack of workplace support systems reduce women's labour participation.
- **Weak data systems:** Fragmented, outdated

employment statistics obstruct evidence-based policymaking.

Way Ahead:

- **Integrated National Employment Policy:** Combine central and state schemes under one coordinated employment framework.
- **Focus on MSMEs and gig workers:** Strengthen access to finance, digital tools, and safety nets for these job-rich sectors.
- **Skill-industry linkage:** Reform higher education and training to align with AI, robotics, and green industry needs.
- **Inclusive job creation:** Launch targeted programmes like urban employment guarantees and women-centric incentives.
- **Real-time data dashboard:** Establish a unified labour observatory for timely, transparent workforce insights.

Conclusion:

India stands at a pivotal moment to convert its demographic dividend into a growth engine. A **coherent, inclusive, and data-driven employment strategy** can bridge inequality and unlock resilience. Making jobs the **core of economic policy**, not a by-product, is vital for achieving [Viksit Bharat by 2047](#).

Topics: Inclusive growth and issues arising from it.

AGRICULTURE IN THE AGE OF INEQUALITY

Context: The article exposes the systemic erosion of India's farm economy due to corporate capture, predatory [commercialization](#), and decades of neoliberal policies.



About Agriculture in the Age of Inequality:

Data and Statistics on Agriculture:

- **Farmer Suicides:** Over 4,00,000 farmers have died

by suicide since 1995; NCRB (2022) reported 11,290 deaths, indicating that over one farmer dies every hour due to indebtedness and [market distress](#).

- **Income Decline:** The NSS 77th Round (2018–19) reveals that average farm household income is ₹10,218/month, marking a 10% decline from 2012–13, reflecting stagnation amid rising costs.
- **Employment Exodus:** Between 1991 and 2011, India lost nearly 15 million full-time cultivators, with 2,000 farmers quitting agriculture every day, signalling a collapse in rural viability.
- **Inequality Ratio:** The 217 Indian billionaires' wealth (US\$1.04 trillion) equals 58× the agriculture budget, exposing a stark contrast between rural poverty and elite accumulation.
- **Falling Terms of Trade:** Cotton's purchasing power plunged—farmers who once bought 12 gm of gold per quintal in the 1970s can't buy 1 gm today, showing the widening gap between input inflation and stagnant output prices.

Importance of Agriculture in India:

- **Economic Backbone:** Agriculture sustains 45% of India's workforce and contributes ~18% of GDP, serving as the foundation of livelihood and national growth.
- **Food Security Anchor:** It ensures self-sufficiency in food grains, stabilizes prices, and cushions inflation shocks, making it the cornerstone of nutritional security.
- **Social Stability:** Acts as a shock absorber during unemployment and pandemics (e.g., COVID-19 [reverse migration](#)), highlighting its role as a rural safety net.
- **Cultural Identity:** Embodies India's civilizational ethos of dharti-mata, symbolizing harmony between humans, soil, and seasons—a moral rhythm of sustenance.
- **Intersectoral Linkages:** Fuels MSMEs, transport, and food industries, generating demand chains that stimulate rural-urban economic interdependence.

Inequality and Its Link to Agriculture:

- **Policy Bias:** Post-1991 liberalization favoured [capital-intensive corporates](#), reducing public investment, subsidies, and credit flow to smallholders.
- **Corporate Penetration:** Agribusiness giants now dominate seeds, logistics, and markets, eroding farmer autonomy and traditional cooperatives.
Eg: Bayer-Monsanto's seed-pricing disputes in India show how monopoly control depresses farmer margins.
- **Market Distortions:** Weak MSP enforcement and mandi deregulation have shifted price control to traders, worsening income asymmetry.
Eg: In 2023-24, paddy farmers in Bihar earned ₹1,850/ql—₹250 below MSP—while corporate buyers cornered procurement through contract

channels.

- **Rural Deprivation:** Cuts in irrigation, insurance, and research widened regional disparities, trapping farmers in debt cycles and uncertainty.
Eg: Vidarbha and Bundelkhand, with [low irrigation coverage](#) (< 15%), account for over a quarter of India's farm suicides.
- **Wealth Concentration:** Fiscal "incentives" for corporates and tax leniency transferred vast public resources away from small cultivators.
Eg: By 2024, the top 10 agribusinesses received loans worth ₹1.3 lakh cr—five times more than all small and marginal farmers combined—reflecting a systemic transfer of resources upward.

Implications of Agrarian Inequality:

- **Rural Exodus:** Widespread distress forces millions to migrate to cities, swelling informal labour and urban poverty belts.
- **Nutritional Crisis:** Families now sell milk and cereals once meant for home use, worsening [child malnutrition](#) and food insecurity.
- **Erosion of Democracy:** Corporate capture of policy space weakens panchayati raj institutions and grassroots accountability.
- **Social Discontent:** The Delhi Farmers' Protest (2020–21) symbolized democratic assertion against policy centralization and inequality.
- **Ecological Stress:** [Monocropping](#), chemical-intensive farming, and climate shocks are accelerating soil depletion and biodiversity loss.

Way Ahead:

- **Reinvest in Public Agriculture:** Expand rural infrastructure, irrigation, and R&D while guaranteeing fair MSP and public procurement mechanisms.
- **Rebalance Policy Priorities:** Redirect subsidies, credit, and insurance toward small farmers, FPOs, and agro-cooperative ecosystems.
- **Empower Local Governance:** Strengthen panchayats, SHGs, and producer groups to ensure decentralized, participatory planning.
- **Diversify Livelihoods:** Encourage agro-ecological and allied sectors (dairy, fisheries, food processing) to create rural non-farm employment.
- **Social Safety and Ethics:** Revitalize [MGNREGS](#), crop insurance, and grievance systems with transparency and ethical oversight to uphold dignity.

Conclusion:

India's agrarian decline mirrors a deeper moral imbalance between profit and people. The solution lies not in abandoning agriculture but in re-humanizing it through justice, dignity, and sustainability. Reviving the countryside is thus not charity—it is the reclamation of India's collective conscience.

NITI AAYOG REPORT "ROADMAP ON AI FOR INCLUSIVE SOCIETAL DEVELOPMENT"

Context: NITI Aayog has released the report "Roadmap on AI for Inclusive Societal Development", outlining a strategic plan to use Artificial Intelligence (AI) for empowering India's vast [informal sector workforce](#) through digital inclusion, skilling, and social security integration.

1C. Social security coverage

1D. Female labour force participation



About NITI Aayog report "Roadmap on AI for Inclusive Societal Development"

Trend and Data on India's Informal Sector Workforce:

1. **Massive Workforce Base:** Nearly 490 million Indians (≈90% of total workforce) are engaged in informal work — from agriculture to street vending — contributing ~50% to India's GDP (MoLE, 2024).
2. **Dominance in Rural Economy:** Over 80% of rural workers lack formal contracts or social security, heavily concentrated in sectors like construction, retail, and handicrafts.
3. **Gendered Informality:** Women constitute over 55% of informal labour, particularly in home-based work and agriculture (ILO, 2023).
4. **Low Productivity and Wages:** Average informal sector productivity is one-fourth of the formal sector, leading to persistent income insecurity.
5. **Rising Urban Informality:** Gig and platform workers have expanded India's "new informal class", with ~7.5 million platform workers (NITI Aayog, 2022) operating without labour protection.

Current Challenges in the Informal Sector:

- **Financial Insecurity:** Over **75% of informal workers** earn below ₹10,000/month and lack access to affordable credit or insurance (Periodic Labour Force Survey, 2024).
- **Limited Market Access:** Small producers and artisans depend on middlemen — only **12%** directly access digital or organized markets.
- **Digital and Skill Divide:** Around **70% of informal workers** lack basic digital literacy, making them unprepared for AI-enabled economic systems.
- **Social Protection Gaps:** Only **one-third of eligible informal workers** are registered under social security schemes like e-Shram or [PM-SYM](#).
- **Fragmented Policy and Trust Deficit:** Overlapping welfare databases and weak institutional coordination reduce benefits reach and trust among

workers.

Technology's Role in Transforming the Informal Workforce:

- **AI for Financial Inclusion:** AI-driven credit scoring (e.g., SBI YONO, Setu.ai) can enable micro-loans for workers lacking collateral or formal records.
- **Digital Public Infrastructure (DPI):** Platforms like Aadhaar, UPI, and e-Shram create verifiable worker identities, enabling targeted benefits and wage transparency.
- **Smart Contracts and Blockchain:** Transparent wage payments and supply-chain traceability (pilot by Tata Steel Foundation in Jharkhand) can reduce exploitation.
- **AI-enabled Skilling:** Adaptive learning platforms (e.g., Skill India Digital) can deliver vernacular, voice-based micro-learning modules to reskill workers.
- **Predictive Analytics for Welfare Delivery:** AI can optimize welfare targeting (e.g., PM Kisan Samman Nidhi data integration), ensuring timely assistance and data-driven governance.

Need for Urgent Action:

- **Rising Inequality:** Informal workers remain most vulnerable to automation and economic shocks, widening post-pandemic income gaps.
- **Demographic Dividend Window:** With 65% of the population below 35 years, the next decade is crucial to convert demographic strength into productivity gains.
- **Global AI Race:** Without immediate investment, India risks missing the \$957 billion AI-driven GDP boost projected by PwC by 2035.
- **Climate and Urban Pressures:** Informal workers are at the frontlines of climate vulnerability — from heat-exposed construction to displaced agriculture labour.
- **Ethical and Inclusive Tech Use:** Without a framework for responsible AI, data misuse could reinforce bias rather than inclusion, deepening social divides.

Key Recommendations of NITI Aayog Report

- **Launch "Digital ShramSetu Mission":** A national AI-enabled platform integrating social security, skilling, and livelihood linkages for informal workers.
- **Develop Sectoral AI Models:** Prioritize high-impact sectors — agriculture, construction, retail, and logistics — for AI-driven productivity enhancement.
- **Promote Voice-First and Vernacular Interfaces:** To bridge the literacy barrier, AI tools should be accessible in local languages and dialects.
- **Public-Private Partnerships (PPP):** Encourage collaboration among tech companies, startups, and ministries to scale innovations in informal ecosystems.
- **Ethical AI and Data Governance:** Create a Responsible AI Charter ensuring transparency, privacy, and inclusivity in AI deployment for social sectors.

- **AI Skilling and Micro-Credentials:** Institutionalize continuous upskilling through modular AI curricula under [Skill India 2.0](#).
- **Impact Evaluation Framework:** Mandate data-based evaluation on inclusion, income rise, and service delivery to track the social return on AI investments.

Conclusion:

The NITI Aayog roadmap envisions AI not as a disruptor but as a social equalizer, capable of transforming livelihoods with dignity. By integrating technology, trust, and targeted governance, India can unlock the untapped potential of its 490 million informal workers. To realize [Viksit Bharat@2047](#), AI must evolve from an innovation tool to an instrument of inclusion.

Topics: [Government Budgeting](#).

RESTORING FISCAL SPACE FOR THE STATES

Context: The abolition of the [GST compensation cess](#) marks a turning point in Centre-State fiscal relations. Several States have raised concerns over the loss of fiscal autonomy and revenue stability, demanding reforms in India's tax-sharing mechanism to strengthen cooperative federalism.



About Restoring Fiscal Space for the States:

Fiscal Policy Evolution and GST Impact:

- **Shift from Origin to Destination-Based Taxation:** The 101st Constitutional Amendment (2017) introduced GST, replacing multiple indirect taxes with a destination-based system, reducing States' authority to levy taxes independently.
- **Centralised Decision-Making in GST Council:** Despite being a joint forum, the Centre holds dominant voting power (33%), giving it a decisive edge in policy formulation.
- **End of GST Compensation Era:** The cessation of the GST compensation cess (July 2025) leaves resource-poor States vulnerable to revenue shocks.
- **Restructuring of Tax Slabs:** The latest GST slab restructuring aims to pass ₹2 lakh crore in benefits to consumers but also shrinks States' fiscal space.
- **Erosion of Fiscal Federalism:** By merging major tax

sources under one umbrella, GST has centralised taxation authority, weakening States' fiscal sovereignty.

Role of the Finance Commission and Fiscal Transfers:

1. **Constitutional Mandate:** The Finance Commission (Article 280) determines vertical (Centre–State) and horizontal (among States) tax distribution, but its criteria vary, causing perceived unfairness.
Eg: The 15th Finance Commission reduced the States' share from 42% to 41% post J&K bifurcation.
2. **Rise of Cesses and Surcharges:** These account for ₹4.23 lakh crore in Budget Estimates 2025–26, but are excluded from the divisible pool, reducing actual transfers to States.
Eg: The 15th FC noted that 18% of the Centre's tax receipts come from non-shareable cesses.
3. **Falling Devolution Ratios:** Despite higher recommendations, the actual share of States in Gross Tax Revenue (GTR) has dropped to below 33%, eroding trust in federal finance.
Eg: Between FY2018–FY2023, the Centre retained ~₹12 lakh crore extra via non-divisible revenues.
4. **Dependency on Central Transfers:** States rely on the Centre for nearly 44% of their total revenue receipts, with poorer States like Bihar (72%) and U.P. (61%) showing extreme dependence.
Eg: Economically advanced States like Tamil Nadu (31%) get proportionally less.
5. **Uneven Grants and Criteria:** States allege bias in Centrally Sponsored Schemes (CSS) and grant disbursals, which distort fiscal equity and autonomy.
Eg: After the Planning Commission's abolition (2014), CSS allocations became politically influenced.

Growing Fiscal Imbalance between Centre and States:

1. **Centralised Resource Control:** The Centre collects about 67% of India's total tax revenue, while States collect only 33%, despite handling over 50% of total expenditure.
Eg: RBI's "State Finances Report 2025" confirms this persistent mismatch.
2. **Higher Expenditure Responsibilities:** States manage critical sectors — health, education, law & order, and local governance — which consume over 52% of total national spending.
Eg: During COVID-19, States bore 70% of public health expenditure but lacked revenue backing.
3. **Political and Fiscal Friction:** Opposition-ruled States often cite delays in fund release and conditional grants as tools of fiscal control.
Eg: The GST compensation delay of ₹78,000 crore (FY2021–22) deepened mistrust.
4. **Design Asymmetry in Federal Finance:** The Centre's power to raise taxes is centralised, while expenditure duties are decentralised, causing vertical fiscal imbalance.
Eg: OECD ranks India among the most fiscally centralised federal systems globally.

5. **Liquidity and Autonomy Challenges:** Overdependence on the Centre forces States to borrow more, straining debt sustainability.
Eg: States' debt-to-GSDP ratio rose to 31.2% in FY2024, above FRBM thresholds.

Towards Fiscal Autonomy and Reforms Proposed:

1. **Revising Tax-Sharing Principles:** Economists suggest a new vertical devolution formula reflecting rising State expenditure and regional disparities.
Eg: 16th Finance Commission (2025–30) is expected to revisit the 41% devolution ceiling.
2. **Sharing Personal Income Tax (PIT):** Proposal to share the ₹13.57 lakh crore PIT base (BE 2025–26) equally (50:50) between Centre and States.
Eg: This could raise effective State devolution by over ₹7 lakh crore annually.
3. **Allowing PIT Top-Ups:** States could levy a small surcharge (1–2%) on personal income tax collected within their boundaries.
Eg: This model mirrors Canadian federal taxation, which grants provinces greater flexibility.
4. **Merging Cesses with Divisible Pool:** Integrating cess and surcharge revenue into the shared pool will expand fiscal space and transparency.
Eg: If merged, States could gain ₹1.5 lakh crore more annually, per NIPFP estimates (2024).
5. **Strengthening Fiscal Federalism:** Empowering States improves local accountability and aligns with cooperative federalism principles under the Constitution.
Eg: Tamil Nadu's expert committee (2025) recommended incentive-linked fiscal autonomy.

Conclusion:

India's fiscal federalism is at a crossroads. With States shouldering greater welfare and development responsibilities, restoring fiscal autonomy is imperative. Strengthening tax devolution, integrating cesses, and sharing income tax bases can rebuild trust and balance power. True cooperative federalism lies in empowering States—not just administratively, but financially.

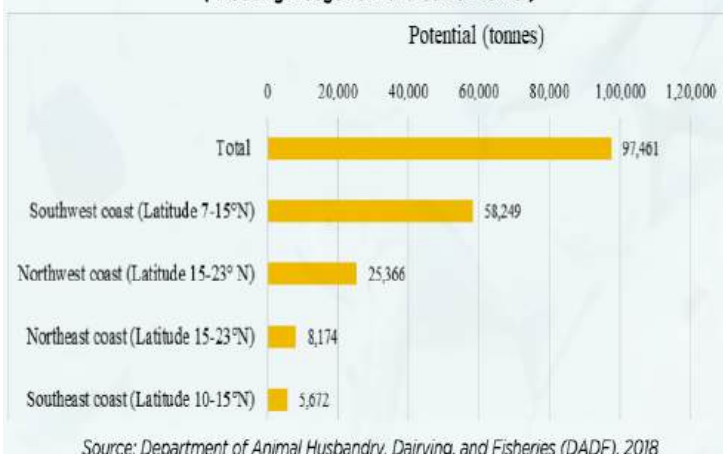
Topics: Issues related to direct and indirect farm subsidies and minimum support prices; Public Distribution System-objectives, functioning, limitations, revamping; issues of buffer stocks and food security; Technology missions; economics of animal-rearing.

INDIA'S BLUE ECONOMY – STRATEGY FOR HARNESSING DEEP-SEA AND OFFSHORE FISHERIES

Context: NITI Aayog released a report "[India's Blue Economy](#) – Strategy for Harnessing Deep-Sea and Offshore Fisheries" outlining a scientific, sustainable, and inclusive roadmap for

developing India's deep-sea and offshore fisheries.

Fig 3.1: The resource potential in the deep-sea realm (200-500 m depth) of mainland Indian EEZ (*Including Wadge Bank and Gulf of Mannar)



About India's Blue Economy – Strategy for Harnessing Deep-Sea and Offshore Fisheries:

Current Status and Overview:

- **Underdeveloped Sector:** India's deep-sea fishing remains nascent, despite an estimated **7.16 million tonnes (MT)** potential within its [EEZ](#).
- **Limited High-Seas Presence:** Only **4 Indian-flagged vessels** operate in high seas versus **Sri Lanka's 1,883** and **Iran's 1,216**, reflecting weak international engagement.
- **Regulatory Void:** No specific law governs fishing between **12–200 nautical miles**, leading to [IUU fishing](#) and legal ambiguity.
- **Jurisdictional Limitation:** States regulate only up to **12 nmi**, restricting oversight of larger marine zones.

Opportunities and Potential:

- **Economic Growth:** Deep-sea expansion could enhance exports beyond the **₹60,523 crore earned in FY 2023–24**.
- **Livelihood Creation:** A modern vessel can yield **₹32 lakh annual profit**, 10× more than small motorised boats.
- **Coastal Relief:** Shifting effort offshore will reduce pressure on inshore fish stocks and aid sustainability.
- **Non-Conventional Resources:** Untapped 1.847 MT in lanternfish, squids, and deep-sea shrimp holds new value.
- **Strategic Edge:** A strong offshore fleet strengthens India's food security and maritime presence in the Indian Ocean.

Major Challenges:

- **Policy Gaps:** India lacks a unified EEZ Fisheries Act and effective coordination among maritime, environmental, and defence agencies, causing fragmented regulation.
- **Infrastructure Deficit:** Only a few of the 90 fishing harbours can berth large vessels; absence of cold storage and processing units' limits export competitiveness.
- **High Costs:** Deep-sea fishing demands high

fuel, capital, and maintenance costs, making it unaffordable for small and traditional fishers.

- **Data Deficiency:** There's no central database for fish stock, species mapping, or catch trends, leading to poor planning and [risk of overfishing](#).
- **Environmental Risks:** Bottom trawling, bycatch, and marine pollution degrade habitats and endanger species in fragile deep-sea ecosystems.

Global Best Practices:

- **China:** Operates large distant-water fleets and "motherships," showing scale potential but also risks of resource depletion from overfishing.
- **Spain:** Employs Vessel Monitoring Systems (VMS), eco-friendly gear, and traceability tools for responsible fishing practices.
- **New Zealand:** Implements Quota Management System (QMS) assigning catch rights to maintain balance between economy and ecology.

NITI Aayog's Key Recommendations:

- **Policy Overhaul:** Draft a national EEZ Fisheries Act harmonized with [UNCLOS](#) and revise subsidies to reward sustainable practices.
- **Institutional Strengthening:** Establish a Deep-Sea Fisheries Authority and invest in research, data systems, and scientific manpower.
- **Fleet Modernisation:** Provide incentives for modern, GPS and cold-storage-equipped vessels, promoting cooperative ownership models.
- **Sustainable Management:** Adopt ecosystem-based catch limits, enforce marine spatial planning, and enable real-time vessel tracking.
- **Financing Mechanism:** Set up a [Deep-Sea Fishing Development Fund](#) supported by PPPs, soft loans, and insurance for risk mitigation.
- **Stakeholder Inclusion:** Empower fishing communities in governance, ensure capacity-building, and include small-scale fishers in policy benefits.

Conclusion:

The report charts a [blue revolution 2.0](#)—integrating **economic growth with ecological balance**. A robust, regulated deep-sea sector can **boost exports, secure livelihoods, and strengthen India's maritime footprint, aligning with the vision of a sustainable Blue Economy**.

Topics: Infrastructure: Energy, Ports, Roads, Airports, Railways etc.

TRANSFORMATION OF INDIA'S LOGISTICS SECTOR

Context: India's logistics sector is undergoing a major transformation driven by initiatives such as the [PM Gati Shakti National Master Plan](#), National Logistics Policy, and

Dedicated Freight Corridors, aiming to reduce logistics costs and enhance trade efficiency.

- The survey results highlight cost variation across transport modes (measured as ₹ per tonne per km or PTPK). These costs, for the different modes of transport, are estimated at:

 Road: ₹3.78	 Waterways (average): ₹2.30
 Rail: ₹1.96	 Coastal: ₹1.80
 Air: ₹72	 Inland: ₹3.30

About Transformation of India's Logistics Sector:

Overview of the Indian Logistics Sector:

- India's logistics sector, once fragmented and cost-intensive, is now evolving into a **digitally integrated and multimodal network**.
- Valued at **USD 215 billion in 2021**, it connects agriculture, manufacturing, retail, and e-commerce through transportation, warehousing, and supply chain management.
- The government's infrastructure push and digital reforms have made India a **rising logistics hub in Asia**.
- The sector employs over **22 million people** and contributes nearly **14% of GDP**, underscoring its central role in economic resilience.

Economic Importance of the Logistics Sector:

- Trade Competitiveness:** Efficient logistics can reduce export costs, improving India's position in global value chains.
- GDP Growth Engine:** A 1% reduction in logistics costs can potentially boost GDP by 2%.
- Employment Generation:** Creates large-scale jobs in transport, warehousing, and IT-enabled supply chain services.
- Regional Development:** Enhances rural-urban connectivity, stimulating industrial growth in Tier-II and Tier-III cities.
- Revenue Growth:** [Improved logistics efficiency](#) increases tax revenues through higher trade and manufacturing activity.

Initiatives Taken So Far:

- National Logistics Policy (2022):** Targets logistics cost reduction from 14–16% to single digits through digital and infrastructure reforms.
- PM Gati Shakti Master Plan (2021):** Integrates 57 ministries and 36 states on a 1,700-layer GIS platform for unified infrastructure planning.
- Dedicated Freight Corridors:** Eastern and Western

corridors now 96% operational, decongesting rail routes and cutting transit time.

- Multimodal Logistics Parks:** 35 parks approved across India to promote warehousing and last-mile efficiency.
- Digital Platforms:** Launch of ULIP and Logistics Data Bank for real-time cargo tracking and data integration.
- Maritime Amrit Kaal Vision 2047:** Focuses on port modernisation, hydrogen hubs, and shipbuilding expansion.

Challenges Associated:

- High Logistics Costs:** Despite improvement, logistics costs remain around **14–16%** in 2024, which is still higher than **China (8%)** and the **US (6–8%)**, reducing India's export competitiveness.
- Infrastructure Gaps:** Poor last-mile connectivity, congested ports, and limited multimodal linkages hinder the seamless movement of goods across transport modes.
- Regulatory Fragmentation:** The presence of multiple ministries and regulatory overlaps delays clearances and increases inefficiency in the logistics chain.
- Skill Deficit:** Lack of trained manpower in digital supply chain management, automation, and logistics analytics weakens operational efficiency.
- Environmental Concerns:** Overreliance on diesel-based freight transport and slow adoption of green fuels raise emissions and undermine sustainability goals.

Way Ahead:

- Integrated Infrastructure:** Expand PM Gati Shakti and Multimodal Logistics Parks (MMLPs) to synchronise road, rail, air, and port networks for smoother connectivity.
- Green Logistics:** Invest in biofuels, electric and hydrogen-powered trucks, and promote carbon-neutral freight corridors to cut emissions.
- Skill Development:** Establish national logistics universities and industry-linked training hubs to prepare a skilled workforce in [supply chain technology](#).
- Digital Innovation:** Harness AI, blockchain, IoT, and data analytics to enhance real-time tracking, transparency, and predictive logistics management.
- Public-Private Partnerships (PPP):** Foster PPPs for building warehouses, cold chains, and logistics parks, ensuring efficiency and investment-driven growth.

Conclusion:

India's logistics transformation is central to achieving [Viksit Bharat @2047](#) and a **\$5 trillion economy**. By improving infrastructure, embracing sustainability, and reducing costs, India can emerge as a **global logistics powerhouse**. The next decade must focus on **integration, innovation, and inclusivity** to ensure logistics becomes a driver of national competitiveness.

Topics: Science and Technology- developments and their applications and effects in everyday life Achievements of Indians in science & technology; indigenization of technology and developing new technology.

INDIA'S BIOTECH SURGE AND ITS SCALING CHALLENGES

Context: India's biotechnology sector has seen an exponential rise—from 500 startups in 2018 to over 10,000 in 2025—driven by policies like [BioE3](#) and a target of a \$300-billion bioeconomy by 2030.



About India's Biotech Surge and its Scaling Challenges:

Growth in India's Biotech Ecosystem:

1. **Exponential Startup Expansion:** The number of biotech startups increased **20-fold (2018–2025)**, supported by **94 incubators across 25 States**, reflecting India's transition from generic manufacturing to deep-tech innovation.
2. **Affordable R&D Edge:** India's **low-cost research ecosystem** and young [STEM talent](#) pool enable competitive innovation.
3. **AI-Driven Research Integration:** Biotech startups are integrating **AI and data analytics** for faster [drug discovery](#) and diagnostics.
4. **Global Vaccine Leadership:** India supplies **60% of global immunisation doses** (DPT, BCG, measles), underscoring its role as the “Pharmacy of the World.”
5. **Ambitious Bioeconomy Vision:** The **BioE3 Policy (2025)** targets a **\$300-billion bioeconomy by 2030**, positioning biotech as a national growth pillar alongside IT and energy.

Major Initiatives Taken:

1. **BIRAC (Biotechnology Industry Research Assistance Council):** Provides seed funding, grants, and incubation support through programs like **BIG** and **SBIRI**, fostering over **6,000 startups**.
2. **BioE3 Policy 2025:** Integrates biomanufacturing, bioagriculture, bioenergy, and biopharma into a unified framework aligned with SDG and Atmanirbhar Bharat goals.
3. **Production-Linked Incentive (PLI) for Biopharma:**

Encourages domestic production of **critical raw materials and bulk drugs**, reducing import dependency.

4. **FDI Liberalisation and Startup India:** Allows **100% FDI in biotech**, drawing global investors and partnerships.

Major Challenges:

1. **Funding Bottlenecks in Scale-up Phase:** Early-stage funding is strong, but **Series B/C rounds remain scarce**, limiting transition from lab to market.
Eg: India attracted only **\$3 billion (2023–25)**—far below China's **\$12 billion** for biotech scale-ups.
2. **Fragmented Infrastructure:** 70+ incubators exist, but few offer **end-to-end GMP or pilot-scale facilities**, leading to duplication and delays.
Eg: Startups often travel between Hyderabad, Pune, and Bengaluru to complete one product cycle.
3. **Regulatory Outdatedness:** Current **clinical trial and patent regimes** lag behind emerging technologies like [CRISPR](#) and **AI-based therapeutics**.
Eg: Delays in gene therapy approvals cost startups international collaborations and IP protection.
4. **Talent and Brain Drain:** India loses **over 40% of its biotech PhDs** to overseas research hubs due to limited career pathways.
Eg: Countries like Singapore and South Korea offer better post-doc incentives and funding continuity.
5. **Limited Global Market Access:** Indian firms face **regulatory misalignment** with the US FDA and EU EMA, restricting exports of high-value biologics.
Eg: Only **15% of Indian biosimilars** meet EMA approval criteria due to data integrity gaps.

Strategic Priorities for Reform

Area	Proposed Action
Ecosystem Consolidation	Create biotech clusters (e.g., “GMP Commons” in Genome Valley, Mumbai–Pune corridor) pooling shared infrastructure.
Financing Mechanism	Establish dedicated biotech funds and blended-finance structures using venture debt and insurance capital.
Clinical Trial Hubs	Develop late-phase trial centres in AIIMS hospitals with integrated EHRs, centralised ethics committees, and labs.
Talent Reinforcement	Launch reverse brain drain schemes—tax incentives, relocation grants, micro-credential training (CRISPR, AI-biostatistics).
Regulatory Modernisation	Adopt risk-based, adaptive frameworks inspired by the EU AI Act and US FDA models for emerging biotech domains.

Way Ahead

1. **Create Biotech Clusters:** Develop integrated “Bio

Commons” hubs (Genome Valley, Mumbai–Pune corridor) for shared GMP and regulatory facilities.

Eg: Clustered models in Boston and Seoul cut scale-up costs by **25%** and improved collaboration.

2. **Establish Dedicated Biotech Financing Fund:** A **National Bio-Venture Fund** with blended financing can support companies post-proof-of-concept.

Eg: Matching equity + venture debt could unlock institutional capital from pension and insurance funds.

3. **Modernise Regulations:** Introduce risk-based, adaptive frameworks aligned with EU AI Act and US FDA Predetermined Change Control Plans.

Eg: Faster approvals for low-risk biologics can cut market-entry delays by **6–12 months**.

4. **Attract and Retain Talent:** Launch reverse **brain drain** programmes with tax breaks, relocation incentives, and micro-credential courses in AI-biostatistics, CRISPR, GMP data integrity.

Eg: Israel’s “Return Home Program” boosted R&D capacity by 20%; a similar model can aid India.

5. **Public–Private Collaboration:** Foster **co-development partnerships** between government labs, academia, and private firms.

Eg: The **Serum Institute–Oxford collaboration** during COVID-19 became a model for global biotech diplomacy.

Conclusion:

India’s biotech revolution stands at a crossroads — rich in ideas but constrained by structure. To translate its startup boom into global leadership, **India must consolidate, capitalise, and collaborate**. By aligning innovation with infrastructure and governance, India can truly evolve into the **biotech capital of the Global South** by 2030.

Topics: Awareness in the fields of IT, Computers, robotics, nano-technology, bio-technology and issues relating to intellectual property rights.

POWERING THE INTELLIGENCE REVOLUTION: HOW SMALL MODULAR REACTORS CAN FUEL INDIA’S AI DATA CENTRE BOOM

Context: AI data centres — the digital engines behind Generative AI and cloud services — are driving massive global power demand, forcing countries to explore low-carbon, 24×7 energy sources like **Small Modular Reactors** (SMRs).

- India, through its Nuclear Energy Mission (2025), has announced plans to deploy indigenously built SMRs to meet rising AI and data infrastructure energy needs.



About Powering the Intelligence Revolution: How Small Modular Reactors Can Fuel India’s AI Data Centre Boom

India’s Electricity Demand: Data and Trends

- **Flat but Rising Curve:** India’s electricity demand remained steady at **~5% annual growth for two decades**, but is now rising with AI, EVs, and green hydrogen.
- **Industrial Shift:** Energy-intensive sectors like **data centres, 5G, and digital manufacturing** are adding new base-load demand layers.
- **Capacity Challenge:** Despite being the **third-largest electricity producer**, India’s grid faces localised shortages and transmission stress.
- **Decarbonisation Pressure:** India targets **500 GW of renewables by 2030**, but intermittency remains a hurdle for 24×7 supply to high-load facilities.

Need for AI Data Centres:

- **Digital India Push:** Policies like data localisation and Digital India require massive domestic storage and processing infrastructure.
- **5G & IoT Explosion:** Rollout of 5G and IoT devices generates exponential data, necessitating high-performance computing hubs.
- **AI and Cloud Workloads:** Generative AI and **LLMs** require high-density GPUs, transforming data centres into computational power grids.
- **Security & Sovereignty:** India’s data protection regime demands that sensitive data be processed within national borders.
- **Economic Multiplier:** The AI data centre ecosystem can generate jobs, attract FDI, and enhance India’s role as a **global digital hub**.

Global and India Scenario:

- **Global Growth:** Worldwide electricity use by data centres may rise from 460 TWh (2024) to 1,300 TWh by 2035, led by the U.S. and China.
- **U.S. Leadership:** The U.S. holds 51% of global capacity, with hubs in Texas, Virginia, and Phoenix, driving 25% grid demand growth.
- **India’s Expansion:** India’s current 1.4 GW capacity may reach 7 GW by 2030, with projects by Google, Reliance, AdaniConneX, and Yotta.

- **Regional Focus:** Key clusters are emerging in Mumbai, Chennai, Bengaluru, Hyderabad, Jamnagar, and Visakhapatnam under the IndiaAI Mission.

Role of Small Modular Reactors (SMRs) in Power Supply:

- **Baseload Solution:** SMRs provide **24×7 low-carbon baseload power**, ideal for continuous AI data centre operations.
- **Scalable & Modular:** With **1–300 MW range**, SMRs can be deployed near consumption hubs, reducing transmission losses.
- **Safety by Design:** Incorporate **passive cooling, smaller cores, and accident-tolerant fuels**, enhancing reliability.
- **Global Investment:** Over **\$15.4 billion** has been committed globally; India plans to commission five SMRs by 2033.
- **Policy Backing:** India's ₹20,000 crore **Nuclear Energy Mission** aims for **100 GW by 2047**, with reforms to attract **\$26 billion private investment**.

Limitations and Concerns of SMRs:

- **Regulatory Bottlenecks:** Current licensing frameworks are tailored to large reactors, delaying SMR approvals.
- **Cost Overruns:** Despite modularity, initial capital costs remain high without large-scale deployment.
- **Waste Disposal Issues:** New fuel types (e.g., HALEU) pose challenges for long-term waste management.
- **Transportation Risks:** Factory-fabricated units require secure logistics and radiation safeguards.
- **Public Acceptance:** Despite improved safety, **social resistance** and nuclear liability concerns persist.

Way Ahead:

- **Regulatory Reforms:** Develop technology-neutral, streamlined licensing aligned with IAEA's harmonisation frameworks.
- **Public-Private Partnerships:** Facilitate joint ventures among SMR vendors, AI data centre players, and renewable firms.
- **Site Repurposing:** Convert retired coal plants and hydrogen hubs into nuclear-ready SMR sites.
- **Skilling and Research:** Train regulators, re-skill the coal workforce, and promote SMR R&D collaboration with global leaders.
- **Integrated Power Strategy:** Combine **renewables**, SMRs, and storage systems to create resilient digital energy ecosystems.

Conclusion:

As AI becomes the new industrial engine, energy will be its oxygen. India's leap toward Small Modular Reactors and renewable hybrids offers a pathway to power this intelligence responsibly. The future belongs to nations that can balance computation with clean, continuous, and conscience-driven energy.

AI IN ROBOTICS — TRANSFORMING INDIA'S HEALTHCARE, AGRICULTURE, AND INDUSTRY

Context: AI-powered robotics is revolutionizing key sectors like healthcare, agriculture, and manufacturing in India, driving precision, productivity, and sustainable growth under initiatives aligned with 'AI for All' and [Digital India](#).



About AI in Robotics — Transforming India's Healthcare, Agriculture, and Industry:

What AI in Robotics Means?

- Combines **artificial intelligence** with **mechanical automation** to enable robots to **learn, adapt, and make autonomous decisions** instead of following pre-programmed instructions.
- Promotes **human-machine collaboration**, enhancing creativity, safety, and efficiency across industries.

Key Applications Across Sectors

- **Healthcare:**
 - **Robotic Surgery for Precision Care:** AI-powered robots assist surgeons in performing minimally invasive procedures with micrometric accuracy, reducing human error and post-surgery recovery time.
 - **AI in Diagnostics:** Machine-learning algorithms analyze medical imaging, blood samples, and genomic data, enabling early disease detection and personalized treatment plans.
 - **Rehabilitation and Assistive Robotics:** Intelligent exoskeletons and robotic limbs support patient rehabilitation after injuries or paralysis, improving mobility and recovery outcomes.
 - **Elderly and Home Care Automation:** Service robots equipped with speech recognition and emotion detection assist the elderly in daily tasks, medication reminders, and [remote health monitoring](#).
- **Agriculture:**
 - **Precision Farming and Soil Analytics:** AI-driven drones and agribots conduct soil

analysis, crop mapping, and yield prediction, helping farmers optimize resources and reduce wastage.

- **Automated Irrigation and Weather Prediction:** Smart irrigation systems use real-time AI-based climate and moisture data to regulate water use, improving sustainability in dry regions.
- **Disease Detection and Pest Control:** Computer vision algorithms identify crop diseases or pest infestations early, enabling timely intervention and reduced chemical dependency.
- **Case Study – Saagu Baagu Initiative:** Over 7,000 farmers in Telangana adopted AI agritech tools for soil and disease monitoring, resulting in up to 2x yield improvement and higher income.
- **Industry and Logistics:**
 - **Smart Manufacturing and Predictive Maintenance:** AI-integrated robots monitor machine performance and predict failures, reducing downtime and improving [production efficiency](#).
 - **Collaborative Robots (Cobots):** Cobots work alongside human workers, dynamically adjusting speed and precision to ensure safety and efficiency in manufacturing plants.
 - **Automated Warehousing and Supply Chains:** Self-navigating robots streamline inventory management, packaging, and order fulfillment, boosting speed and accuracy in logistics.
 - **Indian Robotics Startups and Innovation:** Startups like GreyOrange, Addverb, and Ati Motors are deploying AI-based warehouse and mobility robots, making India a hub for industrial automation.

Emerging AI Trends in Robotics:

- **Conversational GenAI & Voice Interfaces:** Enable intuitive communication between humans and robots.
- **Domain-specific LLMs:** Tailor AI for healthcare, aviation, and defense applications.
- **AI Agents & Decision Support Systems:** Allow robots to handle complex, real-time operations.
- **Composite AI Models:** Blend multiple AI techniques for better adaptability and learning.
- **Sovereign AI & BharatGPT:** Focus on **data privacy and indigenous innovation** using India-specific datasets.
- **Affordable AI Platforms:** Democratize automation access for **MSMEs and startups** through no-code tools.

Significance for India's Development:

- **Boosts Efficiency, Sustainability, and Safety:** AI-

driven robotics enhances industrial productivity, promotes eco-friendly resource use, and ensures worker safety through automation in high-risk environments.

- **Encourages Innovation and Job Transformation:** Rather than replacing jobs, AI creates new roles in design, maintenance, and data analytics, enabling India's workforce to move toward higher-value digital employment.
- **Supports Atmanirbhar Bharat and Local R&D:** Indigenous AI models like BharatGPT and IIT-led robotics initiatives foster technological self-reliance, ensuring data sovereignty and domestic innovation.
- **Strengthens India's Global Leadership in AI and Robotics:** Rapid growth in robotics startups, policy support, and ethical AI frameworks positions India as a key global hub for intelligent automation and responsible innovation.

Conclusion:

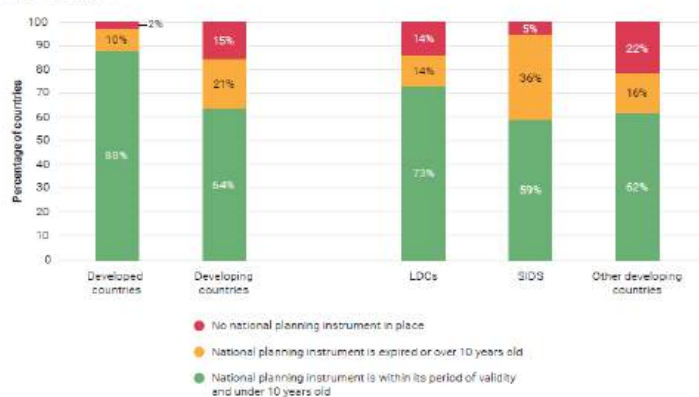
AI-powered robotics marks a transformative leap for India—integrating intelligence, precision, and sustainability across key sectors. By blending human creativity with machine efficiency, it is redefining productivity and [inclusivity](#). With ethical governance and indigenous innovation, India stands poised to lead the next global wave of intelligent automation.

Topics: Conservation related issues, environmental pollution and degradation, environmental impact assessment.

UNEP ADAPTATION GAP REPORT 2025

Context: The UN Environment Programme ([UNEP](#)) released the [Adaptation Gap Report 2025](#): “Running on Empty”, warning that the global finance gap for climate adaptation in developing countries has widened drastically.

Figure 2.2. Status of national adaptation planning instruments across different country classifications commonly used under the UNFCCC



About UNEP Adaptation Gap Report 2025:

- **What It Is?**
 - An annual flagship publication of the United Nations Environment Programme (UNEP) that tracks global progress on [climate adaptation](#) planning, implementation, and

finance, assessing how far the world is from achieving climate resilience goals.

- **Published By:** UNEP–Copenhagen Climate Centre with contributions from multiple global institutions and experts.
- **Aim:** To evaluate whether nations—especially developing ones—are adapting fast enough to climate impacts, and to quantify the adaptation finance gap to support global negotiations under the UNFCCC and [COP30](#) process.

Key Trends and Summary:

- **Massive Finance Gap:** Developing countries require US\$310–365 billion annually by 2035, while current adaptation finance stands at only US\$26 billion (2023) — 12–14 times lower than the need.
- **Falling Commitments:** Adaptation finance declined from US\$28 billion (2022), meaning the Glasgow Climate Pact target of doubling finance by 2025 will be missed.
- **Rising Debt Concerns:** 58% of adaptation finance is loan-based, including non-concessional debt, deepening inequality for vulnerable countries.
- **Uneven Planning Progress:** 172 countries have at least one [national adaptation plan](#) (NAP), but 36 are outdated, limiting real impact.
- **Implementation Gaps:** Over 1,600 adaptation actions were reported globally, mostly in [biodiversity](#), agriculture, water, and infrastructure, yet few measure tangible outcomes.
- **Private Sector Underperformance:** The private sector contributes only ~US\$5 billion, but could potentially invest up to US\$50 billion annually with policy support.
- **Baku–Belém Roadmap (2024):** Envisions US\$1.3 trillion per year by 2035 in total climate finance; calls for grants and non-debt instruments to prevent debt traps.
- **COP30 Context:** The report stresses a “global collective effort (mutirão global)” led by Brazil’s presidency to align [climate finance](#), transparency, and adaptation goals.

India and the Adaptation Gap Report:

- **India’s Significance:** As a major developing nation, India’s NAPCC and State Action Plans align with UNEP’s call for mainstreamed adaptation in agriculture, water, and infrastructure.
- **Regional Vulnerability:** Frequent heatwaves, floods, and glacial melts highlight the urgency for adaptive investments.
- **Leadership Role:** India’s initiatives under the International Solar Alliance, [LIFE Mission](#), and G20 Presidency (2023) demonstrate global leadership in climate adaptation diplomacy.
- **Finance Dependence:** India also faces adaptation investment constraints, needing stronger global partnerships and concessional funding.

Success So Far:

- **Widespread Policy Adoption:** 172 countries now have at least one national adaptation framework, marking near-universal policy recognition of climate resilience as a development imperative.
- **Enhanced Multilateral Funding:** Climate funds under the UNFCCC — including **GCF, GEF, and the Adaptation Fund** — collectively disbursed **US\$920 million in 2024**, reflecting an 86% rise over the previous five-year average.
- **Mainstreaming Progress:** Adaptation is increasingly integrated into national development and fiscal plans, especially across **Small Island Developing States (SIDS)** and **Least Developed Countries (LDCs)**, aligning adaptation with poverty reduction and sustainability goals.

Limitations:

- **Severe Finance Shortfall:** The available adaptation finance—around **US\$26 billion annually**—covers only one-twelfth of the actual requirement, creating a massive financial stress for developing nations.
- **Debt-heavy Mechanisms:** Over half of adaptation finance is in the form of loans, raising the danger of “**adaptation debt traps**” for already vulnerable economies.
- **Low Private Sector Role:** The private sector’s adaptation investment remains negligible, owing to high-risk perception and lack of blended-finance mechanisms to de-risk participation.
- **Weak Tracking Systems:** Many nations lack reliable **Monitoring, Evaluation, and Learning (MEL)** frameworks, preventing evidence-based tracking of adaptation results.
- **Risk of Maladaptation:** Poorly designed or isolated adaptation measures risk increasing vulnerability—especially in rural and low-income communities—rather than reducing it.

Recommended Way Ahead:

- **Expand Grant-based Support:** Shift from debt to grant-based or concessional finance, ensuring equitable access for developing nations through global climate funds.
- **Mobilise Private Sector:** Encourage blended finance, guarantees, and public-private partnerships to unlock up to US\$50 billion annually in adaptation funding.
- **Integrate Resilience Metrics:** Embed climate resilience indicators within banking, insurance, and credit systems, incentivising risk-sensitive investment decisions.
- **Update NAPs Regularly:** Ensure national and sectoral adaptation plans are periodically updated to reflect new scientific evidence and climate realities.
- **Strengthen Regional Cooperation:** Foster South–South partnerships and technology transfers via initiatives like ISA and [CDRI](#) to enhance collective adaptation capacity.

Conclusion:

The **Adaptation Gap Report 2025** is a stark reminder that **climate resilience cannot run on empty promises**. Bridging the financial and policy divide is not charity but a **strategic investment in collective survival**. Only through **equitable finance, innovation, and global solidarity** can adaptation outpace acceleration of climate risk.

COP30 AND GLOBAL CLIMATE DIPLOMACY

Context: The upcoming [30th Conference of Parties \(COP30\)](#) to the UNFCCC, scheduled for November 2025 in Belém, Brazil, comes amid heightened climate anxiety — the 1.5°C target slipping away, the U.S. withdrawal from the Paris Agreement, and growing scepticism over multilateral climate processes.

About COP30 and Global Climate Diplomacy

The Evolving Role of COP: From Commitments to Implementation

1. **COP as a 'Summit of Solutions':** COP30 marks a shift from target-setting to implementation and financing mechanisms. The Brazilian Presidency has declared it the "COP of Action," focusing on deploying funds and practical solutions rather than new promises.
2. **New Collective Quantified Goal (NCQG):** Developed nations are expected to scale up climate finance to \$300 billion annually by 2035, up from the long-standing \$100 billion goal. The focus is now on allocation efficiency between mitigation and adaptation.
3. **Baku–Belém Roadmap to \$1.3 Trillion:** A proposed roadmap aims to mobilize \$1.3 trillion in climate finance by 2035 through public-private coordination and innovative green instruments.
4. **Regional Priorities: The Amazon and Beyond:** Hosting COP in Belém, gateway to the Amazon, underlines Brazil's intent to integrate forest conservation, biodiversity protection, and indigenous participation in climate policy.
5. **Focus on Just Transition and Carbon Markets:** Developing countries are set to push back against the EU's [Carbon Border Adjustment Mechanism \(CBAM\)](#), arguing for climate equity and fair trade, while promoting voluntary carbon markets and green industrialization.

Relevance of Multilateral Climate Processes:

1. **Institutional Continuity in Uncertain Times:** Even as the U.S. withdraws and geopolitical rifts deepen, COP provides a stable platform where global climate governance can continue through dialogue, consensus, and transparency.
2. **Agenda-Setting Power:** COP debates, even without unanimous outcomes, shape national and corporate climate strategies. For instance, discussions on fossil

phase-down prompted Gulf nations to diversify into renewables.

3. **Diplomacy Beyond Politics:** The Presidency acts as a neutral convener, insulating negotiations from political shocks and restoring trust among nations. Brazil's role in rebuilding [South–South cooperation](#) exemplifies this.
4. **Catalyst for Market and Policy Shifts:** COP outcomes influence global financial markets — carbon pricing, green bonds, and ESG investments trace their legitimacy to [UNFCCC frameworks](#).
5. **Normative Power of the Process:** The moral and legal legitimacy of the COP process sustains momentum for collective action, even when targets falter. It keeps climate action a global public good, not a fragmented national agenda.

Key Challenges to Climate Multilateralism:

1. **Consensus Paralysis:** The UNFCCC's "consensus rule" gives every country a de facto veto, stalling progress on crucial issues like loss and damage and climate finance.
2. **Finance Deficit and Inequity:** Developed nations' unmet commitments undermine trust. The \$100 billion climate finance goal remains under-delivered, deepening North–South divides.
3. **Climate Fatigue and Political Volatility:** With slow progress and economic pressures, public and political commitment to decarbonization is wavering in several economies.
4. **Implementation Gaps:** [Nationally Determined Contributions \(NDCs\)](#) lack binding enforcement, and adaptation projects face poor monitoring and underfunding.
5. **Scientific Alarm vs. Political Inertia:** The world is on track for 2.7°C warming by 2100, threatening irreversible ecosystem collapse, even as political will lags behind science.

The 1.5°C Debate: Overshoot, Not Abandonment

1. **Symbolic and Strategic Importance:** The 1.5°C target is not merely scientific; it is politically and ethically binding, representing the global ambition for climate justice.
2. **Overshoot Pathway:** Experts suggest temporarily exceeding 1.5°C (to around 1.7°C) and returning below it later through rapid emission cuts and carbon removal technologies.
3. **Moral Imperative for Vulnerable Nations:** Abandoning 1.5°C would signal surrender for small island states and least developed countries, exacerbating global inequality.
4. **IPCC's Guiding Role:** The upcoming Seventh Assessment Report is expected to reinforce this target as non-negotiable, urging governments to align national budgets with carbon neutrality.
5. **Psychological Impact of Persistence:** Retaining the 1.5°C benchmark sustains collective motivation, forcing nations and industries to innovate faster in

decarbonization.

Reforming the COP Process: The Way Forward

1. **Adopt Flexible Decision-Making Models:** Move beyond consensus paralysis by enabling “coalitions of the willing” for rapid implementation.
2. **Strengthen Climate Finance Governance:** Establish an independent Global Climate Finance Authority for transparency and equitable allocation.
3. **Empower Regional Platforms:** Strengthen South-South climate cooperation (like the [India–Brazil–South Africa Dialogue](#) Forum) for technology sharing and adaptation strategies.
4. **Integrate Private Sector Leadership:** Expand corporate accountability through mandatory climate disclosures and science-based target frameworks.
5. **Enhance Civil Society and Youth Participation:** Institutionalize engagement of civil society, women, and youth networks, ensuring bottom-up accountability in global negotiations.

Conclusion:

The failure to meet climate targets is not the failure of COP itself but of collective political will. The Conference of Parties remains humanity’s most legitimate forum for negotiating its survival — a space where diplomacy, science, and ethics intersect. As COP30 convenes in Belém, the world must transform it from a stage of promises to one of performance. Multilateralism, though imperfect, is the only compass guiding us toward a livable, equitable, and sustainable future.

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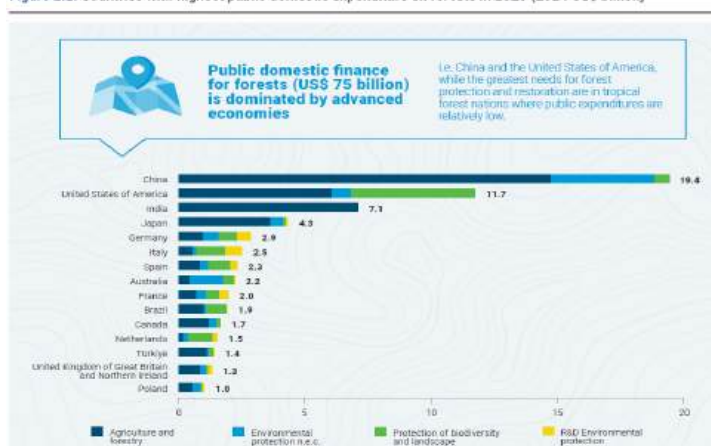
STATE OF FINANCE FOR FORESTS (SFF) 2025 REPORT

Context: The first State of Finance for Forests (SFF) 2025 Report by the UN Environment Programme ([UNEP](#)) highlights that global investments in forests must triple by 2030 to achieve climate, biodiversity, and land restoration goals.

About State of Finance for Forests (SFF) 2025 Report: Trends Highlighted in the Report:

1. **Severe underfunding of forests:** Only **US\$ 84 billion** was invested in forests in 2023—**91% public, 9% private**—while **US\$ 300 billion** is needed annually by 2030 to meet global climate goals.
2. **Dominance of public finance:** Governments contributed **US\$ 77 billion**, led by **China and the U.S.**, with **tropical forest nations** accounting for just **17% of domestic spending**, showing major regional disparities.
3. **Low private sector participation:** Private Forest finance was **US\$ 7.5 billion**, mainly via **certified commodity chains (39%)** and **impact investing (23%)**, while high-risk tropical commodities got minimal funds despite causing **97% of global deforestation**.
4. **Environmentally harmful flows persist:** Environmentally damaging agricultural subsidies reached **US\$ 406 billion** in 2023, and banks financed **US\$ 8.9 trillion** to firms with deforestation risk—vastly exceeding green investments.
5. **Rising need for nature-based solutions:** Achieving Rio Convention targets requires expanding 1 billion ha by 2030, with protected forests and avoided deforestation needing **US\$ 32 billion** annually, while reforestation requires **US\$ 96 billion**.

Figure 2.2. Countries with highest public domestic expenditure on forests in 2023 (2024 US\$ billion)



India-Specific Trends in the State of Finance for Forests (SFF) 2025 Report:

1. **Public Finance Dominates:** India's forestry sector remains heavily dependent on **public funding** through schemes like **CAMPA** and **Green India Mission**, reflecting strong state-led conservation but minimal private participation.
2. **Limited Private Investment:** Private capital in forest finance is **extremely low**, with negligible engagement in **biodiversity credits** or **carbon markets**, showing untapped potential for green investors.
3. **High Domestic Commitment:** India spends **over 30 times more domestically** on forest protection than it receives in international aid, proving a robust national commitment to environmental restoration.
4. **Shift Toward Nature-Based Solutions:** National programmes such as LiFE, Green Credit Programme (2023), and REDD+ pilots align with UNEP's call for scaling up nature-positive and carbon-resilient investments.
5. **Community & Equity Focus Growing:** India's forest finance increasingly integrates Joint Forest Management (JFM) and tribal livelihood projects, echoing UNEP's emphasis on inclusive, community-led forest governance.

Positives in Report:

1. **Increased policy focus on forests:** Growing integration of **forest finance into climate and biodiversity agendas**, especially through **REDD+**, **UN-REDD**, and **ODA grants** (80% concessional).
2. **Emergence of innovative asset classes:** Growth in **carbon markets** (US\$ 1.3 billion), **biodiversity credits**, and **impact investing** reflect new opportunities for sustainable private finance.
3. **Gender and community inclusion:** Projects like Ecuador's **gender-responsive credit line** (US\$ 3.9 million) for 228 women producers show positive progress in equitable access to finance.
4. **Public leadership in forest-rich nations:** Despite fiscal constraints, **tropical countries** spend **36 times more** domestically than they receive in international forest aid—signaling local ownership and commitment.
5. **Growing global awareness:** The report establishes a data-driven foundation for forest finance tracking, ensuring better transparency and accountability in green investments.

Challenges Highlighted:

1. **Massive funding gap:** A **US\$ 216 billion annual shortfall** persists between current investment and required levels for climate and biodiversity goals.
2. **Weak private participation:** Only **1 in every 10 forest dollars** comes from private sources; risk aversion and low returns deter investors.
3. **Dependence on harmful subsidies:** Governments still fund **US\$ 406 billion** in harmful agriculture subsidies, counteracting forest conservation efforts.

4. **Low access for local communities:** **Indigenous Peoples** and Local Communities received just **US\$ 362 million**, less than 0.5% of international finance.
5. **Data and governance gaps:** Lack of consistent tracking of **private finance flows** and **gender-inclusive policies** hampers evidence-based decision-making.

Recommendations:

1. **Triple investments by 2030:** Scale annual investments to **US\$ 300 billion by 2030** through blended finance, carbon pricing, and restructured subsidies.
2. **Reform harmful subsidies:** Redirect environmentally damaging agricultural subsidies toward **nature-positive incentives** for forest protection.
3. **Mobilize private capital:** Expand **green bonds, carbon markets, and biodiversity credits**, and enhance transparency to attract investors.
4. **Empower communities and women:** Create **direct financing channels** for Indigenous Peoples and women-led forest initiatives to ensure equity and ownership.
5. **Strengthen governance and data systems:** Build robust **forest finance tracking frameworks** and integrate forests into **national climate finance plans**.

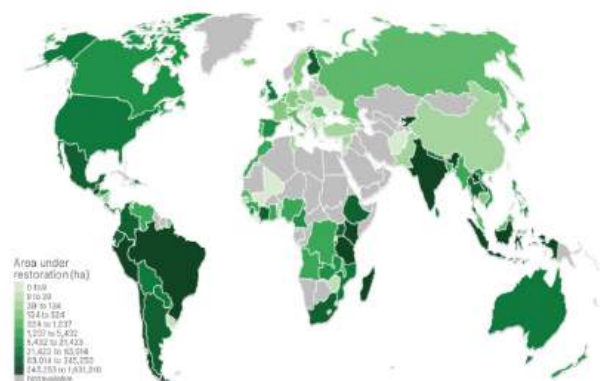
Conclusion:

The **State of Finance for Forests 2025** underscores a stark truth — forests are vital yet undervalued in global finance. Bridging the funding gap demands systemic shifts from subsidies to sustainability, from pledges to measurable finance. As UNEP notes, unlocking forest potential is central to achieving **climate, biodiversity, and SDG goals** by 2030.

THE FOREST DECLARATION ASSESSMENT 2025

Context: The Forest Declaration Assessment 2025 reports that global deforestation reached 8.1 million hectares in 2024, putting the world 63% off-track to achieve zero deforestation by 2030, despite renewed global forest commitments under the Glasgow and [Kunming-Montreal Declarations](#).

Figure 1.20: Area covered by projects explicitly aiming to restore deforested land or degraded forests, as included in Rector and the Brazilian Restoration and Reforestation Observatory



Source: Own analysis using a data subset from the Rector database and all polygons of area under restoration from the Brazilian Restoration and Reforestation Observatory

About The Forest Declaration Assessment 2025:

Status of Forests in Crisis:

1. **Global Decline in Forest Integrity:** Forest loss continues at unsustainable levels—**8.1 M ha deforested and 8.8 M ha degraded in 2024**, with tropical regions accounting for 94% of total loss.
2. **Carbon Emissions Surge:** Deforestation and degradation emitted **3.1 Gt CO₂e**, equal to 150% of U.S. energy sector emissions.
3. **Primary Forests at Risk:** **6.7 M ha of tropical primary forests**—critical for biodiversity—were destroyed, mainly in Latin America and Africa.
4. **Biodiversity Impact:** Forested **Key Biodiversity Areas** (KBAs) lost **2.2 M ha** of tree cover, increasing extinction risks for endemic species.
5. **Restoration Lag:** Only **10.6 M ha** under restoration globally, covering **just 0.3% of the biophysical potential**, far below 2030 targets.

Causes of the Forest Crisis:

1. **Agricultural Expansion (86% share):** Conversion of forests for pasture, soy, and palm oil remains the **largest driver of global deforestation**.
2. **Mining and Infrastructure Projects:** Rising mineral extraction and road networks fragment forests and enable illegal logging.
3. **Forest Fires and Climate Stress:** Amazon fires in 2024 emitted **791 Mt CO₂e**, intensifying degradation.
4. **Weak Governance and Corruption:** Poor law enforcement and land speculation fuel uncontrolled clearing.
5. **Unsustainable Global Consumption:** Industrialised nations drive indirect deforestation through **imported commodities** and consumption-linked trade.

Restoration Efforts:

1. **Global Commitments:** UN's Decade on Ecosystem Restoration (2021–2030) and Kunming-Montreal Framework Target 2 aim to restore 30% of degraded land.
2. **Regional Leadership:** Latin America and Asia account for **>70% of restoration projects**, though data remains fragmented.
3. **Monitoring Platforms:** **FAO's Framework for Ecosystem Restoration Monitoring (FERM)** integrates global tracking and best practices.
4. **Innovative Models:** Agroforestry and community-based restoration link livelihoods with ecosystem revival.
5. **India's Role:** Through the **Green India Mission**, **CAMPA**, and **National Afforestation Programme**, India targets **26 M ha restoration by 2030**.

Challenges to Counter Forest Crisis:

1. **Insufficient Finance:** Global investments that benefit forests form **less than 10% of total climate finance**, leaving restoration and protection projects underfunded and donor-dependent.

2. **Data Gaps and Fragmented Tracking:** Multiple platforms like **FAO-FERM**, **Restor**, and **Global Forest Watch** operate separately, preventing unified global monitoring and timely response to forest loss.
3. **Policy Incoherence:** Deforestation drivers are reinforced by **contradictory climate, agriculture, and trade policies**, where subsidies and land-use incentives still favour expansion over conservation.
4. **Limited Community Rights:** **Indigenous and forest-dependent communities** lack clear land tenure and access to decision-making, undermining sustainable and inclusive forest governance.
5. **Restoration Quality Issues:** Overemphasis on **tree-planting counts** rather than ecological integrity ignores biodiversity recovery, **soil health**, and long-term carbon sequestration benefits.

Recommendations:

1. **Legally Binding Forest Targets:** Convert voluntary pledges into **enforceable national laws** with measurable benchmarks, accountability audits, and transparent progress reporting.
2. **Redirect Finance Flows:** Reform subsidies and corporate investments to prioritise **deforestation-free supply chains** and low-carbon commodities through green certification mechanisms.
3. **Empower Local Communities:** Legally recognise **Indigenous land rights and participatory forest councils** to enhance protection through traditional ecological knowledge.
4. **Strengthen Monitoring:** Integrate databases like **FAO-FERM** and **Forest Declaration Dashboard** for **real-time, open-access forest data** supporting evidence-based policymaking.
5. **Promote Nature-Positive Agriculture:** Incentivise **agroforestry, regenerative farming, and mixed-crop systems** that maintain productivity while preserving carbon stocks and biodiversity.

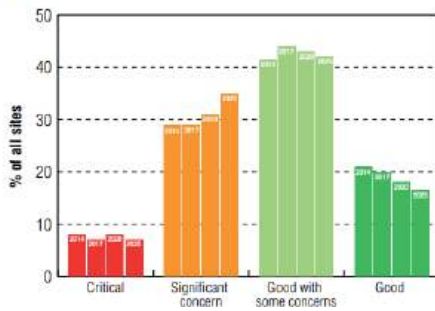
Conclusion:

The *Forest Declaration Assessment 2025* is a wake-up call — forests, the planet's green lungs, are losing resilience faster than policies evolve. Only **binding commitments, community-driven restoration, and sustainable consumption** can reverse this decline. Protecting forests is not a climate option — it is a planetary necessity for survival, equity, and future generations.

IUCN WORLD HERITAGE OUTLOOK 2025

Context: The IUCN World Heritage Outlook 4 is launched at the **IUCN** World Conservation Congress in Abu Dhabi in October 2025, assessing the conservation status of all natural and mixed UNESCO **World Heritage Sites**.

Figure 2. Conservation outlook of sites in 2014, 2017, 2020 and 2025, for the 228 sites for which four datasets are now available.



About IUCN World Heritage Outlook 4:

What it is?

- The IUCN World Heritage Outlook is a global assessment system that evaluates the state of conservation of all UNESCO natural and mixed World Heritage Sites **every 3–5 years**.

Published By: Released by the **International Union for Conservation of Nature (IUCN)** through its **World Heritage Programme** and the World Commission on [Protected Areas \(WCPA\)](#).

Launched In:

- The **4th Edition (Outlook 4)** will be launched at the [IUCN World Conservation Congress 2025](#) (Abu Dhabi).
- Previous editions were published in **2014, 2017, and 2020**.

Aim:

- Track Conservation Health:** Monitor how effectively natural World Heritage sites are managed and conserved.
- Recognize Best Practices:** Showcase exemplary management and promote knowledge sharing between sites.
- Identify Threats:** Provide early warning signals for sites facing degradation, climate threats, or governance gaps.

Key Summary of the IUCN World Heritage Outlook 4:

- Global Trend:** Nearly **two-thirds (~65%)** of **World Heritage sites** show a stable or improving conservation outlook since 2020, reflecting enhanced site governance and restoration efforts.
Eg: Improved status of [Galápagos Islands](#) and [Yellowstone National Park](#) through ecosystem-based management.
- Climate Threats:** Over **80% of natural sites** face direct climate risks like coral bleaching, glacier melt, and wildfires, posing severe ecological and cultural challenges.
Eg: [Great Barrier Reef \(Australia\)](#) continues to experience bleaching events despite management upgrades.
- Biodiversity Pressure:** Around **60% of sites** are under stress from invasive species, habitat loss, and overexploitation, particularly in tropical ecosystems.
Eg: Invasive plants in [Hawaiian Volcanoes National](#)

[Park](#) threaten endemic flora and fauna.

- Positive Cases:** Marine parks like [Komodo \(Indonesia\)](#) and [Aldabra Atoll \(Seychelles\)](#) show notable improvement due to strict regulation, sustainable tourism, and science-based monitoring.
- Technological Innovation:** Increasing reliance on AI-based monitoring, satellite mapping, and eDNA sampling improved conservation forecasting accuracy.
Eg: UNESCO–IUCN’s AI pilot in the [Okavango Delta](#) enhances wildlife migration tracking.
- Socio-Economic Linkages:** The report underscores that well-managed heritage sites contribute to livelihoods, disaster mitigation, and global carbon sequestration.
Eg: Natural sites globally store **≈10% of terrestrial carbon**, reinforcing climate regulation functions.
- Warning Signal:** Around **15 sites** were added to the **“World Heritage in Danger”** list, reflecting a rise in conflict-linked habitat loss and pollution in fragile ecosystems.

Trends in India:

- Total Sites:** India has **7 natural and mixed World Heritage sites**, covering ecosystems from Himalayan peaks to coastal wetlands, representing over 1.5% of global natural heritage area.
- Improved Sites:** [Kaziranga](#) and [Manas](#) show enhanced ecological health through anti-poaching patrols, habitat restoration, and eco-tourism regulation, backed by local community involvement.
- At-Risk Sites:** [Sundarbans](#) exhibit declining mangrove health due to **salinity, cyclones, and sea-level rise**, while Western Ghats face mining, construction, and land-use conflicts.
- Emerging Concern:** [Nanda Devi](#) and [Great Himalayan National Park](#) face glacial retreat and invasive species, with potential long-term hydrological impacts on the Ganga basin.
- Policy Integration:** The [Wildlife \(Protection\) Amendment Act, 2022](#) and the **LiFE (Lifestyle for Environment) Mission** are recognized as strong national commitments aligning with [KM-GBF 2030](#) goals.
- Funding and Data Gaps:** The report notes that **India’s protected areas require 30–40% more recurring funds** for effective monitoring, particularly in marine and transboundary zones.

Challenges:

- Climate Change Impact:** Rising global temperatures are accelerating coral bleaching, glacier melt, and desertification, directly threatening ecosystem stability and species survival.
- Unsustainable Development:** Expansion of **mining, tourism infrastructure, and hydropower projects** near protected sites is fragmenting habitats and disrupting ecological connectivity.
- Funding Deficits:** Nearly **40% of heritage sites** lack adequate financial and human resources, hampering

restoration, anti-poaching, and monitoring initiatives.

4. **Weak Governance:** Overlapping institutional mandates, poor coordination, and weak law enforcement lead to ineffective management of protected areas.
5. **Biodiversity Data Gaps:** Incomplete or outdated ecological data limits real-time monitoring and adaptive policy response, affecting site evaluation accuracy.

Recommendations:

1. **Climate-Resilient Planning:** Embed heritage site protection in national climate adaptation strategies, promoting ecosystem-based mitigation.
Eg: India's [LiFE Mission](#) and **National Adaptation Fund** can integrate heritage resilience targets.
2. **Green Financing:** Develop public-private green funds, carbon credits, and eco-investment instruments to sustain site management.
Eg: The UNDP-GEF Biofin Initiative mobilizes biodiversity finance in developing countries.
3. **Community Partnerships:** Involve Indigenous and local communities as active custodians in decision-making, monitoring, and benefit-sharing.
Eg: Eco-Development Committees in Manas and Periyar improved livelihood-linked conservation.
4. **Technology Integration:** Leverage AI, satellite imaging, eDNA analysis, and drones for accurate mapping, patrolling, and real-time threat detection.
Eg: IUCN's Global Ecosystem Atlas uses remote sensing for cross-site tracking.
5. **Global Collaboration:** Foster joint research, transboundary conservation corridors, and heritage diplomacy under [UNESCO](#)-IUCN partnerships.
Eg: The [India-Nepal Terai Arc Landscape](#) exemplifies regional biodiversity cooperation.

Conclusion:

The IUCN World Heritage Outlook 4 reaffirms the urgent need for collective global action to safeguard natural heritage amid intensifying climate and developmental pressures. India's active participation in heritage monitoring highlights its commitment to biodiversity-led development. Strengthening science, finance, and community linkages will be pivotal in shaping a sustainable, heritage-secure planet.

COST OF CONVENIENCE: HEALTH HAZARDS OF DIGITAL TOOLS

Context: India generated 2.2 million tonnes of e-waste in 2025, becoming the third-largest generator globally after China and the US. Despite formal recycling capacity, more than half of the waste is still processed informally.



About Cost of Convenience: Health Hazards of Digital Tools India and E-waste Burden:

- India's e-waste surged **150% since 2017–18**, from 0.71 MT to 2.2 MT in 2025.
- **65 cities produce 60% of total e-waste**, with hotspots like **Seelampur (Delhi)**, **Moradabad (UP)**, **Bhiwandi (Maharashtra)**.
- Though **322 formal units** can process 2.2 MT annually, **>50% remains in informal chains** of kabadiwalas and scrap dealers.

Health Hazards of E-Waste

- **Respiratory Illnesses:**
 - [Open-air burning](#) and acid treatment release fine particulate matter.
 - **Eg:** 2025 MDPI study found 76–80% of Indian informal e-waste workers suffered chronic bronchitis and asthma.
- **Neurological Damage:**
 - [Heavy metals](#) like lead and mercury impair brain development in children.
 - **Eg:** A 2023 review in *Frontiers in Public Health* linked blood lead levels $\geq 5 \mu\text{g/dL}$ with cognitive decline and behavioral disorders.
- **Skin and Ocular Disorders:**
 - Direct contact causes rashes, burns, dermatitis, and eye irritation.
 - **Eg:** A 2024 review reported skin issues in up to 100% of informal recyclers in certain clusters.
- **Genetic and Systemic Impacts:**
 - DNA damage, oxidative stress, and [endocrine disruption](#) are increasingly documented.
 - **Eg:** WHO notes 18 million children worldwide live or work in e-waste zones, many in India.
- **Syndemic Impact:**
 - Hazards intersect with poverty, malnutrition, and poor housing, worsening outcomes for urban poor.
 - **Eg:** Informal recycling hubs report higher miscarriages and preterm births (Guiyu, China as global parallel).

Policy Response:

- **Strengthened EPR norms** – The 2022 Rules tightened

Extended Producer Responsibility, making producers accountable for collection and recycling.

- **Mandatory registration** – Dismantlers and recyclers must be registered to curb illegal, unsafe practices and improve accountability.
- **Incentives for formalisation** – Policies encourage transition from informal to formal units by offering compliance-linked incentives.
- **Persistent gaps** – Only **43% of e-waste was formally processed (2023–24)**; disputes over capped EPR credits hinder effective enforcement.

Way Ahead:

- **Formalise informal sector** – Train kabadiwalas, provide PPE, healthcare and social security so that livelihoods are protected while ensuring safe recycling practices.
- **Strengthen enforcement** – Introduce digital tracking, periodic audits and empower Pollution Control Boards to crack down on unsafe, unregistered recycling units.
- **Medical surveillance** – Organise regular health camps, baseline studies and long-term monitoring in e-waste hotspots to safeguard vulnerable workers and children.
- **Promote innovation** – Support R&D for affordable, local recycling technologies and create decentralised hubs to reduce transport costs and increase efficiency.
- **Awareness building** – Integrate e-waste education in school curricula and launch public campaigns to promote responsible disposal among citizens.

Conclusion

India's digital leap cannot be allowed to create a **toxic legacy** of disease and degradation. Systemic reforms must combine **science, justice, and innovation** to safeguard people and ecosystems. Only then can digital empowerment truly align with **sustainable and inclusive growth**.

Topics: Disaster and management.

INDIA'S DIRECTION FOR DISASTER RESILIENCE

Context: India is strengthening its disaster resilience framework using science-based, nature-driven, and finance-linked strategies, guided by the Prime Minister's 10-Point Agenda on [Disaster Risk Reduction](#) (2016) and the 15th Finance Commission's ₹2.28-lakh-crore allocation for disaster management (2021-26).



About India's Direction for Disaster Resilience: Institutional and Policy Framework

1. **Home Ministry & NDMA** – Oversee pre- and post-disaster management through multi-hazard planning and state coordination.
Eg: NDMA's *National Guidelines for Landslides (2023)* and *Urban Flood Management Framework (2024)*.
2. **15th Finance Commission (2021–26)** – Allocated **₹2.28 lakh crore** to strengthen disaster risk reduction (DRR) capacities:
 - o Preparedness & capacity-building: **10%**
 - o Mitigation: **20%**
 - o Response: **40%**
 - o Reconstruction: **30%**
3. **Prime Minister's 10-Point Agenda (2016)** – Mainstream disaster risk reduction into development planning, use technology, and strengthen local capacities.

Key Features of the New Disaster Resilience Model

- **Financial Innovation**
 - o Integrates **public finance** with **scientific hazard modelling**.
 - o Moves beyond relief to **risk prevention and climate adaptation**.
 - o Multilateral debt dependence replaced by *domestic budget-linked funding*.
 - o Eg: ₹5,000 crore reconstruction packages in 2025 for *Uttarakhand, Himachal Pradesh, Assam, Sikkim, and Kerala*.
- **Nature-based and Technological Solutions**
 - o NDMA promotes **bio-engineering** for **slope stabilization**, **revival of wetlands (beels)** to mitigate floods, and **forest-fire fuel breaks**.
 - o Encourages *remote sensing* and *automated weather stations* for glacial-lake monitoring.
 - o Eg: *National Cyclone Mitigation Programme (2011-22)* built 700 cyclone shelters and

early-warning systems across 8 states.

- **Capacity Building**

- o Establishment of **geo-spatial training labs** and expansion of **National Institute of Disaster Management (NIDM)** courses across 36 disciplines.
- o Creation of **Apda Mitra** and **Yuva Apda Mitra** volunteer corps (2.5 lakh trained).
Eg: Fire safety modernisation received ₹5,000 crore allocation.

- **Community-Centric Preparedness**

- o Panchayat-level disaster plans being mainstreamed into local development.
- o School safety programmes and mock drills promote behavioural readiness.

Challenges in India's Disaster Resilience Framework:

- **Fragmented Implementation** – Disaster management responsibilities are divided among multiple ministries and state agencies, often leading to duplication, coordination delays, and inconsistent policy execution during crises.
- **Urban Vulnerability** – Rapid urbanisation, weak zoning laws, and encroachments on wetlands and floodplains have increased exposure to heatwaves, flash floods, and infrastructure collapse in cities.
- **Funding Absorption** – Many states lack technical capacity and trained personnel to design, execute, and monitor projects under DRR funds, leading to underutilisation of central allocations.
- **Data Integration** – Absence of a unified, real-time disaster database linking IMD, NDMA, ISRO, and state units hampers accurate risk mapping, forecasting, and timely decision-making.
- **Climate Uncertainty** – Erratic monsoons, retreating glaciers, and extreme weather events make hazard prediction complex, challenging traditional planning and long-term adaptation strategies.

Way forward:

- Σ **Local Governance:** Strengthen panchayats with real-time early-warning systems and micro-insurance schemes to enable faster local response and quick recovery after disasters.
- Σ **Green Infrastructure:** Restore mangroves, rivers, and urban green corridors to naturally absorb shocks from floods, heatwaves, and cyclones, promoting eco-based resilience.
- Σ **Data-Driven DRR:** Build an integrated risk-mapping platform linking NDMA, IMD, and ISRO data for real-time monitoring, [early warnings](#), and predictive disaster analytics.
- Σ **Private Sector Role:** Encourage corporate investment in disaster insurance, resilient infrastructure, and CSR-led preparedness projects to expand national resilience capacity.
- Σ **Education & Ethics:** Integrate climate ethics and disaster awareness in curricula to foster responsible, informed citizens who value sustainability and

preparedness.

Conclusion:

India's disaster resilience journey reflects a **shift from reactive recovery to anticipatory governance**, blending **finance, technology, and [community stewardship](#)**. By integrating *nature-based solutions with ethical climate responsibility and global cooperation*, India is poised to become a model for sustainable disaster management by **2047 — Viksit Bharat's centenary vision**.

[Topics: Challenges to internal security through communication networks, role of media and social networking sites in internal security challenges, basics of cyber security; money-laundering and its prevention](#)

THE DANGEROUS BLIND SPOT IN CRITICAL INFRASTRUCTURE CYBERSECURITY

Context: The World Economic Forum highlighted a major “blind spot” in [cybersecurity](#) — the vulnerability of critical infrastructure's operational technology (OT) systems — following repeated global power outages such as the Spain–Portugal blackout.



About [The Dangerous Blind Spot in Critical Infrastructure Cybersecurity](#):

What is Operational Technology (OT)?

Operational Technology refers to **hardware and software systems that control physical processes** — such as electric grids, pipelines, water treatment plants, and transport networks.

- Unlike IT (information systems), OT **manages real-world machinery** like turbines, valves, or pumps.
- Traditionally **air-gapped** or offline, OT is now **interconnected with IT systems** due to digitalization.
- It forms the backbone of [critical infrastructure](#), and any cyber breach can cause **massive physical and economic damage**.
- Example: In 2022, a **cyberattack on Colonial Pipeline (US)** halted fuel supplies across the East Coast, showing the risk of OT failure.

Reasons for Growing Vulnerability of Critical Infrastructure:

- **Digital Integration of OT & IT:** Modernization has merged industrial control systems with the internet, **expanding the attack surface**.
 - Eg: Global OT-IT convergence grew by 40% between 2020–2024 (Dragos Report).
- **Rise of Sophisticated Threat Actors:** **State-sponsored hackers** increasingly target OT systems for geopolitical leverage.
 - Eg: Russia's "NotPetya" attack (2017) crippled Ukraine's power systems.
- **Outdated Legacy Systems:** Many plants still run **decades-old SCADA platforms** lacking encryption or monitoring.
- **Inadequate Cyber Investment:** Firms spend **10x more on IT than OT security**, leaving industrial networks unprotected.
- **Data Blindness in OT Networks:** Most OT data isn't logged, making **real-time detection and forensics nearly impossible** after an incident.

Challenges to Critical Infrastructure Cybersecurity

- **Lack of Visibility & Monitoring:** 60% of OT networks lack **intrusion detection systems**, creating forensic blind spots.
- **Fragmented Regulatory Oversight:** No uniform global standard exists; countries follow disparate frameworks (e.g., NIST vs. EU NIS2).
- **Shortage of Skilled Workforce:** Only **15% of cybersecurity professionals** specialize in OT systems (WEF, 2024).
- **Complexity of Incident Attribution:** Difficulty in distinguishing **technical faults from cyberattacks** delays response.
- **High Integration Cost:** Retrofitting legacy infrastructure with security tools is **cost-intensive** for **developing nations**.

Implications of OT Cyber Vulnerability:

- **Organizational Impacts:**
 1. **Operational Disruption:** Outages halt production — a **single-hour power plant downtime** can cost **\$1 million+**.
 2. **Reputational Damage:** Undetected breaches reduce public trust in utilities and regulators.
 3. **Insurance Risks:** Lack of forensic clarity complicates claims and increases **premium costs by 20–30%**.
- **Economic Impacts:**
 1. **Massive Economic Losses:** Global cyberattacks on infrastructure cost **\$10.5 trillion annually** (Cybercrime Report 2024).
 2. **Supply Chain Disruption:** Attacks on ports or grids paralyze trade and logistics (Eg: Maersk cyberattack 2017 cost \$300M).
 3. **Inflationary Pressures:** Energy or fuel disruptions drive commodity prices up (e.g., Colonial Pipeline case).

National Security Impacts:

1. **Strategic Sabotage Risk:** Adversaries may infiltrate grids or water systems to cause covert damage.
2. **Plausible Deniability in Warfare:** Cyberattacks are hard to trace, complicating retaliatory diplomacy.
3. **Civilian Harm:** Attacks on water treatment or hospitals can directly **endanger public health**.

World Economic Forum (WEF) Recommendations:

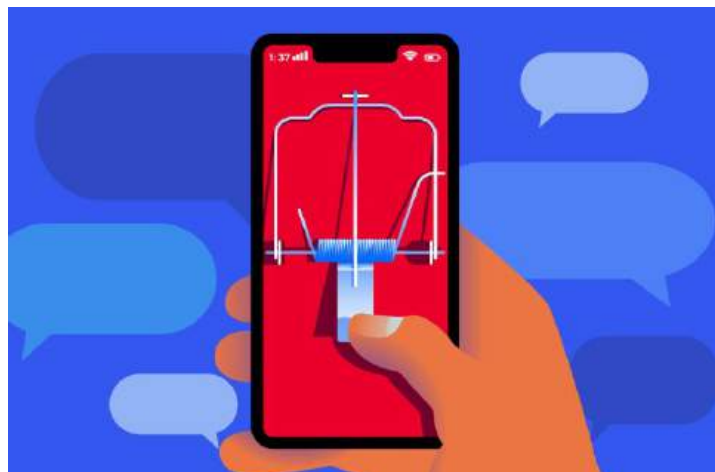
- **Internal Network Security Monitoring (INSM):** Adopt models like US FERC's CIP-015-1, mandating real-time OT traffic surveillance.
- **Integrated Cyber-Physical Governance:** Treat OT security as national infrastructure, not an IT subset.
- **Invest in Detection Technologies:** Deploy AI-driven anomaly detection and forensic data recorders for rapid attribution.
- **Public-Private Coordination:** Build sectoral cyber fusion centers to share threat intelligence across energy, transport, and health.
- **Workforce Capacity-Building:** Upskill engineers in OT cybersecurity through global WEF-NATO-ITU partnerships.

Conclusion:

Critical infrastructure lies at the heart of national resilience — yet its cybersecurity lag leaves nations exposed to both economic paralysis and strategic coercion. The WEF warns that without urgent investment in OT visibility and **cross-sector coordination**, the next major cyberattack could shut down cities, not just servers. Strengthening cyber-physical security is thus no longer optional — it is existential.

SAFEGUARDING INDIA'S DIGITAL ECONOMY

Context: The Indian digital economy is in the spotlight after a sharp rise in sophisticated cyber frauds such as phishing, **UPI/OTP** scams, identity theft, and digital arrests.



About Safeguarding India's Digital Economy:

Cybercrime Landscape in India

1. **Scale of problem:** Over **13.9 lakh cybercrime cases** were reported in India in 2023 (NCRB), but experts estimate many go unreported due to stigma or distrust in institutions.
 - o **Eg:** In 2025, a **78-year-old banker lost ₹23 crore** through a “digital arrest” scam.
2. **Tactics used:** Social engineering is at the core—fear, greed, urgency—exploited via phishing, OTP/UPI frauds, loan/job scams, remote access malware, and fake government impersonations.
3. **Weakest links:**
 - o **Elderly and rural citizens:** digitally illiterate yet financially vulnerable.
 - o **Banks:** often issue generic advisories, fail to detect abnormal transactions, and allow **mule accounts with weak KYC**.
 - o **Cyber police:** lack manpower, training, and AI-driven tools, reducing their effectiveness.

Constitutional and Institutional Dimensions:

- **Right to Privacy (Justice K.S. Puttaswamy vs Union of India, 2017):** Citizens’ personal and financial data must be protected as a fundamental right under **Article 21**.
- **Article 300A:** Protects property; digital financial frauds threaten citizens’ legitimate wealth.
- **RBI Regulations:** Banks are mandated to provide **zero liability protection** for victims in certain categories of digital fraud.
- **CERT-In:** Nodal agency under the IT Act for cybersecurity incidents, but lacks proactive capacity for retail-level fraud detection.

Threats to India's Digital Economy:

- **Social Engineering Fraud:** Exploiting fear, urgency, and trust through phishing, OTP/UPI scams, job/loan frauds, and fake government impersonation.
 - o Eg: “Digital arrest” scam siphoned ₹23 crore from a retired banker in 2025.
- **Identity Theft & Data Breach:** Misuse of Aadhaar, PAN, or bank details due to data leaks and poor encryption safeguards.
- **Mule Accounts & Money Laundering:** Weak KYC enables mule accounts, which are used for **layering and dispersal of funds**, making recovery difficult.
- **Institutional Negligence:** Banks fail to monitor abnormal high-value transactions; cyber police remain **under-equipped in manpower and technology**.

- **Cross-Border Scams:** Fraud networks operate internationally, exploiting jurisdictional loopholes and weak cooperation frameworks.

Initiatives Taken So Far:

- **Regulatory Safeguards:**
 - o RBI’s zero liability policy for certain categories of fraud.
 - o Digital Personal Data Protection Act, 2023 for secure handling of personal data.
- **Institutional Mechanisms:**
 - o CERT-In for cybersecurity incident reporting.
 - o Indian Cyber Crime Coordination Centre (I4C) for inter-agency coordination.
- **Awareness Campaigns:** [RBI’s Cyber Jagrookta Abhiyan](#) and RBI Kehta Hai campaigns to spread digital literacy.
- **Technological Steps:**
 - o Some banks adopting AI-based anomaly detection.
 - o National Cyber Crime Reporting Portal for grievance redressal.

Recommended Measures:

- **Technology & AI Integration:** Deploy [AI/ML](#) for real-time anomaly detection, personalised transaction profiling, and blockchain for tamper-proof KYC.
- **Strengthen Cyber Police:** Establish 24/7 cyber rapid response units, expand forensic labs, and train workforce in global best practices.
- **Bank Accountability:** Strictly enforce KYC compliance, penalise banks failing to freeze mule accounts, and mandate real-time fraud alerts.
- **Cross-Institutional Cooperation:** Build a National Fraud Intelligence Grid linking banks, telecoms, and enforcement agencies.
- **Citizen Empowerment:** Launch targeted digital literacy drives for senior citizens, rural communities, and students to counter social engineering.
- **Global Coordination:** Enhance Interpol, [FATF](#), and bilateral cyber treaties for tracking international fraud networks.

Conclusion:

Safeguarding India’s digital economy demands a shift from reactive redressal to proactive prevention through AI-driven monitoring and stronger bank accountability. Empowered cyber police and digitally literate citizens are vital to counter evolving fraud tactics. Only by combining technology, institutions, and trust can India build a truly resilient digital economy.

Topics: [Various Security forces and agencies and their mandate.](#)

THE BATTLEFIELD AND CHANGE

Context: At the Combined Commanders' Conference 2025 in Kolkata, Prime Minister emphasised moving from service silos to integrated theatre commands to prepare India's armed forces for future [multi-domain wars](#).



[About The Battlefield and Change:](#)

Changing nature of warfare:

- **AI and Automation** – Artificial intelligence enables faster decision-making and autonomous systems, but increases risks of cyber sabotage and ethical dilemmas.
- **Drones and Precision Weapons** – Low-cost drones and precision-guided munitions make attacks more lethal and accessible, altering traditional battlefield calculations.
- **Cyber & Information Warfare** – Wars now extend to digital and psychological domains, where misinformation and hacking can cripple critical infrastructure without a shot fired.
- **Two-Front Threat** – India must be combat-ready for simultaneous pressure from China and Pakistan, demanding jointness, structural reforms, and tech-driven preparedness.

From coordination to command:

- **Theatre commands push** – PM of India in 2025 urged shifting from service silos to integrated theatre commands for unified operational command.
- **Inter-Services Rules 2025** – Empower commanders with administrative and disciplinary authority to ensure true jointness in field operations.
- **Tri-service agencies raised** – Cyber, space and special operations wings under HQ IDS boost integrated defence preparedness.
- **New modular groups** – Units like “Rudra” & “Bhairav” merge infantry, armour, artillery and surveillance for rapid mission-specific deployment.
- **Amphibious doctrine** – Framework created for land-

air-sea synergy, but India still lags China's mature integrated commands.

Doctrinal and technological evolution:

- **Joint doctrines** – The 2017 and 2018 doctrines laid basic principles of synergy, now needing modernisation for multi-domain wars.
- **Ran Samvad seminar** – Stressed building “hybrid warriors” who combine tactical skills with coding, cyber, and information warfare.
- **MQ-9B drones** – Provide persistent ISR and precision strike, strengthening tri-service employment across borders and seas.
- **Rafale-M jets** – Enhance carrier aviation, giving Navy strong maritime strike and fleet air defence capacity.
- **Akashteer AI network** – Integrates Army's air defence with IAF's command system, enabling faster and automated responses.

Creating a modern force:

- **Integrated Battle Groups** – “Rudra” brigades designed to deploy within 12–48 hrs with multi-domain assets for fast response.
- **Pralay missile trials** – Quasi-ballistic missiles expand India's land-based theatre strike capability against hardened targets.
- **Carrier-centric Navy** – Rafale-M stabilises near-term air wings while Navy charts 15-year roadmap for manned & unmanned dominance.
- **Civil-military fusion** – Strong integration of [DRDO](#), PSUs, private firms and universities into PME will fast-track innovation.

Way forward:

- **Gradual theatre commands** – Start with limited mandates and expand, balancing inter-service differences with operational needs.
- **Standardised systems** – Unified data and interface protocols will ensure seamless communication and interoperability.
- **Technologist-commanders** – PME must embed AI, cyber, coding and tech training into leadership to create adaptive warriors.
- **Industrial ecosystem** – Rapid prototyping, repeated field trials, and discarding outdated systems will keep the military agile.

Conclusion:

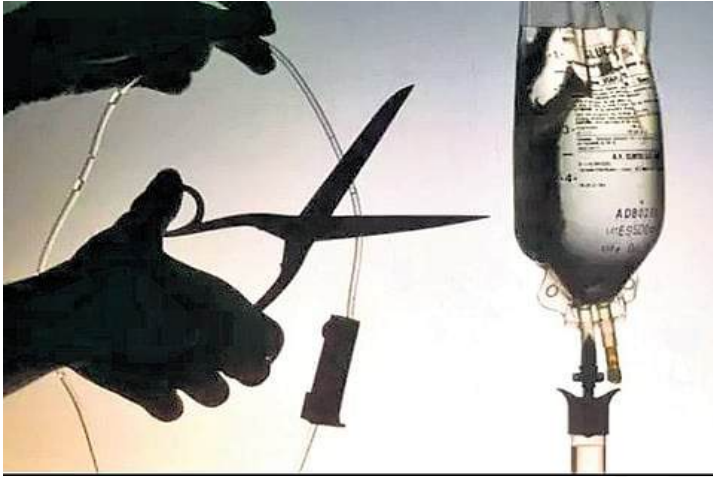
The **battlefield of the future will be multi-domain** where speed, information, and adaptability matter as much as firepower. For India, achieving **true jointness, civil-military fusion, and technological integration** is essential to face evolving threats and remain operationally decisive.

GENERAL STUDIES – 4

PASSIVE EUTHANASIA IN INDIA

Context: The recent debate in the U.K. over the [Terminally Ill Adults \(End of Life\) Bill 2025](#) has reignited global reflection on the ethics of dying.

- For India, the task is not to legalise active euthanasia but to reform the existing framework so that it becomes humane, transparent, and truly accessible.



About Passive Euthanasia in India:

What it is?

- Definition:** Passive euthanasia is the withdrawal or withholding of life-support or medical treatment when a terminally ill patient has no realistic chance of recovery, allowing death to occur naturally.
- Purpose:** Aims to protect the right to die with dignity and prevent prolonged, futile suffering for patients in irreversible conditions.

Legal Status and Key Judgments:

- Early position:** Until 2011, euthanasia was not legally permitted; attempt to suicide was criminalised under **Section 309, IPC**.
- Aruna Shanbaug v. Union of India (2011):**
 - Recognised **passive euthanasia** under judicial supervision.
 - Allowed withdrawal of life support in exceptional cases with High Court approval.
 - Drew distinction between active (illegal) and passive (conditionally legal) euthanasia.
 - Emphasised that life without dignity is not constitutionally protected.
- Common Cause v. Union of India (2018):**
 - Expanded the right to include **advance medical directives (living wills)**.
 - Held that the [Right to Die with Dignity](#) is an inseparable part of **Article 21 – Right to Life**.
 - Laid down detailed procedural guidelines for authorising passive euthanasia.

Existing Procedure (as per Supreme Court guidelines, 2018 – modified 2023)

1. Advance Directive (Living Will):

- Any adult of sound mind can record a living will, specifying circumstances for withdrawal of life support.
- Must be signed before two witnesses and attested by a [Judicial Magistrate First Class \(JMFC\)](#).

2. Medical Board Approval:

- The treating hospital must constitute a **primary medical board** of three senior doctors to certify the patient's condition as irreversible.
- Their decision is reviewed by a **secondary board** constituted by the district's Chief Medical Officer (CMO).

3. Magisterial Oversight:

- The JMFC verifies the authenticity of the living will and medical opinions before allowing withdrawal of life support.

4. In Absence of Living Will:

- Family members, next of kin, or doctors can approach the court for permission under the same two-tier medical scrutiny.

5. Recent Simplification (SC Order, Jan 2023):

- Removed the need for district collector approval.
- Empowered hospital-level ethics committees to authorise decisions more quickly.
- Retained double medical-board review to prevent misuse.

Why the Current System Fails?

- Bureaucratic delay:** Multi-tier clearance defeats the purpose of timely relief to terminally ill patients.
- Lack of awareness:** Citizens and many doctors remain unaware of legal procedures for end-of-life decisions.
- Ethical pressure:** Families struggle between moral guilt and financial constraints, making formal consent rare.
- Unequal healthcare:** Fragmented public health and absence of institutional ethics committees hinder fair application.
- Legal vacuum:** Doctors hesitate to act, fearing prosecution under **IPC Section 309** or medical negligence laws.

Ethical and Constitutional Imperatives

- Article 21 interpretation:** The right to life includes freedom from prolonged, undignified suffering.
- Ethical balance:** Passive euthanasia aligns with **autonomy** (self-determination) and **non-maleficence** (avoiding harm).
- Judicial caution:** Courts draw a moral line between *allowing death* and *causing death*, ensuring ethical restraint.
- Cultural resonance:** Indian philosophy accepts death

as a natural stage of existence, advocating conscious acceptance rather than denial.

- **Administrative duty:** The State's role under **Article 47** demands accessible palliative and end-of-life care as part of public health.

Comparative Perspective and Indian Adaptation

- **Global lessons:** The U.K. and Netherlands models rely on robust healthcare and strict oversight, difficult to replicate in India.
- **Indian approach:** Prioritise procedural simplicity, ethical clarity, and institutional capacity before expanding legal scope.
- **Balanced model:** Combine compassion with caution—making the existing right operational rather than introducing [active euthanasia](#).

Reforming the Framework

- **Digital Advance Directives**
 - Launch a **National Euthanasia Portal** linked with [Aadhaar](#) to register and authenticate living wills.
 - Enable patients to file, modify, or withdraw directives online with doctor certification for mental competence.
 - Reduce dependence on paperwork and judicial verification.
- **Hospital-Level Ethics Committees**
 - Establish committees including senior physicians, palliative experts, and an independent member.
 - Authorise withdrawal of life support within **48 hours**, ensuring prompt yet accountable decisions.
 - Decentralises authority and reduces court burden.
- **Transparent Oversight**
 - Replace a single ombudsman with **state-level health commissioners** or **digital dashboards** for monitoring.
 - Periodic random audits and public reporting promote trust and transparency.
- **Mandatory Safeguards**
 - Impose a **7-day cooling-off period** with mandatory counselling for family and patient.
 - Review by [palliative-care](#) specialists ensures decisions are informed, not coerced.
 - Protects elderly and vulnerable citizens from financial or emotional pressure.
- **Capacity Building & Awareness**
 - Introduce end-of-life ethics modules in **medical and nursing curricula**.
 - Run public awareness drives explaining living wills and palliative options.
 - Encourage community dialogue through local health missions and [NGOs](#).

Conclusion:

India's progress on euthanasia must balance

legality with humanity. The aim is not to legalise death but to **humanise dying**—where the law upholds [compassion](#), autonomy, and dignity. By embracing digital tools, hospital-level ethics, and public awareness, India can transform passive euthanasia from a theoretical right into a **humane, workable reality** consistent with its moral and constitutional ethos.

CODE OF ETHICS

Context: The Institute of Chartered Accountants of India ([ICAI](#)) is revising its Code of Ethics to permit advertising and firm websites, marking a progressive step toward ethical modernization and professional autonomy.



About Code of Ethics:

Definition:

- A Code of Ethics is a codified moral framework that governs conduct, ensuring professionals act with **honesty, integrity, and [accountability](#)** as custodians of public trust.

Purpose: It provides ethical direction during dilemmas, balancing legal compliance with moral discernment, thereby sustaining institutional credibility and social legitimacy.

Features:

1. **Defines Mission and Values:** It articulates the organization's ethical DNA—its core mission, values, and standards that translate purpose into principled practice.
2. **Outlines Conduct Norms:** By specifying acceptable and prohibited behavior, it sets **moral boundaries** that distinguish professionalism from opportunism.
3. **Guides Decision-Making:** It provides an ethical compass to resolve conflicts where law is silent, promoting [conscience-based judgment](#) in complex situations.
4. **Promotes Ethical Compliance:** By embedding fairness, transparency, and responsibility, it transforms compliance into **character-driven integrity**.
5. **Ensures Accountability:** It acts as a moral bench-

mark for disciplinary and legal evaluation, ensuring ethics are enforceable, not ornamental.

Types of Code of Ethics:

1. **Compliance-Based Code:** Rooted in legal enforceability, it establishes strict procedural norms to deter malpractice through defined penalties, ensuring ethical behaviour is maintained even under external compulsion.
 - It reinforces that discipline sustains morality, making rule-based compliance a necessary foundation for professional integrity.
2. **Value-Based Code:** This code transcends legal boundaries, emphasizing self-governance and moral introspection as the guiding principles of conduct.
 - Here, ethics emerge not from fear of punishment but from inner conviction, where virtue becomes the silent regulator of professional choices.
3. **Professional Code:** Designed for specialized domains like accountancy, law, and medicine, it integrates technical excellence with moral conscience.
 - It ensures that competence without character never substitutes genuine professionalism, preserving the dignity and trust of the vocation.

Importance of Code of Ethics in Office:

1. **Integrity in Decision-Making:** Ethical codes inject conscience into administrative choices, ensuring that **means remain as pure as ends**.
2. **Public Trust and Legitimacy:** They convert authority into service, ensuring citizens trust institutions for **credibility, not coercion**.
Eg: The Supreme Court's verdict on Electoral Bonds (2024) reaffirmed that ethical governance is the true source of institutional legitimacy.
3. **Conflict Prevention:** By drawing moral boundaries, ethical codes pre-empt corruption camouflaged as procedural convenience.
4. **Cultural Standardization:** A unified ethical framework harmonizes departmental cultures, making **virtue the invisible constitution** of governance.
Eg: The Mission Karmayogi institutionalised ethics modules across ministries, creating uniform administrative culture.
5. **Accountability Reinforcement:** It embeds responsibility as a personal value rather than an imposed rule.

Challenges to Code of Ethics:

1. **Interpretational Ambiguity:** Vague moral clauses leave room for subjective enforcement, creating unequal ethical expectations.
2. **Commercial Temptations:** Market competition often blurs ethical clarity—profit overshadows principle.
Eg: The Pharmaceutical marketing scandals exposed how incentives distorted doctors' ethical duties to patients.
3. **Lack of Moral Training:** Without ethical education, compliance becomes mechanical, devoid of conviction.
4. **Regulatory Fragmentation:** Overlapping oversight bodies create accountability diffusion rather than ethical cohesion.
5. **Weak Enforcement:** Delayed redressal dilutes deterrence, turning moral norms into ceremonial codes.

2nd ARC Recommendations on Code of Ethics:

1. **Comprehensive Public Service Code:** Integrate integrity, empathy, and impartiality as operational virtues.
2. **Ethics Committees:** Institutional ethics cells must assist officers in real-time dilemmas.
3. **Mandatory Ethics Training:** Regular modules convert moral theory into habit and instinct.
Eg: LBSNAA's Learning Management System (LMS) called GYAN trains probationers through scenario-based moral simulations.
4. **Ethical Appraisal System:** Performance reviews should reward integrity equally with efficiency.
Eg: The CVC "Integrity Index Rating" ties promotions to ethical evaluations alongside output metrics.
5. **Legal Empowerment:** Codified ethics strengthen deterrence by linking moral failure to legal consequence.

Conclusion:

The ICAI's reform reflects India's shift from rule-based compliance to virtue-based professionalism, aligning ethics with enterprise. By institutionalising conscience through law, policy, and education, India can nurture a culture where trust becomes the new currency of governance—reminding us that integrity is not an act, but a habit of national character.

FACTS FOR PRELIMS

GENERAL STUDIES – I

ART & CULTURE

Miscellaneous

NOBEL PRIZE IN LITERATURE 2025

Context: Hungarian author [László Krasznahorkai](#) has been awarded the Nobel Prize in Literature 2025 by the Swedish Academy.

Nobel Prizes 2025



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About Nobel Prize in Literature 2025:

What It Is?

- The **Nobel Prize in Literature**, instituted by [Alfred Nobel's will \(1895\)](#), is awarded annually by the **Swedish Academy** to an author who has produced "the most outstanding work in an ideal direction."
- The prize carries a **cash award of 11 million Swedish crowns** (≈ \$1.2 million) and international recognition as the world's highest literary honour.

Winner – László Krasznahorkai:

- Born in **1954 in Gyula, Hungary**, Krasznahorkai is known for his **dense, philosophical, and apocalyptic prose**, deeply rooted in the Central European literary tradition of Kafka and Thomas Bernhard.
- His writing is often marked by absurdism, existential dread, and grotesque realism, exploring chaos, faith, and [human resilience](#) amid decay.

Notable Works:

- 'Satantango' (1985):** His debut novel — a dark, surreal portrayal of a collapsing village — became a modern classic and was adapted into a seven-hour film by Béla Tarr.
- 'The Melancholy of Resistance' (1989):** Explores

moral collapse and authoritarianism in a small Hungarian town.

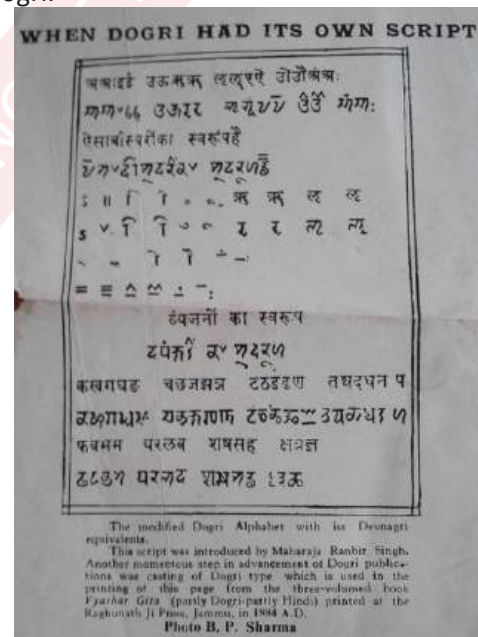
- 'War and War' (1999):** A meditation on violence, history, and transcendence through the eyes of an archivist.
- 'Herscht 07769' (2018):** A recent work depicting German social unrest with precision and empathy, hailed as a "great contemporary German novel."

Literary Legacy:

- Krasznahorkai's fiction bridges metaphysical inquiry and social critique, positioning him among the most formidable European voices of the postmodern era.
- His long, rhythmic sentences and intense imagery evoke both spiritual despair and artistic redemption, defining his unique literary style.

DOGRI LANGUAGE

Context: A recent sociolinguistic study in [Jammu](#) has raised alarms over the declining use of Dogri language, revealing that urban youth show near-zero proficiency in reading or writing Dogri.



About Dogri Language:

What it is?

- Dogri is an Indo-Aryan language spoken predominantly in the Jammu region of India. It is one of the 22 scheduled languages under the Eighth Schedule of the Indian Constitution and an official language of J&K since 2020.

Origin:

- A descendant of **Sanskrit**, Dogri evolved from the **Old Indo-Aryan (1200–250 BCE)** through **Middle Indo-Aryan (400 BCE–1100 CE)** into its modern form. The word "Dogra" or "Duggar" appears as early as **1317 CE** in Amir Khusrow's Nuh Sipihr.

History:

- Once the **official script** of the Dogra princely state under Maharaja Ranbir Singh (1857–85 CE), it was written in **Dogra Akkhar** but later replaced by **Devanagari script** in the 20th century.
- Dogri gained **constitutional recognition in 2003**, marking a milestone in India's linguistic preservation.

Spoken among: Dogri is spoken by approximately 2.6 million people, primarily across Jammu, Himachal Pradesh, and northern Punjab, with smaller communities in Pakistan and among the Indian diaspora.

Features:

- **Linguistic Traits:** Uses 10 vowels and 28 consonants with tonal variations (level, falling, rising).
- **Phonological Patterns:** Displays nasalization, metathesis, and tone-based sound differentiation.
- **Vocabulary Influence:** Incorporates borrowings from **Persian** and English while retaining Sanskrit roots.
- **Geographical Variation:** Dialectal diversity exists between hill regions and plains of Jammu.

Reasons for Decline:

- **Policy Neglect:** Late recognition and minimal government promotion compared to Urdu or Hindi have eroded institutional support.
- **Urban Detachment:** Surveys show only 4% of urban respondents can write Dogri, reflecting its shrinking space in education and administration.
- **Generational Disconnect:** Younger generations show zero literacy proficiency, viewing Dogri as culturally nostalgic but economically irrelevant.

UNESCO LAUNCHES THE WORLD'S FIRST VIRTUAL MUSEUM OF STOLEN CULTURAL OBJECTS

Context: UNESCO has recently launched the world's first Virtual Museum of Stolen Cultural Objects at the **MONDIACULT 2025 Conference** in Barcelona, Spain.



About UNESCO launches the World's First Virtual Museum of Stolen Cultural Objects :

What is the Virtual Museum of Stolen Cultural Objects?

- It is a **first-of-its-kind global digital museum** created by **UNESCO** to display, document, and trace stolen or trafficked cultural objects from around the world.
- The museum acts as a virtual platform for education, restitution, and heritage protection, symbolically reuniting nations with their **displaced artifacts**.
- **Launched at:** World Conference on Cultural Policies and Sustainable Development (MONDIACULT 2025).
- **Organized by:** **UNESCO** (United Nations Educational, Scientific and Cultural Organization)

Aim:

- **Combat Illicit Trafficking:** Create a global platform to track and raise awareness of stolen and looted cultural heritage.
- **Cultural Reconnection:** Digitally **reconnect communities with their lost heritage**.
- **Educational Mission:** Strengthen **heritage education and ethical museum practices** through storytelling and testimonies.

Key Features of the Virtual Museum:

- **Digital Platform:** Uses 3D modelling, artificial intelligence, and **virtual reality** (VR) to recreate over 240 missing artifacts from 46 countries.
- **Interactive "Rooms":**
 - **Stolen Cultural Objects Gallery:** Displays digital reconstructions of stolen items.
 - **Auditorium:** Hosts discussions, expert talks, and awareness programs.
 - **Return and Restitution Room:** Showcases successful recovery cases.
- **AI Recreation:** For items lacking visual records, **AI-generated models** allow virtual rotation and study.
- **Educational Content:** Provides **historical context**, restoration practices, and **anti-trafficking** awareness tools.
- **India's Representation:** Features two **9th-century sandstone sculptures** from **Mahadev Temple, Pali (Chhattisgarh)** — a **Nataraja** and Brahma figure — stolen during colonial-era looting.

UNESCO ELECT NEW CHIEF

Context: **UNESCO's** Executive Board has elected Egypt's Khaled El-Enany, as the new Director-General of the organization for a four-year term, succeeding France's Audrey Azoulay.



About UNESCO Elect New Chief:

What It Is?

- The Director-General of UNESCO (United Nations Educational, Scientific and Cultural Organization) is the organization's top executive authority responsible for implementing the decisions of the General Conference and Executive Board.
- The position carries a **four-year term**, renewable once, and plays a key role in shaping UNESCO's global agenda on education, culture, science, and heritage preservation.

Process of Election:

- **Nomination and Voting:**
 - Candidates are nominated by member states and evaluated by the **58-member Executive Board**.
 - The Board conducts a **secret ballot**, requiring an absolute majority to select one nominee.
- **Approval:**
 - The selected candidate's name is forwarded to the **General Conference (194 members)** for formal confirmation.
- **2025 Election Outcome:**
 - Khaled El-Eenay received **55 votes**, defeating Édouard Firmin Matoko of Congo (2 votes).
 - The **United States abstained** from voting.
 - El-Eenay will serve from **2025 to 2029**, pending ratification.

Functions:

- **Leadership and administration:** Oversees UNESCO's global operations, including World Heritage conservation, education initiatives, and scientific cooperation.
- **Policy execution:** Implements decisions of the General Conference and Executive Board.
- **Representation:** Acts as the organization's international spokesperson and engages in global diplomacy on cultural and educational issues.
- **Budget management:** Mobilizes funding and diversifies resources, especially crucial after the U.S. withdrawal cuts 8% of **UNESCO's budget**.

Significance:

- **Symbolic importance:** Egypt's leadership marks a

shift toward greater African and Arab representation in **UN bodies**.

- **Institutional revival:** El-Eenay faces the challenge of sustaining UNESCO's global initiatives amid funding shortfalls and political polarization.

ANCIENT HISTORY

Important Personalities

SARDAR VALLABHBHAI PATEL

Context:

The Ministry of Culture is organizing grand cultural performances on **Rashtriya Ekta Diwas** (31 October 2025) to commemorate the 150th birth anniversary of Sardar Vallabhbhai Patel, with Prime Minister of India as Chief Guest.



About Sardar Vallabhbhai Patel:

- **Early Life and Birth:** Born on **31 October 1875** in **Nadiad, Gujarat**, Sardar Vallabhbhai Patel began his career as a **successful lawyer** before dedicating his life to India's freedom struggle.
- **Entry into Public Life:** His association with **Mahatma Gandhi** during the **Kheda Satyagraha (1918)** transformed him from a lawyer to a nationalist leader advocating for farmers' rights and **social justice**.
- **Role in Freedom Movement:**
 - Led the **Bardoli Satyagraha (1928)**, where his leadership earned him the title "**Sardar**" (leader).
 - Served as **President of the Indian National Congress (1931, Karachi Session)**, where he guided the party during turbulent times following Bhagat Singh's execution.
 - Worked closely with leaders like **Gandhi, Nehru, and Rajendra Prasad** in shaping India's freedom trajectory.
- **Architect of National Integration:**
 - As India's first **Deputy Prime Minister and Home Minister (1947–50)**, Patel led the integration of **565 princely states** into the Indian Union using diplomacy, persuasion,

and firmness.

- o Successfully handled complex accessions like **Hyderabad (Operation Polo, 1948)**, **Junagadh**, **Travancore**, and **Kashmir (Instrument of Accession, 1947)**.
- o Established the **All-India Services**, calling them the “Steel Frame of India” to ensure [administrative unity](#) and integrity.
- **Vision and Legacy:**
 - o Advocated for a **strong, united, and self-reliant India**, rooted in discipline and national integration.
 - o His vision culminated in later milestones — **merger of Goa (1961)**, **Sikkim’s accession (1975)**, and the **abrogation of Article 370 (2019)**, fulfilling his dream of complete unity.
 - o The **‘Statue of Unity’**, inaugurated in **2018** at Kevadia, Gujarat, stands as the **world’s tallest statue (182 metres)**, symbolizing his enduring legacy.
- **Unique Facts:**
 - o Popularly known as the **“Iron Man of India”** for his grit and administrative strength.
 - o Personally led sanitation drives in Ahmedabad as Municipal President (1924), setting an example of ethical leadership.

Miscellaneous

VANDE MATARAM - 150 YEARS CELEBRATION

Context: Prime Minister, in his Mann Ki Baat address, called for nationwide participation to celebrate the 150th anniversary of “[Vande Mataram](#)”, describing it as a “mantra that unites 140 crore Indians”.



About Vande Mataram - 150 Years Celebration:

What it is?

- Vande Mataram (meaning “I bow to thee, Mother”) is **India’s national song**, symbolizing reverence to the motherland and evoking [patriotism](#) and unity among citizens.

Written by:

- Composed in **Sanskritised Bengali** by [Bankim](#)

[Chandra Chattopadhyay](#) in the **1870s**, it was first published in his novel *Anandamath* (1882).

History:

- The song’s **first public rendition** was by [Rabindranath Tagore](#) at the **1896 Congress Session**.
- It became the **anthem of India’s freedom struggle**, sung in protests and revolutionary gatherings despite being banned by the British.
- The [Indian National Congress \(1937\)](#) adopted its **first two stanzas** as the **National Song**, balancing inclusivity and secular appeal.
- On **January 24, 1950**, the **Constituent Assembly** accorded *Vande Mataram* equal honour to the **National Anthem “Jana Gana Mana.”**

Features:

- **Spiritual Patriotism:** Depicts the nation as a nurturing mother embodying both emotional and divine strength.
- **Secular Adaptation:** Only the first two stanzas, devoid of religious imagery, are used officially to ensure inclusivity.
- **Cultural Symbolism:** Serves as a unifying call cutting across linguistic and regional divides.
- **Historical Legacy:** Its association with movements like [Swadeshi \(1905\)](#) and **Quit India (1942)** made it the lyrical soul of resistance.

Current Status:

- Recognized by the Government of India as equal in stature to the National Anthem.
- Instrumental version is played at the closing of every Parliament session.
- Citizens are encouraged to show equal respect to both [Vande Mataram](#) and *Jana Gana Mana*, as affirmed by a Delhi High Court affidavit (2022).

VISVA-BHARATI UNIVERSITY

Context: Visva-Bharati University, founded by Rabindranath Tagore, is facing a deep institutional crisis as [National Education Policy \(NEP\) 2020](#) reforms trigger funding cuts, faculty unrest, and allegations of administrative overreach.



About Visva-Bharati University:

- **What it is?**
 - Visva-Bharati is a **Central University of national importance** known for its unique blend of Indian tradition and global learning. It serves as a model of **holistic education integrating arts, science, and humanities**.
- **Established in:** Founded in **1921** by **Rabindranath Tagore**.
 - Shantiniketan was established in 1901.
 - A 'world university' was established at Santiniketan in 1921, recognizing the unity of humanity or "Visva Bharati".
- **Located in:** Situated at **Santiniketan**, in Birbhum district, West Bengal.
- **History:**
 - Began as an **ashramic school** emphasizing simplicity, self-reliance, and learning in nature.
 - In **1951**, it became a **Central University through an Act of Parliament**, gaining status as an institution of national importance.
 - Over the decades, it evolved into a **centre of global exchange**, fostering art, literature, music, and rural reconstruction.
- **Key Features:**
 - Promotes **interdisciplinary education** rooted in Indian ethos and global outlook.
 - Encourages **artistic and rural engagement**, with schools like Kala Bhavana (Fine Arts) and Sriniketan (Rural Development).
 - Operates under Tagore's principle of **freedom in learning** — promoting creativity over rote learning.

About The South Atlantic Anomaly (SAA):

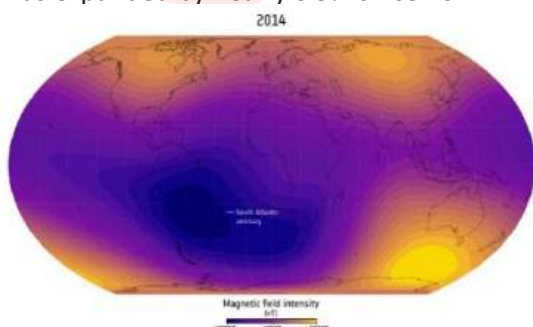
- **What It Is?**
 - The South Atlantic Anomaly is a weak magnetic field zone located over South America and the southern Atlantic Ocean, where Earth's magnetic field intensity is significantly lower than the global average.
- **Identified By:** First noted in the **19th century**, the anomaly has been continuously mapped and analysed using **ESA's Swarm satellites** launched in 2013.
- **Reason for the Anomaly:**
 - The SAA occurs because of **irregular flow of molten iron and nickel** in Earth's **outer core**, disrupting the **geo-dynamo** — the mechanism that generates the magnetic field.
 - Beneath the South Atlantic, **reverse flux patches** are observed — regions where the **magnetic field lines re-enter the Earth instead of exiting it**, weakening local magnetic strength.
 - These complex **core-mantle interactions** create spatial variations in magnetic intensity, forming the SAA.
- **Features:**
 - **Location:** Covers parts of South America, southern **Atlantic Ocean**, and southwest of Africa.
 - **Expansion:** Has grown by 0.9% since 2014 and continues to move westward.
 - **Dual Cell Structure:** Since 2020, the SAA has split into two weaker sub-cells, one toward South America and another near southwest Africa.

GEOGRAPHY

Geomorphology

SOUTH ATLANTIC ANOMALY (SAA) - MAGNETIC WEAK SPOTS

Context: Recent findings from the **European Space Agency's (ESA) Swarm mission** reveal that the South Atlantic Anomaly (SAA) — the region of weakest intensity in Earth's magnetic field — has expanded by nearly 0.9% since 2014.



What Are Magnetic Weak Spots?

- **Definition:**
 - Magnetic weak spots are localized regions of diminished geomagnetic intensity on Earth's surface caused by uneven distribution of magnetic flux within the planet's outer core.
- **Why They Form:**
 - **Uneven Core Flow:** The molten metals in Earth's outer core do not circulate uniformly, causing some regions to produce weaker magnetic fields.
 - **Reverse Magnetic Flux:** In certain zones like the SAA, **magnetic field lines** loop backward into the core, lowering the surface magnetic strength.
 - **Core Dynamics:** Constant fluid motion, convection currents, and thermal variations in the liquid outer core lead to periodic reorganisation of magnetic strength zones.
- **Impacts of Magnetic Weak Spots**
 - **Satellite & Spacecraft Vulnerability:** Satellites passing through the SAA encounter increased radiation exposure,

- risking hardware damage, data corruption, or blackouts in instruments.
- **Navigation Challenges:** Variations in field strength can affect magnetic navigation and calibration systems, especially in [low-Earth orbits](#).
- **Space Weather Sensitivity:** The weakened shield allows charged solar particles to dip closer to Earth's surface, heightening space weather hazards.
- **Regional Variation Effects:** The SAA's westward drift and expansion increase the risk zone for [orbiting satellites](#), especially Earth-observing and communication systems.

LIMESTONE CLASSIFIED AS A MAJOR MINERAL

Context: The Ministry of [Mines](#) has issued a notification, classifying limestone entirely as a major mineral, removing its dual classification as both a major and minor mineral.

DIFFERENCE BETWEEN MAJOR AND MINOR MINERALS:

CRITERIA	MAJOR MINERALS	MINOR MINERALS
• Definition	• Minerals with high economic, strategic, and industrial significance.	• Minerals with lower economic value and localized use.
• Regulatory Authority	• Indian Bureau of Mines (IBM), Ministry of Mines.	• State Governments.
• Examples	• Iron ore, coal, bauxite, gold, barytes, feldspar, mica, quartz.	• Sand, gravel, marble, limestone, clay, granite.
• Governing Law	• Mines and Minerals (Development and Regulation) Act, 1957 (MMDR Act, 1957).	• MMDR Act, 1957, but regulated by State Governments.
• Lease Period	• Up to 50 years under Section 8A of the MMDR Act, 1957.	• Typically shorter lease durations, decided by State Governments.
• Revenue Collection	• Earnings go to State Governments but regulated by the Central Government.	• Revenue goes directly to State Governments.
• Strategic Importance	• Critical for energy, defense, aerospace, and industrial sectors	• Mainly used for construction and local industries.

About Limestone Classified as a Major Mineral:

- **What it is?**
 - Limestone is a **sedimentary rock** composed mainly of [calcium carbonate](#) (CaCO_3), widely used in **cement, steel, fertilizer, sugar, and chemical industries**. It is also an important building and industrial raw material with high commercial significance.
- **Background:**
 - Earlier, limestone was classified based on **end use** — minor when used for lime production in building material and major when used for industrial purposes.
 - The **new notification (October 2025)** removes this end-use distinction, treating all limestone uniformly as a **major mineral** under the **Mines and Minerals (Development and Regulation) Act, 1957 (MMDR Act)**.
- **Aim:**
 - To simplify mineral regulation and eliminate artificial distinctions between major and

minor mineral categories.

- To promote ease of doing business, enabling leaseholders to sell limestone freely to any industry.

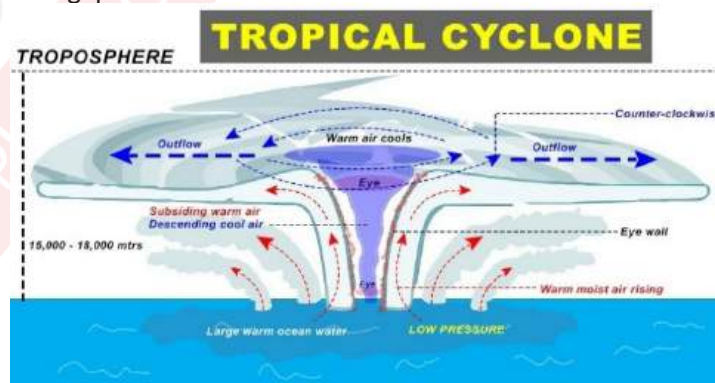
About Limestone:

- **Composition:** Sedimentary rock made primarily of **calcium carbonate (CaCO_3)** in the form of **calcite or aragonite**, sometimes mixed with [dolomite](#).
- **Formation:** Derived either from **biogenic precipitation** (marine organisms) or **mechanical deposition** of older limestone.
- **Uses:** Vital in cement, steel, [fertilizer](#), glass, and building materials, as well as in agriculture and chemical industries.
- **Geological Significance:** Contains rich fossil records, helping reconstruct Earth's evolutionary history.

Climatology

CYCLONE MONTHA

Context: The India Meteorological Department ([IMD](#)) has issued a high alert for Andhra Pradesh and Odisha as Cyclone Montha is set to make landfall between Machilipatnam and Kalingapatnam near Kakinada.



About Cyclone Montha:

- **What it is?**
 - Cyclone Montha is a tropical cyclonic storm forming over the southeast Bay of Bengal, expected to intensify into a [Severe Cyclonic Storm](#) (SCS) as it approaches India's east coast, bringing heavy rainfall and strong winds across Andhra Pradesh, Odisha, and adjoining states.
- **Origin:**
 - The storm originated as a deep depression over the southeast Bay of Bengal, gaining strength due to warm ocean temperatures, [low vertical wind](#) shear, and high humidity, which are conducive conditions for cyclone formation in this region.
- **How cyclones are formed?**
 - **Low-Pressure Centre:** [Warm ocean waters](#)

(above 26°C) cause air to rise, creating a low-pressure zone.

- **Condensation & Energy:** As moist air rises, it condenses and releases latent heat, fueling the cyclone.
- **Coriolis Effect:** The Earth's rotation causes winds to spiral anticlockwise in the Northern Hemisphere and clockwise in the Southern Hemisphere, forming a rotating storm system.
- **Development Stages:** Disturbance → Depression → Deep Depression → Cyclonic Storm → Severe Cyclone → Super Cyclone (based on wind speed).
- **Naming of cyclones:**
 - **Responsible Body:** Cyclones in the North Indian Ocean are named by countries under the WMO/ESCAP Panel on Tropical Cyclones (PTC) — a joint initiative of the World Meteorological Organization ([WMO](#)) and the UN Economic and Social Commission for Asia and the Pacific (ESCAP).
 - **Member Countries (13 nations):** India, Bangladesh, Myanmar, Oman, Pakistan, Sri Lanka, Thailand, Maldives, Iran, Qatar, Saudi Arabia, UAE, and Yemen.
- **Naming Process:**
 - Each country submits **13 suggested names** to the panel.
 - The **IMD (India Meteorological Department)** maintains the regional list and assigns names sequentially when new cyclones form.
 - The current list (released in **2020**) contains **169 names** in total.
 - "Montha" was **proposed by Thailand** which is one of the 13 member countries from this 2020 list.

BLIZZARD

Context: A severe blizzard struck the eastern face of Mount Everest in Tibet, trapping nearly 1,000 trekkers in the remote [Karma valley](#).



About Blizzard:

What it is?

- A blizzard is a severe mid-latitude snowstorm characterized by strong winds (≥ 56 km/h), low temperatures, and near-zero visibility caused by blowing snow.
- It occurs when polar or continental cold air masses interact with moist maritime or tropical air, producing intense snowfall accompanied by violent winds.

How It Develops?

1. **Cold Air Supply:** Cold, dense air from high latitudes or elevated terrain ensures snow formation instead of rain.
2. **Moisture Source:** Moist air masses, often from nearby oceans or large lakes, provide water vapour for condensation and precipitation.
3. **Uplift Mechanism:** Warm, moist air is forced to rise over cold air ([frontal uplift](#)) or up mountain slopes ([orographic uplift](#)), forming snow-laden clouds.
4. **Strong Pressure Gradient:** A steep pressure difference generates high wind speeds, driving snow horizontally and drastically reducing visibility.

Features:

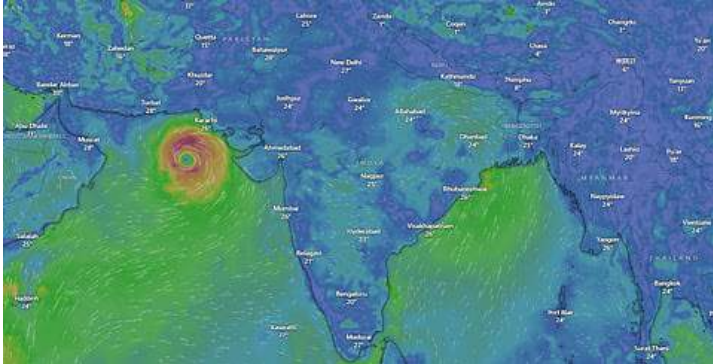
- **Wind Velocity:** 80–100 km/h (often exceeding 120 km/h in severe cases).
- **Temperature:** Falls below freezing, intensifying **wind chill** effects.
- **Visibility:** Drops below 0.4 km for over three hours, leading to **whiteout conditions**.
- **Duration:** Can persist for several hours to days, often followed by cold wave conditions.
- **Variants:**
 - **Ground Blizzard:** Pre-existing snow lifted by strong winds.
 - **Nor'easter:** Coastal blizzard type common along North Atlantic coasts.

Impact:

- **Environmental:**
 - Causes snow accumulation, avalanches, and temporary glacial expansion.
 - Alters albedo and local energy balance, affecting regional climate feedbacks.
- **Human:**
 - Leads to frostbite, [hypothermia](#), and loss of life among trekkers and residents.
 - Transport and communication networks collapse due to snow-blocked roads and damaged power lines.

CYCLONE SHAKHTI

Context: The India Meteorological Department (IMD) confirmed the formation of Cyclone Shakhti over the [northeast Arabian Sea](#).



About Cyclone Shakhti:

What it is?

- A **tropical cyclonic storm** that developed in the northeast Arabian Sea, ~340 km west of Dwarka (Gujarat).
- Named “**Shakhti**” under the World Meteorological Organisation’s regional naming system.

Origin:

- Formed due to **low-pressure development over warm Arabian Sea waters** in early October 2025.
- The system strengthened into a **cyclonic storm (CS)** on October 3 and is forecast to become a **severe cyclonic storm (SCS)** as it tracks west-southwestwards.

Features:

- Brings **strong winds, high sea waves, and heavy rainfall potential** along coastal belts.
- Part of a **trend of increasing Arabian Sea cyclones** due to rising sea surface temperatures.

Why Bay of Bengal Gets More Cyclones than Arabian Sea

1. Warmer Waters:

- Bay of Bengal is semi-enclosed and landlocked, retaining warm water (29–30°C year-round).
- Arabian Sea remains cooler due to stronger winds and evaporation.

2. Moisture Availability:

- Bay receives abundant moist air from rivers and monsoon flows.
- Arabian Sea is influenced by **dry winds from Oman and Yemen**, limiting cyclone intensity.

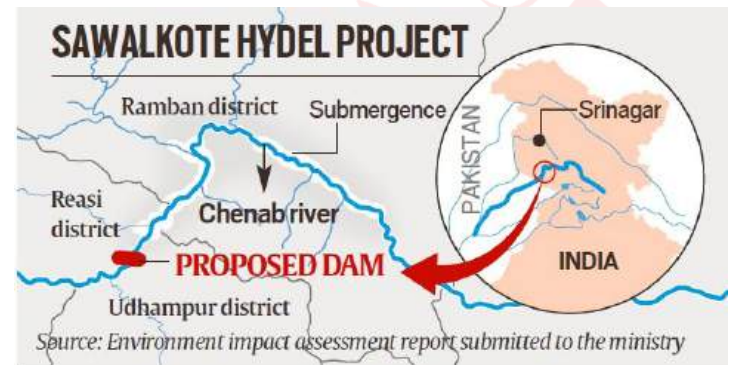
3. External Triggers (Pulses):

- Typhoons from the Pacific often enter [Bay of Bengal](#) as low-pressure systems, which then intensify.
- Arabian Sea does not get such external inputs.

Oceanography River System

THE SAWALKOTE HYDRO PROJECT

Context: The Union Environment Ministry’s Expert Appraisal Committee (EAC) has granted a fresh environmental clearance to the Sawalkote Hydroelectric Project on the [Chenab River](#) in Jammu & Kashmir.



About The Sawalkote Hydro Project:

What it is?

- The Sawalkote Hydroelectric Project is a **run-of-the-river** hydropower project designed to harness the flow of the Chenab River for clean energy generation.
- It is being developed by the National Hydroelectric Power Corporation ([NHPC](#)) Ltd. and will be among India’s largest hydroelectric projects in the Indus basin.

River and Location

- **River:** Chenab River — a west-flowing tributary of the Indus.
- **Location:** Ramban district, **Jammu and Kashmir**.
 - The project area spans approximately **1,159 hectares**, including riverine and forest land.

Historical Background:

- **First proposed:** 1984.
- **Initial environmental clearance:** Granted in **2017** when managed by the Jammu & Kashmir Power Development Corporation (JKPDC).
- **Transfer to NHPC:** In **2021**, NHPC took charge for development and operation till 2061.
- **Re-clearance (2025):** Granted after India suspended the [Indus Waters Treaty](#) (April 2025), expediting strategic projects on western rivers.

Key Features:

- **Installed Capacity:** 1,856 MW (Stage I – 1,406 MW; Stage II – 450 MW).
- **Structure:** 192.5-metre-high **concrete gravity dam** with a reservoir capacity of 530 million cubic metres.
- **Energy Generation:** Approx. **8,000 million units (MUs)** annually.
- **Project Cost:** Revised to **₹31,380 crore** (up from ₹22,000 crore).

Indian and World Human Geography

BLUE FLAG BEACHES

Context: [Five beaches in Maharashtra](#) — Shrivardhan, Nagaon, Parnaka, Guhagar, and Ladghar — have been awarded the international Blue Flag certification by the Foundation for Environmental Education (FEE), Denmark



About Blue Flag Beaches:

What it is?

- The Blue Flag is a globally recognised eco-label awarded to beaches, marinas, and sustainable boating tourism operators that meet stringent standards of environmental quality, safety, and management.

Organisation Involved: The certification is granted by the **Foundation for Environmental Education (FEE), Denmark**, an international non-profit organisation working to promote sustainable environmental practices through education and certification.

India Joined In: India officially joined the [Blue Flag Programme](#) in 2018.

Aim:

- The Blue Flag programme aims to promote sustainable coastal tourism, protect marine ecosystems, and ensure safe, clean, and eco-friendly recreation spaces for visitors and local communities.

Criteria (Six Key Areas):

- Environmental Education and Engagement:** Promotes local ecosystem awareness and community participation.
- Climate Action:** Encourages [energy-efficient infrastructure](#) and resilience to coastal erosion and sea-level rise.
- Biodiversity Management:** Focuses on protecting wildlife habitats and managing coastal vegetation responsibly.
- Pollution and Water Quality:** Mandates top-grade water testing, waste segregation, and control of plastic and oil pollution.
- Accessibility:** Requires facilities and services to be inclusive and accessible for all, including [persons with disabilities](#).

- Safety and Services:** Enforces lifeguards, first-aid, and emergency plans for visitors' safety.

Current India Blue Flag Status (as of 2025):

- Total Certified Beaches:** 13 + 5 New (total 18 Beaches) Blue Flag beaches across India.
- Recent Additions:** Five beaches from Maharashtra — Shrivardhan, Nagaon, Parnaka, Guhagar, and Ladghar — received certification in 2025.

STATE MINING READINESS INDEX (SMRI)

Context: The Ministry of Mines released the first-ever State Mining Readiness Index (SMRI) and State Rankings (2025) to benchmark State performance in [mining reforms](#), fulfilling a key announcement of the [Union Budget 2025–26](#).



About State Mining Readiness Index (SMRI):

What It Is?

- The State Mining Readiness Index (SMRI) is a performance benchmarking framework that evaluates and ranks Indian States based on their efficiency, reform readiness, and sustainability in the mining sector, particularly for non-coal minerals.

Published By: Released by the Ministry of Mines, Government of India.

Aim:

- To encourage healthy competition among States in mining sector governance.
- To enhance transparency and efficiency in mineral exploration and mine operationalisation.
- To promote sustainable and responsible mining practices aligned with India's environmental and [economic priorities](#).

Criteria Used:

The SMRI assesses States on four key indicators —

- Auction Performance:** Effectiveness and transparency in mineral block auctions.
- Early Mine Operationalisation:** Speed of converting auctioned blocks into functional mines.

- **Exploration Thrust:** Investment and initiatives for [geological exploration](#) and discovery of new resources.
- **Sustainable Mining Practices:** Adoption of environmentally sound and socially responsible mining models.

Key Features:

- **Categorised Evaluation:** States are grouped into three categories based on mineral endowment to ensure fair comparison.
 - **Category A:** Mineral-rich States
 - **Category B:** Moderately endowed States
 - **Category C:** Low-endowment States
- **Focus on Non-Coal Minerals:** Encourages diversification beyond [coal](#), focusing on critical and strategic minerals.
- **Reform Benchmarking Tool:** Designed to drive policy alignment with ease of doing business, investment promotion, and [sustainable resource management](#).
- **Supports Federal Reform Model:** Acts as a cooperative federalism instrument to motivate lagging States to improve their mining ecosystem.

State Rankings 2025:

Category	Top 3 States (2025)
A (Mineral-Rich)	1. Madhya Pradesh 2. Rajasthan 3. Gujarat
B (Moderate Resources)	1. Goa 2. Uttar Pradesh 3. Assam
C (Low Endowment)	1. Punjab 2. Uttarakhand 3. Tripura

SOCIETY AND SOCIAL JUSTICE

OLLO TRIBE

Context: The [Assam Rifles'](#) Khonsa Battalion has launched a skill-based empowerment programme under Operation Sadbhavana for women of the Olo tribe in Arunachal Pradesh's Tirap district.



About Olo tribe:

Who they are?

- The Olo tribe, also known as Lazu Naga, is a [Tibeto-Burman ethnic group](#) native to the Tirap district of Arunachal Pradesh and parts of Myanmar's Naga Self-Administered Zone.
- They are culturally affiliated with the Tangshang Naga group and have a distinct clan-based social order.

Habitat:

- The Olo inhabit **12–13 villages in the Lazu Circle** of Tirap district, a region bordering Myanmar.
- Their settlements are found across the [Indo-Myanmar frontier](#), reflecting cross-border ethnic continuity.

History:

- Historically, the Olo were a headhunting community governed by hereditary chiefs (Lowang) and leaders (Ngongpa) under a patrilineal social system.
- Despite external influences such as Christianity and urbanisation, they have preserved oral traditions, [ancestral worship](#), and folklore like the **Voorang folksong**.

Key Features:

- **Social Structure:** Patriarchal, clan-based hierarchy with hereditary leadership and kinship-based land ownership.
- **Cultural Practices:** Strong oral tradition, ancestral rituals, and dormitory systems; their facial tattoos and Voorang Festival reflect their unique tribal aesthetics.
- **Economy:** Subsistence agriculture and traditional crafts form the economic base, now being revitalised through [skill initiatives](#) like tailoring and handicrafts.
- **Population:** Around 1,500 people as per the 2011 Census — making them one of the smallest yet culturally rich indigenous groups in [Northeast India](#).
- **Festivals:** **Woraang (Voorang) Festival**, a vibrant agrarian celebration marked by songs, dances, and rituals symbolising prosperity and community unity.

FACTS FOR PRELIMS

GENERAL STUDIES – 2

POLITY

Bodies (Constitutional, Statutory, Regulatory Bodies)

SPECIAL INTENSIVE REVISION 2025

Context: The Election Commission of India ([ECI](#)) will launch the Special Intensive Revision (SIR) 2025, requiring voters across 12 States and Union Territories.



About Special Intensive Revision 2025:

What it is?

- The Special Intensive Revision (SIR) 2025 is a large-scale, document-based voter verification exercise conducted by the Election Commission of India to update, authenticate, and purify electoral rolls after nearly two decades.
- It ensures that only eligible Indian citizens remain registered voters, aligning with the provisions of the [Representation of the People Act, 1950](#).

Organisation:

- The drive is implemented by the Election Commission of India (ECI) under the supervision of Chief Election Commissioner Gyanesh Kumar.

Aim:

- To ensure a clean, error-free, and verified [electoral roll](#) before upcoming elections.
- To verify citizenship, age, and address details of voters through linkage with historic rolls or supporting documents.
- To enhance transparency, inclusivity, and credibility in India's electoral process.

Key Functionaries Involved in SIR:

- **Booth Level Officer (BLO):**
 - The person responsible for one polling

booth (around 1,000 voters).

- Distributes and collects the **Enumeration Form (EF)** from each voter's household.
- Helps link each voter's name with past voter lists and identifies shifted or deceased voters.
- **District Magistrate (DM):** Hears **first appeals** if anyone disagrees with the ERO's decision.
- **Chief Electoral Officer (CEO):** Hears **second appeals** and oversees the process at the state or UT level.
- **Booth Level Agents (BLAs):**
 - Representatives of recognised political parties trained by ECI.
 - They help collect forms and verify voters to [ensure transparency](#).

Key Processes of the Special Intensive Revision

- **Preparation of Enumeration Forms (EFs):**
 - Each voter will get a pre-printed form with their details (name, [EPIC number](#), address, etc.) based on the current list.
 - Forms are generated from the EC's database as of **27 October 2025**.
- **Distribution by BLOs:**
 - BLOs will visit every home up to **three times** to deliver and collect the forms.
 - Voters can also fill the form **online** on [voters.eci.gov.in](#).
- **Linking with Past Electoral Rolls:**
 - Every voter must trace their or a relative's name in the **old 2002–2004 rolls** (available online).
 - This helps the EC confirm that the voter (or family) existed in earlier verified lists.
- **Filling and Submission of Forms:**
 - Voters fill missing details (like parents' names, date of birth, Aadhaar, etc.) and submit to BLO or online.
 - No supporting document is needed initially.
- **Verification by ERO/AERO:**
 - Forms are checked. If a voter couldn't find a link to old rolls, they'll later need to show **documents proving age and citizenship**.
- **Appeals:**
 - If your name is wrongly deleted, you can appeal first to the **DM**, then to the **CEO** of your state

THE 8TH CENTRAL PAY COMMISSION

Context: The Union Cabinet has approved the Terms of Reference (ToR) for the 8th Central Pay Commission (CPC) headed by [Justice Ranjana Prakash Desai](#) (Retd.).

CENTRAL PAY COMMISSIONS

Name of the Pay Commission	Year of Formation	Chairperson
First Central Pay Commission	1946	Raghubir Singh
Second Central Pay Commission	1957	R. S. Ghosh
Third Central Pay Commission	1970	J. M. M. Sinha
Fourth Central Pay Commission	1983	P. N. Singhal
Fifth Central Pay Commission	April 1994	Justice S. Ratnavel Pandian
Sixth Central Pay Commission	July 2006	Justice B. N. Srikrishna
Seventh Central Pay Commission	February 2014	Justice A. K. Mathur
Eighth Central Pay Commission	January 2024	Justice Ranjana Prakash Desai (Retd.)

About The 8th Central Pay Commission:

- **Definition:**
 - The 8th Central Pay Commission (CPC) is a temporary expert body set up by the Union Government to review and recommend revisions in the salary structure, allowances, and pension benefits of Central [Government employees](#).
- **Establishment:** Announced in **January 2025** and formally constituted after Cabinet approval in **October 2025** to ensure timely implementation from 2026.
- **Composition:**
 - **Chairperson:** Justice Ranjana Prakash Desai (Retd.)
 - **Part-time Member:** Prof. Pulak Ghosh, IIM Bangalore
 - **Member-Secretary:** Pankaj Jain, Petroleum Secretary
- **Tenure:** The Commission will submit its **final report within 18 months** of constitution and may provide **interim recommendations** on specific issues.
- **Coverage:** The [8th CPC](#) covers serving and retired employees of the Central Government, defence forces, [All India Services](#), and Union Territories.
- **Functions and Mandate:**
 - **Pay & Pension Review:** Examine and propose changes in pay scales, allowances, and pension structures.
 - **Fiscal Prudence:** Consider the overall economic situation and maintain budgetary

discipline while recommending pay revisions.

- **Equity Across Sectors:** Ensure parity between Central services, [PSUs](#), and private sector employees in terms of emoluments and working conditions.
- **State Finances Impact:** Evaluate how its recommendations affect State Government finances and ensure coordinated implementation.
- **Sustainability of Pensions:** Address concerns related to non-contributory pension liabilities and their long-term [fiscal implications](#).

Expected Implementation: The recommendations are expected to come into effect from January 1, 2026, continuing the decade-long cycle of pay revisions followed since the First CPC (1946).

DIGILOCKER

Context: The Union Public Service Commission ([UPSC](#)) announced that it will verify candidates' caste, income, and disability certificates through DigiLocker to prevent forged submissions.

- As part of its centenary celebrations, UPSC also launched the **"My UPSC Interview"** anecdote portal for serving and retired officers.



About DigiLocker:

- **What it is?**
 - A flagship initiative under **Digital India** providing citizens with a secure cloud-based platform to access and share authentic digital documents.
- **Ministry:** Developed by the **Ministry of Electronics and Information Technology (MeitY)**.
- **Aim:** To achieve [digital empowerment](#), **paperless governance**, and **faster service delivery** by ensuring access to legally valid digital documents.

Key Features:

1. **Digital Document Wallet:** Stores Aadhaar, PAN, driving license, educational and caste certificates securely in digital form.
2. **Legally Recognised:** Documents are considered **equivalent to originals** under Rule 9A of IT Rules, 2016.
3. **Citizen-Centric:** Provides access to documents

anytime, anywhere with user consent for sharing.

4. **Efficiency:** Enables **real-time verification** directly from issuing authorities, cutting delays and reducing fraud.
5. **Paperless Governance:** Lowers administrative overheads and promotes sustainable, eco-friendly record-keeping.

About [My UPSC Interview Portal](#):

- **What it is?**
 - A new initiative launched during UPSC's centenary year inviting **serving and retired civil servants** to share their **interview experiences**.
- **Aim:** To build a repository of real-life anecdotes for aspirants, enhance **transparency** in recruitment, and **preserve institutional memory**. Selected entries will be published in 2026 as part of the centenary celebrations.

Local Government

MODEL YOUTH GRAM SABHA INITIATIVE

Context: The Ministry of Panchayati Raj, in collaboration with the Ministry of Education and Ministry of Tribal Affairs, launched the [Model Youth Gram Sabha](#) (MYGS) Initiative in New Delhi to foster democratic leadership.



About [Model Youth Gram Sabha Initiative](#):

What it is?

- The **Model Youth Gram Sabha (MYGS)** is a nationwide initiative aimed at providing students hands-on experience in **grassroots democracy** by simulating the functioning of real **Gram Sabhas**. It encourages civic awareness, leadership, and participatory governance among youth.

Organisation:

- Jointly launched by the **Ministry of Panchayati Raj, Ministry of Education (Department of School Education & Literacy)**, and the Ministry of Tribal

Affairs.

- Supported by Jawahar Navodaya Vidyalayas (JNVs), [Eklavya Model Residential Schools](#) (EMRSs), and State Government Schools.

Aim:

- To nurture democratic leadership among students through experiential and activity-based learning.
- To align with the [National Education Policy](#) (NEP) 2020 in fostering responsible, participative, and community-oriented citizens.

Key Features:

- Implementation across **1,000+ schools** nationwide.
- Integration of **training modules** and a dedicated **MYGS digital portal**.
- Promotes **learning by doing**, teamwork, transparency, and decision-making through mock [Gram Sabha](#) sessions.
- Plans to extend the model to urban areas through **Model Ward Sabhas** for city students.

Significance:

- Connects education with [governance](#), making students active participants in democracy.
- Strengthens grassroots awareness and civic responsibility in youth.

Judiciary

APPOINTMENT OF CHIEF JUSTICE OF INDIA

Context: Chief Justice Bhushan Ramakant Gavai has formally recommended Justice Surya Kant, the senior-most [Supreme Court judge](#), to succeed him as the 53rd Chief Justice of India (CJI).



About [Appointment of Chief Justice of India](#):

What it is?

- The Chief Justice of India (CJI) is the head of the Supreme Court and the Judiciary of India, responsible for judicial administration, allocation of cases, and upholding constitutional values.

Constitutional Article: The appointment of the CJI is governed by [Article 124\(2\)](#) of the **Indian Constitution**, which states that the President shall appoint every Judge of the Supreme Court after consultation with such Judges of the Supreme Court and of the High Courts as deemed necessary.

Process of Appointment:

- **Initiation by the Law Minister:** At least **one month before the retirement** of the incumbent CJI, the **Union Law Minister** seeks the recommendation of the outgoing CJI for the appointment of the next [Chief Justice of India](#).
- **Seniority Principle:** Traditionally, the **senior-most Judge of the Supreme Court** deemed fit for the office is recommended as the next CJI. However, if there are concerns about fitness or integrity, the outgoing CJI consults other judges as per **Article 124(2)**.
- **Recommendation Transmission:** The [CJI's recommendation](#) is submitted by the Law Minister to the **Prime Minister**, who then **advises the President** to make the appointment.
- **Presidential Appointment:** The **President of India** formally appoints the CJI through a **warrant under seal**, following which the appointee takes oath before the President.
- **Convention and Collegium Role:**
 - While the [collegium system](#) (CJI + four senior-most judges) primarily handles appointments of other judges, it indirectly reinforces the seniority norm in the CJI's selection.
 - The process ensures **institutional continuity**, merit consideration, and balance between executive consultation and judicial independence.

Key Principles Underlying the Appointment:

- **Seniority and Merit:** The senior-most judge is appointed, maintaining institutional stability.
- **Consultative Process:** Based on conventions, not codified law, ensuring judicial input.
- **Executive Approval:** President acts on the advice of the [Council of Ministers](#), preserving constitutional propriety.

Welfare schemes

PM SHRI SCHEME

Context: Kerala, after long opposing the [PM SHRI scheme](#) over its links with NEP-2020, has now agreed to sign the MoU with the Centre to avail ₹1,500 crore in pending Samagra Shiksha Abhiyan (SSA) funds.



About PM SHRI scheme:

What it is?

- A Centrally Sponsored Scheme launched to upgrade 14,500 schools into model institutions that demonstrate best practices under the [National Education Policy](#) (NEP) 2020, integrating technology, sustainability, and inclusivity.

Launched in: September 2022 by the Ministry of Education, Government of India.

Implemented by: Jointly by the Department of School Education & Literacy (MoE) with participation from States/UTs, Kendriya Vidyalaya Sangathan, and Navodaya Vidyalaya Samiti.

Objective:

- To provide high-quality, holistic, and [skill-based education](#) through experiential learning; align school infrastructure and pedagogy with NEP 2020 and serve as “lighthouse schools” for others to emulate.

Funding Pattern:

- **Total Outlay:** ₹27,360 crore (2022-27)
- **Centre–State Share:** 60:40 (General States/UTs with legislature); 90:10 (NE & Himalayan States, J&K); 100% Central for UTs without legislature

Key Features:

- **Infrastructure Upgrade:** Smart classrooms, computer labs, integrated science labs, skill labs, and [Atal Tinkering Labs](#).
- **Green Initiatives:** Emphasis on solar power, rainwater harvesting, and waste management for eco-friendly campuses.
- **Competency-Based Learning:** Shift from rote methods to inquiry-driven, experiential pedagogy.
- **Holistic Assessment:** Continuous, competency-linked evaluation instead of exam-centric grading.
- **Teacher Empowerment:** Dedicated modules for digital pedagogy and professional growth.
- **Inclusive Education:** Special facilities for barrier-free access, [gender equity](#), and multilingual learning.
- **Selection Process:** Competitive challenge-mode through UDISE+ data, field verification, and expert committee approval.

Miscellaneous

INFORMATION TECHNOLOGY (INTERMEDIARY GUIDELINES AND DIGITAL MEDIA ETHICS CODE) AMENDMENT RULES, 2025

Context: From November 1, 2025, only officials of the rank of Joint Secretary or Director General of Police (DGP) can order the removal of online content under the new Information Technology (Intermediary Guidelines and [Digital Media Ethics Code](#)) Amendment Rules, 2025.



About [Information Technology \(Intermediary Guidelines and Digital Media Ethics Code\) Amendment Rules, 2025](#):

What it is?

- A new amendment to the **IT Rules, 2021**, notified by the **Ministry of Electronics and Information Technology (MeitY)**, to strengthen online content regulation, enhance transparency, and address the emerging challenges of AI-generated and deepfake content.

Aim:

- To ensure that content moderation orders are issued **only by senior officials**, making the process **lawful, proportionate, and accountable**, while also promoting [responsible AI use](#) through mandatory **labelling and identification** of synthetic media.

Key Features:

- Authorized officers:** Only **Joint Secretary** or **DGP**-rank officers can issue takedown requests.
- Legal justification:** Every order must include a **clear statutory basis**, reference to **specific legal provisions**, and detailed **URLs or identifiers** of the targeted content.
- Review mechanism:** All takedown actions will undergo monthly review by a secretary-level officer to ensure legality and proportionality.
- AI-generated content regulation:** Introduces definition of **"synthetically generated information"** — any content created or altered algorithmically to appear real.

- Labelling of deepfakes:** Platforms must embed **visible labels or metadata** on AI-generated visuals and audios covering at least **10% of surface or duration**.
- Platform accountability:** Significant [Social Media Intermediaries](#) (SSMIs) must obtain **user declarations** during upload and use **automated tools** to detect synthetic content.
- Due diligence obligations:** Platforms violating these norms will be deemed **non-compliant** under the [IT Act, 2000](#).

Significance:

- Enhances transparency and checks misuse of content takedown powers.
- Builds trust in digital governance by aligning with principles of necessity and proportionality.
- Addresses deepfake threats, protecting citizens from identity misuse, misinformation, and electoral manipulation.

THE SCHEME FOR INNOVATION AND TECHNOLOGY ASSOCIATION WITH AADHAAR (SITAA)

Context: The Unique Identification Authority of India ([UIDAI](#)) has launched the Scheme for Innovation and Technology Association with Aadhaar (SITAA) to boost Aadhaar authentication security and [counter deepfakes](#), spoofing, and biometric fraud.



About [The Scheme for Innovation and Technology Association with Aadhaar \(SITAA\)](#):

- What It Is?**
 - SITAA is an innovation-driven collaboration program by UIDAI that brings together startups, academia, and industry partners to develop cutting-edge technologies to secure and strengthen Aadhaar-based authentication systems against emerging digital threats.
- Launched By:** The scheme was launched by the Unique Identification Authority of India (UIDAI).
- Aim:**

- To fortify India's [digital identity ecosystem](#) against deepfake and presentation attacks.
- To foster indigenous R&D in biometric, AI, and cybersecurity technologies.
- To align Aadhaar innovation with the vision of [Atmanirbhar Bharat](#) and global data security standards.
- **Key Features:**
 - **Collaborative Framework:** Integrates efforts of startups, research institutes, and industries to co-develop scalable Aadhaar solutions.
 - **Three Innovation Challenges:**
 - **Face Liveness Detection:** AI-driven software development kit (SDK) SDKs to detect spoofing via photos, videos, or masks.
 - **Presentation Attack Detection (PAD):** [AI/ML-based tools](#) for real-time detection of fake biometric inputs.
 - **Contactless Fingerprint Authentication:** SDKs enabling secure fingerprint recognition through smartphones or low-cost devices.
- **Functions of SITAA:**
 - **Foster Innovation:** Encourages startups, academia, and industry to co-develop advanced biometric and AI-based solutions for [Aadhaar authentication](#).
 - **Enhance Security:** Develops technologies to detect and prevent deepfakes, spoofing, and presentation attacks, ensuring robust identity verification.
 - **Promote Collaboration:** Builds a national innovation ecosystem by linking UIDAI with MeitY Startup Hub and [NASSCOM](#) for mentorship, funding, and global outreach.
 - **Strengthen Digital Infrastructure:** Supports creation of indigenous, scalable, and privacy-compliant authentication systems, reinforcing India's digital public infrastructure.
- **Significance:**
 - Strengthens Aadhaar's defence against [cyber and biometric fraud](#), including deepfakes and spoofing.
 - Promotes innovation-led public security, advancing [India's digital public infrastructure](#).

inclusion, accessibility, and empowerment of persons with disabilities (PwDs).



About International Purple Fest 2025:

- **What is the International Purple Fest 2025?**
 - A global inclusion festival dedicated to celebrating diversity and promoting accessibility for persons with disabilities.
 - The 2025 edition was held in Goa from October 9–12, focusing on the theme “Inclusion as a Movement.”
 - Serves as a platform for dialogue, policy innovation, and cultural expression that recognizes PwDs as equal contributors to society.
- **Hosted by:** Department for Empowerment of Persons with Disabilities ([DEPwD](#)), Government of India.
- **Organised by:**
 - Office of the State Commissioner for Persons with Disabilities, Government of Goa.
 - In collaboration with Ministry of Social Justice & Empowerment and United Nations India.
- **Aim:**
 - To mainstream disability inclusion in governance, education, and employment.
 - To foster [empathy](#)-based awareness and encourage universal design in public spaces.
- **Major Initiatives Launched:**
- **IELTS Training Handbook for Persons with Disabilities:**
 - Developed by Believe in the Invisible (BITI) with DEPwD support.
 - First inclusive self-study and teaching manual for IELTS aspirants with visual, hearing, or locomotor disabilities.
 - Includes ISL-linked videos, grammar guidance, time management tips, and accessible practice modules.
- **Recognition of Prior Learning (RPL) in ISL Interpretation**
 - Conducted by Indian Sign Language Research and Training Centre (ISLRTC) under DEPwD.

INTERNATIONAL PURPLE FEST 2025

Context: The [International Purple Fest 2025](#) was recently concluded in Goa, showcasing India's commitment to

- Certified **SODA (Siblings of Deaf Adults)** and **CODA (Children of Deaf Adults)**, strengthening the pool of skilled ISL interpreters.
- First batch trained in August 2025; certificates to be awarded on December 3, 2025 (International Day of PwDs).
- **Specialized Basic Training Programme in ASL & BSL**
 - Launched by **ISLRTC** to train Indian interpreters in **American and British Sign Languages**.
 - Enhances [cross-cultural communication](#) and international job opportunities for Indian ISL professionals.

- **Poorna Swaraj Day (1930)**: All RSS shakhas observed **26 January 1930** as Independence Day, hoisting the **saffron flag** instead of the Congress tricolour.
- **Relief during Partition (1947)**: RSS organised **refugee camps in Punjab, Delhi, and Bengal** to shelter and rehabilitate displaced Hindus.
- **Dialogue with Gandhi (Sept 1947)**: Gandhi praised RSS discipline, simplicity, and service spirit while cautioning against its **exclusivist Hindu-only nationalism**.
- **Post-Independence Transition (1948–51)**: After Gandhi's assassination (by Nathuram Godse, linked to RSS/Hindu Mahasabha), the RSS was banned. To channel political aspirations, **Golwalkar supported the creation of Bharatiya Jana Sangh (1951)** under Syama Prasad Mookerjee.

RASHTRIYA SWAYAMSEVAK SANGH

Context: The Rashtriya Swayamsevak Sangh ([RSS](#)), the ideological parent of the BJP, is celebrating its centenary year in 2025.



[About Rashtriya Swayamsevak Sangh:](#)

What it is?

- A socio-cultural organisation promoting the idea of a Hindu Rashtra.
- Known as the ideological fount of the Sangh Parivar.

Established in: Founded on **27 September 1925** by **K.B. Hedgewar**, a physician from Nagpur.

Headquarters: Nagpur, Maharashtra.

Aims:

- Foster unity among Hindus by transcending caste, regional and sectarian divides.
- Promote discipline, service, and cultural revival.
- Reclaim the idea of Akhand Bharat and establish India as a Vishwa Guru (global leader).

Key Contributions to India's Freedom Movement:

- **Civil Disobedience Movement (1930)**: Hedgewar and several swayamsevaks joined the Jungle Satyagraha against British forest laws in Central Provinces, though RSS officially stayed away.

[International Relations](#)

INDIA-UK CONNECTIVITY AND INNOVATION CENTRE (CIC)

Context: India and the United Kingdom jointly launched the India–UK Connectivity and Innovation Centre (CIC) to advance cooperation in digital technologies, [6G research](#), and secure communications, with an investment of £24 million (₹282 crore) over four years.



[About India–UK Connectivity and Innovation Centre \(CIC\):](#)

What it is?

- The India–UK CIC is a bilateral research and innovation platform aimed at developing next-generation telecom technologies through joint academic, industrial, and governmental collaboration. It will serve as a hub for cutting-edge R&D, testing, and market deployment in [digital connectivity](#).

Nations and Organisations Involved:

- **Countries:** India and the United Kingdom
- **Implementing Agencies:**
 - India – **Department of Telecommunications (DoT)**, Ministry of Communications

- UK – **Department of Science, Innovation and Technology (DSIT)**
- Supported by **UK Research and Innovation (UKRI)** under the [UK-India Technology Security Initiative](#)

Aim: To drive innovation in secure, inclusive, and resilient digital communications, while shaping the global ecosystem for 6G and AI-enabled telecom systems, aligned with the India-UK 2035 Vision.

Key Features:

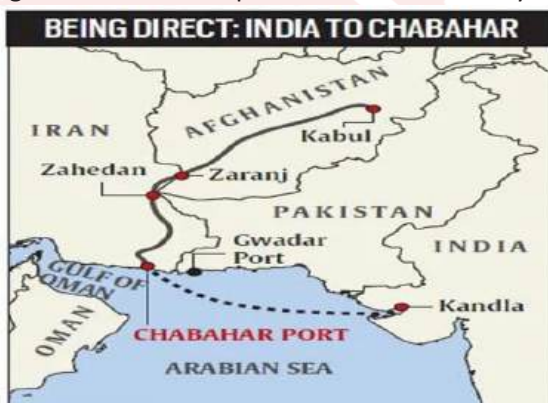
- **Joint Funding:** £24 million (approx. ₹282 crore) committed equally by both nations for 4 years.
- **Focus Areas:**
 1. **AI in Telecom:** Network optimization and intelligent service delivery.
 2. **Non-Terrestrial Networks (NTNs):** Satellite and airborne systems for rural connectivity.
 3. **Telecom Cybersecurity:** Secure, interoperable, and open communication infrastructure.
- **Collaborative Research:** Links university research with lab testing and pilot trials.
- **Joint Testbeds:** Establishes shared facilities for real-world application of emerging technologies.
- **Standards Development:** Encourages [global interoperability](#) through participation in international standard-setting bodies.

Significance:

- **Enhances bilateral digital cooperation** and strengthens India-UK innovation corridor.
- **Accelerates 6G readiness** and contributes to global telecom standards.
- **Promotes digital inclusion** by extending connectivity to remote areas via NTNs.

INDIA GRANTED US SANCTIONS WAIVER FOR CHABAHAR PORT

Context: The United States has granted India a six-month sanctions waiver for operating the Chabahar Port in [Iran](#), allowing continued development and trade activity.



About India Granted US Sanctions Waiver for Chabahar Port:

What it is?

- The Chabahar Port is a strategic seaport in southeastern Iran on the Gulf of Oman, developed jointly by India and Iran to facilitate trade with Afghanistan and [Central Asia](#) while bypassing Pakistan.
- It consists of two main terminals — **Shahid Beheshti and Shahid Kalantari** — with multiple berths for cargo handling.

Located in:

- The port is situated in Chabahar city, Sistan and Baluchistan Province, Iran.
- It lies about 170 km west of Pakistan's [Gwadar Port](#) and serves as Iran's only oceanic port with direct access to the Indian Ocean.

History:

- Originally proposed by Iran's Shah in **1973**, but construction began after the **1979 Iranian Revolution** and the **Iran-Iraq War (1980-88)**.
- India and Iran signed an agreement in **2003** to jointly develop the port; however, sanctions delayed progress.
- In **2016**, India, Iran, and Afghanistan signed a [Trilateral Transit Agreement](#), giving India rights to develop and operate two berths at Shahid Beheshti Terminal.
- India formally took over operations in **December 2018** through **India Ports Global Ltd. (IPGL)**.

Features:

- Equipped with **container terminals, cargo-handling cranes, and modern logistics facilities**.
- Serves as a **key node** for the [International North-South Transport Corridor \(INSTC\)](#), linking India to **Russia and Europe** via Iran and Central Asia.
- Offers a **strategic alternative** to Pakistan's Karachi and Gwadar ports for India-Afghanistan trade.

Significance to India:

- Bypasses Pakistan to provide India direct land-sea access to Afghanistan and Central Asia for trade and aid.
- Strengthens India's presence in the Eurasian connectivity network and counters China's influence via the [China-Pakistan Economic Corridor \(CPEC\)](#).

Current Affairs

INTERNATIONAL CIVIL AVIATION ORGANIZATION (ICAO)

Context: India has been re-elected to Part II of the [ICAO](#)

Council (2025–2028) during the 42nd ICAO Assembly in Montreal.



About International Civil Aviation Organization (ICAO):

What it is?

- A **specialized UN agency** facilitating global cooperation in civil aviation.
- Provides a framework for **safe, secure, and sustainable international air transport**.

Established in:

- **1944**, under the [Chicago Convention on International Civil Aviation](#).
- **Headquarters:** Montreal, Canada.
- **Membership:** 193 States.

Aim:

- Develop and harmonize international civil aviation standards.
- Ensure safety, security, environmental protection, and fair growth of global aviation.
- Promote equitable air connectivity and no country left behind approach.

Functions:

- **Standard-Setting:** Frames **SARPs** (Standards and Recommended Practices).
- **Governance:** ICAO Council (36 members) elected every three years by Assembly.
- **Strategic Function:**
 - **Standard-Setting:** Issues **SARPs** (Standards and Recommended Practices).
 - **Safety Oversight:** Implements the [Global Aviation Safety Plan \(GASP\)](#).
 - **Air Navigation Efficiency:** Enhances infrastructure and capacity.
 - **Security & Facilitation:** Strengthens aviation and border security.
 - **Economic Development:** Supports harmonised air transport frameworks.
 - **Environmental Protection:** Promotes sustainable [aviation fuels](#) and climate-friendly practices.

India and ICAO:

- **Founding member (1944)** with **uninterrupted presence on Council for 81 years**.
- Actively contributes to policy, regulation, and aviation standards.
- Reaffirms commitment to safety, security, innovation, and equitable global connectivity.

UNITED NATIONS (UN)

Context: Today, October 24, 2025, marks the celebration of United Nations Day and the 80th anniversary of the UN's establishment.

- The day commemorates the entry into force of the [UN Charter in 1945](#), reaffirming global commitment to peace, human rights, and sustainable development



United Nations

Peace, dignity and equality
on a healthy planet

About United Nations (UN):

What it is?

- The United Nations (UN) is an intergovernmental organization established to promote peace, security, human rights, and development across the world. It currently comprises 193 member states, making it the most inclusive global body.

History:

- The idea was first conceived during **World War II**, with the term "United Nations" coined by **U.S. President Franklin D. Roosevelt** in 1942.
- The **UN Charter** was signed on **June 26, 1945**, at the **San Francisco Conference** by 50 nations and came into force on **October 24, 1945**.
- The first **Secretary-General** was **Trygve Lie** of Norway.

- **Established in:** 1945, following the devastation of World War II, replacing the failed League of Nations to prevent future conflicts and promote global cooperation.

Aim:

- Maintain international peace and security through dialogue and collective action.
- Foster economic and social development via [sustainable development goals](#) (SDGs).
- Uphold [human rights](#) and international law.
- Deliver humanitarian assistance in crises.

Functions:

- **Peacekeeping and Security:** Deploys

peacekeeping missions in 11 regions (as of 2024).

- **Development Agenda:** Implements Sustainable Development Goals (SDGs) to end poverty and protect the planet by 2030.
- **Humanitarian Relief:** Through agencies like [UNICEF](#), WFP, and UNHCR, provides aid to millions affected by conflict and climate disasters.
- **Global Governance:** Oversees international treaties, human rights conventions, and environmental protocols.
- **Coordination Mechanism:** Works through six main organs — General Assembly, Security Council, [ECOSOC](#), ICJ, Secretariat, and Trusteeship Council.
- **Unique Facts:**
 - **Funding:** 72% of its revenue comes from **member-state contributions**, with the **U.S., China, and Japan** being top funders.
 - India, on the other hand, contributed to 0.2088 per cent of the total UN fundings in 2024-25.
 - **Official Languages:** Arabic, Chinese, English, French, Russian, and Spanish.
 - **Headquarters:** Located in **New York City, USA**.
 - **Nobel Peace Laureate:** The UN and its agencies have collectively received the Nobel Peace Prize 12 times.
 - **Recent Member:** [South Sudan](#) (2011) became the UN's 193rd member.

PAK-AFGHAN BORDER DISPUTE

Context: Tensions have sharply escalated between Pakistan and Afghanistan after cross-border airstrikes and retaliatory fire along the [Durand Line](#), reviving one of South Asia's oldest border disputes.



About [Pak-Afghan Border Dispute](#):

What it is?

- The Durand Line is a 2,640 km-long border demarcated in 1893 between British India and Afghanistan by Sir Mortimer Durand and Emir Abdur Rahman Khan.
- Intended as an administrative boundary, it split the [Pashtun tribal](#) heartland, dividing families, ethnic communities, and trade routes that had existed for centuries without borders.

Origin of the Clash:

- The line was accepted by Abdur Rahman under British pressure but was **never recognised as a permanent international boundary** by later Afghan governments.
- When **Pakistan was created in 1947**, Afghanistan **rejected the Durand Line**, claiming the right to unify Pashtun regions within Pakistan's northwest.
- Afghanistan even **voted against Pakistan's admission to the United Nations**, marking the start of a long-standing territorial and ethnic dispute.

Historical Timeline:

- **1947–61:** Repeated breakdowns of diplomatic ties over the "Pashtunistan" issue.
- **1979–89:** The **Soviet invasion of Afghanistan** turned the border into a **Cold War battleground**, with Pakistan hosting millions of Afghan refugees and mujahideen.
- **1990s:** Pakistan-backed [Taliban rise to power](#), worsening Afghan suspicions of Pakistani interference.
- **2001–2021:** post - 9/11, both sides accused each other of harbouring terrorists — Pakistan sheltering the **Afghan Taliban**, and Afghanistan hosting the **Tehreek-i-Taliban Pakistan (TTP)**.
- **2017 onwards:** Pakistan built a **border fence**, which Kabul protested as a violation of sovereignty.
- **2025:** The dispute reignited after Pakistan's **airstrikes on Afghan provinces** targeting TTP militants, followed by Afghan retaliation.

Key Features of the Dispute:

- The **Durand Line** divides **Pashtun tribes**, creating deep ethnic and cultural fault lines.
- Frequent **border skirmishes**, refugee influx, and militant movements make the area volatile.
- Both nations use [cross-border militancy](#) as leverage, complicating peace efforts.
- The issue symbolizes **colonial legacy and mutual mistrust**, with no formal border agreement post-1947.

Implications for India:

- **Strategic Leverage:** India gains diplomatic space as the Pakistan–Afghanistan standoff weakens Islamabad's influence in the region.
- **Regional Stability:** Instability along the Durand Line

threatens broader South Asian security, affecting India's outreach to Central Asia via [Chabahar Port](#) and INSTC routes.

- **Counterterrorism:** A destabilized frontier risks spillover of extremist networks, including those hostiles to India.

THE NEW SEVILLA FORUM ON DEBT

Context: The New Sevilla Forum on Debt was launched at the 16th United Nations Conference on Trade and Development ([UNCTAD16](#)) in Geneva.



About The New Sevilla Forum on Debt:

- **What it is?**
 - A Spanish-led multilateral platform supported by UNCTAD and [UN DESA](#) to promote fair, transparent, and sustainable solutions to the sovereign debt crisis.
- **Launched in:** Announced at UNCTAD16 in Geneva as part of the [Sevilla Platform for Action](#), following the outcomes of the **Fourth International Conference on Financing for Development (FfD4)**.
- **Aim:** To sustain global dialogue on debt reform, strengthen responsible borrowing and lending practices, and advance reforms in the global debt architecture.
- **Features:**
 - Inclusive forum involving governments, creditors, civil society, and experts.
 - Tracks implementation of debt initiatives agreed in Sevilla.
 - Provides technical support for predictable and equitable debt management.
 - Strengthens North–South cooperation on [debt sustainability](#).
- **Significance:** It acts as a bridge between borrowers and creditors, fostering long-term systemic reforms in global finance and ensuring fairer debt governance for developing economies.

About United Nations Conference on Trade and Development (UNCTAD):

- **What it is?**

- A **permanent intergovernmental body** of the United Nations that promotes integration of developing countries into the global economy through trade, finance, and sustainable development.
- **Launched in:** Established in **1964**, headquartered in **Geneva, Switzerland**.
- **Aim:** To help developing nations access the benefits of globalization fairly, strengthen economic resilience, and support [sustainable development goals](#).
- **Functions:**
 - Provides research and policy analysis on trade, finance, and investment.
 - Facilitates global consensus-building on equitable trade policies.
 - Delivers technical assistance for capacity-building and debt management.
 - Monitors progress on Financing for Development and the 2030 Agenda.
- **Role:** Acts as a key [UN platform](#) linking trade, investment, and technology with inclusive and sustainable growth, ensuring developing countries gain equitable participation in the global economy.

UNITED NATIONS GLOBAL GEOSPATIAL INFORMATION MANAGEMENT FOR ASIA AND THE PACIFIC (UN-GGIM-AP)

Context: India has been elected as the Co-Chair of the United Nations Global Geospatial Information Management for Asia and the Pacific ([UN-GGIM-AP](#)) for a three-year term (2025–2028).



About United Nations Global Geospatial Information Management for Asia and the Pacific (UN-GGIM-AP):

- **What It Is?**
 - The UN-GGIM-AP is one of the five regional committees of the United Nations Committee of Experts on [Global Geospatial Information Management](#) (UN-GGIM).
 - It coordinates regional efforts to promote

geospatial governance, data sharing, and [sustainable development](#) through mapping and information systems.

- **Established In:**

- Originally set up in **1995** as the Permanent Committee on GIS Infrastructure for Asia and the Pacific (PCGIAP).
- Rebranded as **UN-GGIM-AP** in **2012** following the creation of UN-GGIM in 2011, integrating regional geospatial initiatives under the [UN](#) umbrella.

- **Term and Membership:**

- Represents **56 national geospatial authorities** from countries across [Asia and the Pacific](#).
- India's Co-Chair term will run **till 2028**, reflecting its growing role in shaping global geospatial policy and data ecosystems.

- **Aim:**

- To maximize the social, economic, and environmental value of geospatial data through regional collaboration and innovation.
- To strengthen [spatial data infrastructure](#) (SDI), enhance policy frameworks, and facilitate data-driven decision-making for achieving the SDGs.

- **Key Functions:**

- **Capacity Building:** Promotes knowledge exchange, training, and technical assistance among member states.
- **Regional Cooperation:** Facilitates **cross-border geospatial initiatives** and integration of national systems.
- **Policy Guidance:** Supports the formulation of [geospatial governance](#) standards and policy harmonization.
- **Sustainable Development Support:** Aligns geospatial information management with climate action, disaster management, and urban planning.
- **Partnership with ESCAP:** Since **2018**, the **UN-ESCAP Secretariat** supports UN-GGIM-AP operations to strengthen institutional capacity and equitable dissemination of data.

INDIA ELECTED FOR UNITED NATIONS HUMAN RIGHTS COUNCIL (UNHRC)

Context: India has been elected unopposed to the United Nations Human Rights Council ([UNHRC](#)) for the 2026–2028 term, marking its seventh tenure on the global body.



About India Elected for United Nations Human Rights Council (UNHRC):

- **What it is?**

- The UNHRC is the **principal intergovernmental body** within the **United Nations system** responsible for promoting, protecting, and monitoring human rights across the world.

- **Established in:** Created in **2006** by the **UN General Assembly**, it replaced the former UN Commission on Human Rights to strengthen the global human rights framework.

- **Headquarters:** Located at the United Nations Office in Geneva (UNOG), Switzerland.

- **Aim:** To promote universal respect for [human rights](#), address violations, and make recommendations for their protection through international cooperation and dialogue.

- **History:**

- Formed under **UNGA Resolution 60/251 (2006)** to enhance credibility and effectiveness of human rights monitoring.
- It works in collaboration with the [Office of the High Commissioner for Human Rights](#) (OHCHR).

- **Functions:**

- **Reviews human rights** performance of all UN Member States through the Universal Periodic Review (UPR) mechanism.
- **Appoints Special Rapporteurs and Working Groups** to monitor thematic or country-specific issues.
- **Adopts Resolutions** addressing urgent crises and thematic challenges such as freedom of speech, education, or gender rights.
- **Authorizes Fact-Finding Missions and Commissions of Inquiry** to investigate violations globally.
- Provides a **platform for dialogue** between governments, NGOs, and civil society on emerging human rights concerns.

- **Process of Election:**

- Comprises **47 Member States**, elected

directly by [the UN General Assembly](#) through a **secret ballot**.

- Members serve **three-year terms**, with **one-third of seats renewed annually**.
- Membership is **distributed regionally**: Africa (13), Asia-Pacific (13), Latin America & Caribbean (8), Western Europe (7), Eastern Europe (6).
- States can serve a **maximum of two consecutive terms**.
- **India and the HRC:**
 - India has served on the Council **seven times** (2006–2007, 2011–2014, 2014–2017, 2017–2020, 2022–2024, and now 2026–2028).
 - It has actively contributed to global discussions on [inclusive development](#), digital rights, and gender equality.

THE ENTRY/EXIT SYSTEM (EES)

Context: From October 12, 2025, the European Union (EU) will begin implementing its long-delayed biometric Entry/Exit System (EES), marking a major change in how non-EU citizens, including British travellers, enter and leave the [Schengen area](#).



[About The Entry/Exit System \(EES\):](#)

What It Is?

- The EES is a biometric border control system designed to digitally record the entry and exit of all non-European Union citizens visiting the Schengen Area.
- It replaces the manual passport-stamping process with automated electronic verification of travellers' identities.

Launched By: Implemented by the [European Union](#) (EU) under its Smart Borders initiative.

Aim:

- To streamline border procedures and enhance efficiency through automation.
- To combat illegal migration and identify individuals

who overstay beyond the 90-day limit in any 180-day period.

- To strengthen the security and integrity of the Schengen Zone's external borders.

Key Features:

- **Comprehensive Coverage:** Applies to all non-EU nationals, including UK citizens, entering 27 Schengen states plus Iceland, Norway, Switzerland, and Liechtenstein.
- **Gradual Rollout:** Full implementation expected by April 10, 2026, ensuring minimal [border disruption](#).
- **Integration with Future Systems:** Prepares for ETIAS (European Travel Information and Authorisation System) set to launch in 2026.
- **Centralised Database:** Stores biometric data securely for faster, accurate identity verification.
- **No Additional Cost:** Registration under EES is free for travellers.

Significance:

- **Border Modernisation:** Marks a shift from manual to digital border management, improving accuracy and efficiency.
- **Security Enhancement:** Strengthens the EU's capacity to track overstays, detect fraud, and identify potential threats.

THE INTERNATIONAL COMMITTEE OF THE RED CROSS (ICRC)

Context: The International Committee of the Red Cross (ICRC) has been playing a key role in the [Israel-Hamas hostage](#) and prisoner exchanges (2023–2025).



[About The International Committee of the Red Cross \(ICRC\):](#)

What It Is?

- A global humanitarian network of over 80 million members and volunteers, dedicated to protecting human life and dignity during war, disaster, and crisis.
- **Established In:** **1863**, by **Henry Dunant**, a Swiss humanitarian, after witnessing the horrors of the

Battle of Solferino (1859).

- **Aim:** To provide neutral, impartial, and independent humanitarian assistance to those affected by armed conflict and natural disasters, ensuring adherence to International Humanitarian Law (IHL).

Historical Background:

- Founded as the **International Committee of the Red Cross (ICRC)** in **Geneva, Switzerland**, it marked the start of organized [humanitarian response](#) in wartime.
- The idea evolved into a **global movement**, leading to the establishment of the **Red Cross and Red Crescent emblems** as symbols of protection and neutrality.
- In **2005**, the **Red Crystal emblem** was added for use by countries not using the cross or crescent for cultural or political reasons.

Structure and Key Components

Component	Role and Function
ICRC (International Committee of the Red Cross)	Coordinates relief in conflict zones, ensures respect for IHL, protects detainees, assists refugees, and facilitates humanitarian access.
IFRC (International Federation of Red Cross and Red Crescent Societies)	Umbrella organization for 191 National Societies , managing global disaster response and promoting community resilience.
National Red Cross and Red Crescent Societies	Operate within their own countries, assist governments in humanitarian efforts, and support both domestic and international relief missions.

Functions and Significance:

1. **Humanitarian Protection:** Safeguards civilians, detainees, and displaced persons in conflict zones.
2. **Medical and Relief Aid:** Provides healthcare, shelter, and emergency supplies in war and disaster situations.
3. **Restoring Family Links:** Reunites families separated by conflict or disaster through tracing services.
4. **Promotion of International Humanitarian Law (IHL):** Advocates for compliance with the [Geneva Conventions](#) and humane treatment of war victims.
5. **Neutral Mediation:** Acts as a trusted intermediary in hostage exchanges and ceasefire arrangements, as seen in **Gaza 2025**.

SHARM EL-SHEIKH PEACE SUMMIT

Context: Union Minister Kirti Vardhan Singh represented India at the [Sharm El-Sheikh](#) Gaza Peace Summit held in Egypt, as the special envoy of Prime Minister of India.



About [Sharm El-Sheikh Peace Summit](#):

- **What is the Sharm El-Sheikh Peace Summit??**
 - It is an international diplomatic conference convened to consolidate the ceasefire agreement between Israel and Hamas and outline a framework for lasting peace in Gaza and the broader [Middle East region](#).
- **Host Nations:** Arab Republic of Egypt and the United States of America.
- **Joint Chairs:** President Donald Trump (USA) and President Abdel Fattah el-Sisi (Egypt).
- **Aim:**
 - **Ceasefire Implementation:** Ensure the smooth execution of the ceasefire between [Israel and Hamas](#) announced in early October 2025.
 - **Humanitarian Access:** Facilitate safe passage of aid, food, and medical relief to Gaza civilians.
 - **Hostage Exchange Oversight:** Oversee the release of Israeli hostages and Palestinian detainees under U.S.-mediated terms.
 - **Stability in West Asia:** Promote regional dialogue and prevent further escalation in the Middle East conflict.
- **Key Features:**
 - **Venue:** Sharm El-Sheikh, Egypt ([Red Sea](#) Resort City).
 - **Participation:** Over 20 world leaders, including UN Secretary-General António Guterres.
 - **Agenda Highlights:**
 - **Supervised hostage swap:** Hamas to release hostages; Israel to free ~250 prisoners and 1,700 detainees.
 - **Reconstruction Plan:** Establishment of an international consortium for post-war [rebuilding of Gaza](#).
 - **Regional Dialogue Mechanism:** Framework to involve Arab nations in future conflict mediation.
 - **Notable Absence:** Israel's PM Benjamin Netanyahu's participation remained uncertain; Hamas declined to attend.
 - **India's Role:** India reiterated its support for peaceful resolution through dialogue,

[humanitarian assistance](#) to Gaza, and reconstruction partnerships.

INTERNATIONAL STABILIZATION FORCE FOR GAZA

Context: The International Stabilization Force for Gaza (ISF) was proposed under U.S. President Donald Trump's [20-point Comprehensive Plan to End the Gaza Conflict](#) (2025).



About International Stabilization Force for Gaza:
What it is?

- The **ISF** is a proposed **multinational security force** intended to maintain stability and oversee security transition in **post-war Gaza**.
- It will function as the **temporary internal security component** of a “technocratic, apolitical Palestinian transitional committee” under U.S. oversight.

Control: The ISF will be controlled and overseen by the United States, under the direct supervision of the “Board of Peace” chaired by U.S. President.

Aim:

- To demilitarize Gaza, prevent the re-emergence of Hamas or armed militias, and create conditions for a transitional Palestinian governance framework.
- To enable phased [Israeli military](#) withdrawal from designated “terror-free” areas of Gaza.

Functions:

1. **Security Oversight:** Maintain law and order in areas vacated by the Israeli Defense Forces (IDF).
2. **Disarmament:** Oversee the confiscation and destruction of Hamas weaponry and block arms smuggling routes.
3. **Training Local Forces:** Build and train a reformed [Palestinian](#) police force to handle future internal security.
4. **Monitoring Compliance:** Set and verify milestones and timelines for demilitarization and withdrawal.
5. **Coordination Role:** Work under a “Board of Peace” chaired by Trump, involving Arab and international partners, but not under the [UN mandate](#).

Significance:

- **Peacekeeping Innovation:** Represents the first non-UN multinational stabilisation model for Gaza’s reconstruction and governance.
- **Regional Balance:** Aims to involve Arab partners while keeping U.S. strategic oversight intact.
- **Conflict De-escalation:** Seeks to break the cycle of violence through structured demilitarization and power transition.

NEW DEFINITION OF PANDEMIC EMERGENCY

Context: The amended International Health Regulations (IHR) entered into force, bringing in a new legal category — pandemic emergency.



About New Definition of Pandemic Emergency:

What it is?

- A **pandemic emergency** is a newly defined sub-category under IHR that applies to **public health emergencies of international concern (PHEIC)** but with a heightened threshold — when a communicable disease has broad geographic spread, strains health systems, causes major social and economic disruption, and requires rapid, coordinated global action.

2024 Amendments & Changes Made:

- Adopted by **consensus** at the **77th World Health Assembly** through Resolution WHA77.17 in June 2024.
- Entry into force was set for **19 September 2025** for States Parties that accept the amendments.
- The amendments introduced new legal obligations:
 1. The **Director-General (DG)** of WHO may decide if a PHEIC amounts to a **pandemic emergency** (via Article 12).
 2. **National IHR Authorities** must be designated in each country to coordinate implementation across ministries.

3. Introduction of a **Coordinating Financial Mechanism** to assist developing nations in pandemic preparedness.
4. Establishment of a **States Parties Committee** to facilitate implementation (non-punitive oversight).

Key Features:

- **Tiered Alert System:** Pandemic emergency is a higher tier beyond PHEIC, but built on top of it — the event must already meet PHEIC criteria.
- **Broader Triggers:** Requires wide geographic spread, health system overload, socioeconomic disruption, and need for whole-of-society/whole-of-government response.
- **Equity & Solidarity:** Emphasis on fairness in access to medical products, financing support, and collaborative global response.
- **No New Authority Over Sovereignty:** The amendments clarify that [WHO](#) cannot mandate domestic policies (lockdowns, etc.) — countries retain legislative control.
- **Seamless Integration:** It does not replace PHEIC but enriches it; avoids duplicative procedures by integrating decision-making.

Significance:

- **Legal Certainty:** Provides a clearer legal framework for when and how a global pandemic can be declared.
- **Faster Response:** Enables earlier mobilization of global resources and coordinated interventions.
- **Support for Developing Nations:** The financial mechanism and obligations facilitate equity in capacity building.

THE NOBEL PEACE PRIZE

Context: The **2025 Nobel Peace Prize** will be declared on **10 October in Oslo**, with thousands of nominations highlighting global peace efforts.



About The Nobel Peace Prize:

What it is?

- One of the six Nobel Prizes established through the will of **Alfred Nobel (1895)**.
- Awarded annually since **1901** for outstanding contributions to peace.
- Carries a **gold medal, diploma, and SEK 11 million (~\$1.2 million)**.

Eligibility:

- Any individual or organisation fulfilling [Nobel's criteria](#):
 - Promoting fellowship among nations.
 - Working for abolition/reduction of standing armies.
 - Advancing peace congresses and global harmony.
- **Nomination Authority:**
 - Heads of state, parliamentarians, government members.
 - University professors (law, history, philosophy, social sciences).
 - Former Nobel laureates.
 - Certain [NGOs](#) and international judges.

Selection Process:

- **Nominations close:** 31 January each year.
- **Committee formation:** 5 members appointed by the **Norwegian Parliament** (reflecting party balance).
- **Evaluation:** Shortlist prepared; assessed by permanent advisers and external experts.
- **Deliberation:** Committee meets monthly; seeks consensus, else majority vote.
- **Decision:** Announced in October; award presented in Oslo on **10 December (Alfred Nobel's death anniversary)**.

Key Features:

- Independent [Norwegian Nobel Committee](#) conducts the selection.
- **Confidentiality rule:** Full nomination lists sealed for **50 years**.
- Prizes may be awarded to **individuals or organisations**.

ZOMBIE DEER DISEASE

Context:

Health officials in Florida have confirmed new cases of [Chronic Wasting Disease](#) (CWD)—popularly known as “Zombie Deer Disease”—marking the state’s second detected instance of the fatal neurological infection in wild deer.



About Zombie Deer Disease:

- **What it is?**
 - o A fatal neurological disorder that affects deer, elk, and moose, caused by abnormal prion proteins that damage the brain and [nervous system](#).
 - o Classified under Transmissible Spongiform Encephalopathies (TSEs) — the same group as mad cow disease (BSE).
- **Origin:**
 - o First detected in Colorado, USA, in the 1960s, it has now spread across 34 U.S. states, including Florida (2023, 2025), Canada, and parts of Europe.
 - o The 2025 detection marks its geographical expansion into the southeastern U.S.
- **Vector (Causative Agent):**
 - o Caused by [infectious prions](#), misfolded proteins that trigger the breakdown of normal brain proteins.
 - o These prions are resistant to heat, radiation, and disinfectants, making them extremely persistent in the environment.
- **Spread Through:**
 - o **Direct animal contact** via saliva, urine, or feces.
 - o **Environmental contamination** from infected carcasses, soil, and plants where prions can survive for years.
 - o **Scavengers and hunters** may spread infection through tools, carcasses, or deer-urine lures.

- o **No human cases reported**, but health agencies urge **caution and limited exposure**.

- **Symptoms:**

- o Drastic weight loss (wasting), unsteady movement, and loss of fear of humans.
- o Drooling, lethargy, blank stares, and abnormal behaviour similar to “zombie-like” movements.
- o [Disease progression](#) is slow but irreversible, leading to death.

- **Treatment and Control:** No vaccine or cure exists; management focuses on **containment and surveillance**.

MAM01 (MONOCLONAL ANTIBODY AGAINST MALARIA)

Context: A new monoclonal antibody named [MAM01](#) has shown strong protective effects against malaria in an early clinical trial by U.S. researchers.



About [MAM01 \(Monoclonal Antibody Against Malaria\)](#):

What it is?

- MAM01 is a novel [monoclonal antibody](#) (mAb) engineered to prevent malaria infection by neutralising the Plasmodium falciparum parasite before it enters the bloodstream.
- It represents a [passive immunisation](#) strategy, distinct from traditional vaccines that trigger an active immune response.

Developed by:

- Created by the University of Maryland School of Medicine’s Center for Vaccine Development and Global Health (CVD), USA.

Aim:

- Designed to provide **immediate and long-lasting protection** against malaria, particularly for **young**

children and [pregnant women](#) in endemic regions.

- Seeks to overcome the limitations of existing malaria vaccines that require **multiple doses and boosters**.

Key Features:

- Targets a conserved region** of the [Plasmodium falciparum](#) **circumsporozoite protein (CSP)** — a critical molecule that enables the parasite to infect liver cells.
- Single-dose administration** offers **months-long protection** with minimal side effects.
- Phase 1 trial** involved 38 malaria-naïve adults aged 18–50 in a **randomised, double-blind, placebo-controlled study**.
- Provided **100% protection at the highest dose**, with no severe adverse reactions reported.
- Demonstrates **dose-dependent efficacy**, showing higher protection with increasing [antibody concentration](#).

Significance:

- A breakthrough approach that could transform malaria prevention, especially in sub-Saharan Africa, where over 600,000 deaths occur annually.
- Contributes to the global health goal of malaria elimination under [WHO's Global Technical Strategy \(GTS\) 2025–2030](#).

INS VIKRANT

Context: Prime Minister of India celebrated Diwali with [Indian Navy](#) personnel onboard INS Vikrant, India's first indigenous aircraft carrier, and lauded the armed forces for their valour and success in [Operation Sindoor](#).



About [INS Vikrant](#):

What it is?

- INS Vikrant (IAC-1) is India's first **indigenously built aircraft carrier**, symbolising the nation's technologi-

cal self-reliance and naval modernization under the Aatmanirbhar Bharat initiative.

- Named after the historic [INS Vikrant](#) that served with distinction during the [1971 Indo-Pak War](#), it embodies India's maritime legacy and strategic aspirations.

Commissioned in:

- Officially **commissioned on 2 September 2022** by Prime Minister at Kochi, marking a milestone in India's defence manufacturing capabilities.

Built by:

- Constructed by Cochin Shipyard Limited (CSL) under the Indian Navy's Indigenous Aircraft Carrier (IAC) programme, designed by the Directorate of Naval Design (DND).

Aim:

- To enhance India's blue-water naval capability, ensuring dominance and surveillance across the [Indian Ocean Region](#) (IOR).
- Strengthen India's sea-based deterrence, power projection, and humanitarian assistance capacities during regional crises.

Key Features:

- Dimensions:** 262 metres long, 62 metres wide, and 18 decks high — roughly equal to two football fields.
- Displacement:** Around **45,000 tonnes**, making it the **largest warship** ever built in India.
- Aircraft Capacity:** Can carry 30 aircraft, including MiG-29K fighter jets, Kamov-31, MH-60R Seahawk helicopters, and indigenous aircraft in the future.
- Crew and Facilities:** Houses **1,600 personnel**, a **16-bed hospital**, and **2,400 compartments**, functioning as a "city at sea."
- Operational Capability:** Achieved full operational clearance in 2024, now part of the Western Naval Command.
- Propulsion:** Powered by **four gas turbines**, enabling speeds of up to **28 knots (52 km/h)**.

FACTS FOR PRELIMS

GENERAL STUDIES – 3

ECONOMY

Industry and Infrastructure

KOYLA SHAKTI DASHBOARD

Context: The Union Minister of Coal and Mines, launched two major digital platforms — the KOYLA SHAKTI Dashboard and the [Coal Land Acquisition, Management, and Payment \(CLAMP\)](#) Portal.



About [KOYLA SHAKTI Dashboard](#):

What it is?

- A Smart Coal Analytics Dashboard (SCAD) developed by the Ministry of Coal as a unified digital platform integrating the entire coal value chain — from mine to market.

Organisation: Developed and maintained by the Ministry of Coal.

Aim: To act as the digital backbone of India's [coal ecosystem](#) by enabling real-time monitoring, data integration, and evidence-based policy formulation for improved operational efficiency.

Key Features:

- **Unified Visibility:** Integrates data from coal production, logistics, and consumption into a single interface.
- **Real-Time Monitoring:** Tracks coal movement through rail, road, and multimodal systems with live analytics.
- **Data-Driven Governance:** Enables predictive analytics for demand forecasting and resource allocation.
- **Incident Response System:** Provides alerts for operational disruptions and supports rapid redressal.

- **Transparency & Accountability:** Displays [KPIs](#) for all stakeholders to ensure open and fair monitoring.

About [CLAMP Portal](#):

What it is?

- The Coal Land Acquisition, Management, and Payment (CLAMP) Portal is a centralized digital solution for managing [land acquisition](#), compensation, and R&R processes in coal-bearing areas.

Aim: To ensure time-bound, transparent, and equitable land management by digitizing records, payments, and inter-agency coordination.

Key Features:

- **End-to-End Digital Workflow:** From uploading land records to final compensation payment.
- **Central Repository:** Maintains updated land ownership and compensation details.
- **Transparency & Accountability:** Reduces human discretion and procedural delays.
- **Integration Across PSUs:** Links coal PSUs, State departments, and district authorities.
- **Citizen-Centric Governance:** Ensures fair and prompt rehabilitation and resettlement.

TRADE WATCH QUARTERLY REPORT

Context: NITI Aayog released the fourth edition of its “Trade Watch Quarterly” report for Q4 of FY 2024–25 in New Delhi.



About [Trade Watch Quarterly Report](#):

What it is?

- A flagship analytical publication by [NITI Aayog](#) that tracks India's quarterly trade performance, covering both merchandise and services sectors.

Published by: NITI Aayog

Aim:

- To provide evidence-based insights on trade patterns, export competitiveness, and sectoral challenges.
- To guide policy interventions for strengthening India's manufacturing base, boosting exports, and enhancing participation in [global value chains](#) (GVCs).

Key Features:

- **Comprehensive Trade Analysis:** Covers trends in merchandise, services, and regional trade; identifies key drivers and bottlenecks.
- **Data-Driven Insights:** Provides region-wise and product-wise trade breakdowns to support policy planning and trade negotiations.

Recent Trade Trends (FY25):

- **Total Trade:** \$1.73 trillion (+6% YoY) — **Exports:** \$823 billion, **Imports:** \$908 billion.
- **Services Exports:** Reached a **record \$387.5 billion**, led by IT, aviation, and financial services.
- **Regional Trends:**
 - **North America** emerged as India's **top export market**, accounting for 25% of exports (+25% YoY).
 - **EU, GCC, and ASEAN** markets showed slower growth.
- **Import Shifts:**
 - **UAE** overtook Russia as **2nd-largest supplier**, mainly due to **gold inflows under CEPA**.
 - Imports from **China** surged on higher demand for **electronics and machinery**.

ELECTRONICS COMPONENTS MANUFACTURING SCHEME (ECMS)

Context: The Government of India has approved the first batch of seven projects worth ₹5,532 crore under the [Electronics Components Manufacturing Scheme \(ECMS\)](#), projected to generate ₹36,559 crore in production.

Multi-layer PCB (Automotive, Consumer Electronics, ICT, Medical Devices, Telecommunication, Aerospace & Defence, Industrial & Manufacturing)		A Multilayer PCB has multiple copper and dielectric layers interconnected with through-hole vias, commonly used in consumer electronics, industrial controls, and automotive systems.
HDI PCB (Consumer Electronics & Wearable Technology, Automotive Electronics, Medical Devices, Telecommunication, Aerospace & Defence)		HDI (High-Density Interconnect) PCBs are advanced versions with microvias, blind/buried vias, via-in-pad, finer tracks, and tighter spacing, enabling compact, high-performance designs for smartphones, tablets, wearables, aerospace, and medical devices.

About [Electronics Components Manufacturing Scheme \(ECMS\)](#):

What it is?

- A flagship initiative under the Ministry of Electronics and Information Technology (MeitY) to strengthen India's component-level manufacturing ecosystem and reduce dependence on imports for key electronic parts.

Launched in:

- Approved by the **Union Cabinet in 2024**, the scheme aims to make India self-reliant in critical electronic components and materials.

Objective: To promote domestic manufacturing of sub-assemblies, bare components, and capital equipment, enhance [domestic value addition \(DVA\)](#), and integrate Indian firms with Global Value Chains (GVCs) in electronics and semiconductors.

Tenure:

- **Turnover-linked incentive:** 6 years (with 1-year gestation).
- **Capex incentive:** 5 years.

Features:

1. **Investment Support:** Offers differentiated turnover-linked, capex, and hybrid incentives to offset manufacturing disabilities.
2. **Target Segments:** Focuses on [PCBs](#), Camera Modules, Copper-Clad Laminates, Polypropylene Films, and capital equipment.
3. **Strategic Impact:** Aims to meet 100% domestic demand for Copper Clad Laminates, 20% for PCBs, and 15% for Camera Modules.
4. **Employment Generation:** Expected to create 91,600 direct jobs and strengthen local R&D capacity.
5. **Complementary Ecosystem:** Works in tandem with [PLI](#) for Electronics and [India Semiconductor Mission \(ISM\)](#) to build an end-to-end manufacturing chain — from devices to materials.

LOGISTICS EXCELLENCE, ADVANCEMENT, AND PERFORMANCE SHIELD (LEAPS) 2025

Context: Union Minister for Commerce and Industry launched the Logistics Excellence, Advancement, and Performance Shield (LEAPS) 2025 at Bharat Mandapam, New Delhi, marking the 4th Anniversary of [PM GatiShakti](#).



About [Logistics Excellence, Advancement, and Performance Shield \(LEAPS\) 2025](#):

What it is?

- LEAPS 2025 is a national benchmarking initiative designed to recognize excellence, innovation, and leadership across India's logistics sector, enhancing its [global competitiveness](#).
- **Launched in:** October 2025, during the **4th Anniversary of PM GatiShakti** celebrations in New Delhi.
- **Published by:** Department for Promotion of Industry and Internal Trade (DPIIT), under the Ministry of

Commerce and Industry, Government of India.

- **Aim:** To **benchmark logistics performance**, celebrate sectoral innovation, and align industry practices with the [National Logistics Policy \(2022\)](#) and **PM GatiShakti's vision** of integrated, sustainable, and resilient infrastructure.
- **Criteria:** Applications are invited under **13 categories** covering air, rail, road, and maritime freight operators; warehousing (industrial and agricultural); **MSMEs, Startups, academic institutions, and e-commerce logistics providers**, promoting diversity and inclusion in logistics excellence.
- **Features:**
 - Promotes [ESG compliance](#), green logistics, and **sustainability goals**.
 - Encourages **collaboration between Government, Industry, and Academia**.
 - Serves as a **national recognition platform** for logistics innovation, efficiency, and technology adoption.
 - Strengthens India's efforts toward [Make in India](#), [Atmanirbhar Bharat](#), and [Viksit Bharat 2047](#).
 - Registration open on the [Rashtriya Puraskar Portal \(awards.gov.in\)](#).

[External Sector and International Institutions \(BOP, FDI, FII, Capital Account, Currency Devaluation, Depreciation, IMF, WB\)](#)

FOREIGN CURRENCY SETTLEMENT SYSTEM

Context: Finance Minister launched the Foreign Currency Settlement System (FCSS) at GIFT City's [International Financial Services Centre](#) (IFSC), enabling real-time settlement of global currency transactions.



[About Foreign Currency Settlement System:](#)
What It Is?

- The FCSS is a real-time payment and settlement mechanism for transactions conducted in foreign currencies (initially in USD) within GIFT IFSC.

- It replaces the older correspondent banking model, which required multiple intermediaries and 36–48 hours to process global transactions.

Regulatory Framework: Under the [Payment and Settlement Systems \(PSS\) Act, 2007](#), and regulated by the International Financial Services Centres Authority (IFSCA).

Operator: CCIL IFSC Ltd., a subsidiary of the Clearing Corporation of India Ltd. (CCIL).

Aim:

- To facilitate seamless, near-instant foreign currency transactions for entities operating in GIFT City.
- To reduce settlement risk, enhance liquidity, and boost India's international financial competitiveness.
- To align GIFT City's financial infrastructure with global best practices and support cross-border trade and investments.

How It Works?

- Under FCSS, each **member bank's IFSC Banking Unit (IBU)** maintains accounts with a [local settlement bank](#).
- Inter-bank foreign currency transfers are **settled locally** within GIFT IFSC, **bypassing multi-leg Nostro account chains** used in overseas settlements.
- The system processes **real-time or near real-time settlements (4–5 seconds)** instead of earlier 2-day lags.
- Operates under **secure regulatory oversight** ensuring compliance, transparency, and stability.

Key Features:

- **Real-time or near real-time settlement** in foreign currencies.
- **Enhanced operational resilience** and liquidity management within IFSC.
- **Lower transaction cost and time**, eliminating dependence on offshore intermediaries.
- **Scalable multi-currency capability** — initially for USD, with plans to include euro, yen, and pound sterling.
- **Integration-ready architecture** to support fintech, digital banks, and [cross-border payment](#) ecosystems.

FOREX RESERVES

Context: India's [foreign exchange reserves](#) surged by \$4.5 billion, crossing the \$702 billion mark for the first time, mainly due to a sharp rise in gold reserves valued at over \$108.5 billion.

- The rise was driven by [RBI's gold](#) purchases and an increase in global gold prices, while foreign currency assets slightly declined by \$1.7 billion amid exchange rate fluctuations.



About Forex Reserves:

- **What it is?**
 - **Foreign Exchange Reserves (Forex Reserves)** are **external assets** held by a country's **central bank** in foreign currencies, gold, Special Drawing Rights (SDRs), and reserve positions in the [IMF](#).
 - They act as a **financial buffer** to manage external shocks, maintain currency stability, and support international trade obligations.
- **Organisation Involved:** In India, the Reserve Bank of India (RBI) is the custodian and manager of the country's [forex reserves](#).
- **Aims / Objectives:**
 - **Monetary Stability:** To stabilise the value of the Indian Rupee (INR) in case of currency fluctuations.
 - **Crisis Buffer:** To ensure sufficient liquidity during balance of payments crises or [external shocks](#).
 - **Investor Confidence:** To strengthen India's image as a creditworthy and stable economy in global markets.
 - **Payment Assurance:** To meet import and debt servicing needs smoothly even during capital outflows.
- **Key Features:**
 - India's forex reserves comprise:
 - **Foreign Currency Assets (FCA)** – the largest component
 - **Gold Reserves**
 - **Special Drawing Rights (SDRs)** – allocated by the [IMF](#).
 - **Reserve Position in IMF**
 - The reserves are **valued weekly** based on **New York closing exchange rates** and **global gold prices**.
 - India's data dissemination follows **IMF standards**, ensuring transparency and international comparability.
- **Significance:**
 - **Economic Stability:** Acts as an insurance mechanism against external vulnerabilities like currency depreciation or capital flight.
 - **Policy Flexibility:** Enables RBI to intervene in [forex markets](#) to curb volatility.

- **Global Credibility:** Enhances India's credit rating and investor confidence, signalling macroeconomic strength.

FINANCIAL ACTION TASK FORCE (FATF)

Context: The Financial Action Task Force ([FATF](#)), during its ongoing plenary in Paris, is expected to deliberate on the issue of state-sponsored terrorism financing.



About Financial Action Task Force (FATF):

- **What it is?**
 - The FATF is an **intergovernmental policy-making body** that sets global standards to combat **money laundering, terrorist financing, and proliferation financing**. It ensures that countries take effective legal, regulatory, and operational measures to prevent the misuse of financial systems.
- **Established in:** Formed in **1989** by the **G7 countries** during the Paris Summit to coordinate global efforts against financial crimes.
- **Headquarters:** Located in **Paris, France**, and hosted by the Organisation for Economic Co-operation and Development ([OECD](#)).
- **Aim:**
 - To develop and promote international standards for combating money laundering and terrorism financing.
 - To safeguard the integrity of the global financial system.
 - To identify high-risk jurisdictions and ensure coordinated international action against illicit [financial flows](#).
- **Functions:**
 - **Standard Setting:** Issues **FATF Recommendations**, a globally accepted framework to combat financial crimes and terror funding.
 - **Monitoring and Evaluation:** Conducts

Mutual Evaluations to assess how effectively countries implement FATF standards.

- o **Identifying Non-Compliant Jurisdictions:** Maintains the “Grey List” (Increased Monitoring) and “Black List” (High-Risk Jurisdictions) for nations failing to act against financial crimes.
- o **Research and Trend Analysis:** Publishes reports on emerging risks such as cryptocurrency misuse, virtual assets, and state-sponsored terror financing.
- o **Collaboration:** Works with over 200 countries and international organisations, including the IMF, [World Bank](#), and UN, to strengthen global anti-financial crime systems.

AUTHORISED ECONOMIC OPERATOR (AEO) PROGRAMME

Context: India’s Authorised Economic Operator (AEO) Programme has received global appreciation at the WTO, recognised for boosting [MSME participation](#) in international trade and streamlining customs compliance.



About Authorised Economic Operator (AEO) Programme: What it is?

- The AEO Programme is a voluntary trade facilitation initiative under the World Customs Organization’s (WCO) SAFE Framework, recognising trusted traders who comply with customs laws and maintain secure international supply chains.

Launched Under: Implemented by Indian Customs (CBIC) through Circular 33/2016-Customs (July 22, 2016), the programme aligns with Article 7.7 of the [WTO Trade Facilitation Agreement \(TFA\)](#).

Aim:

- To enhance international supply chain security, promote [ease of doing business](#), and provide customs facilitation benefits to compliant entities such as importers, exporters, logistics providers, and warehouse operators.

Key Features:

- **Three-Tier Certification:** AEO-T1, T2, and T3 (increasing levels of facilitation); plus AEO-LO for logistics and other operators.
- **Simplified Procedures:** Reduced documentation and decentralised approvals at Customs Zonal level.
- **Alignment with Global Standards:** Based on [WCO’s SAFE Framework](#) (2018 edition).
- **Mutual Recognition Agreements (MRA):** With countries like **South Korea** and **Hong Kong**, and ongoing negotiations with **USA, UAE, Taiwan**, and others.
- **Target Expansion:** Vision to accredit **3,500 AEOs** nationwide to strengthen trade efficiency.

Benefits:

- **Faster Customs Clearance:** Direct Port Delivery and Entry for import/export cargo.
- **Deferred Duty Payment:** Flexibility in customs duties for AEO-T2 & T3 holders.
- **Global Recognition:** Reciprocal benefits through MRAs for trusted traders.
- **Ease of Trade Compliance:** Self-declaration of Standard Input Output Norms (SION).
- **Financial and Time Efficiency:** Expedited refunds, reduced inspections, and priority processing.

CHINA FILES WTO COMPLAINT AGAINST INDIA OVER UNFAIR EV AND BATTERY SUBSIDIES

Context: China filed a formal complaint with the World Trade Organization (WTO) against India, alleging that India’s [electric vehicle](#) (EV) and battery subsidies grant its domestic industries an unfair competitive advantage, violating global trade rules.



About China Files WTO Complaint Against India Over ‘Unfair’ EV and Battery Subsidies:

- **What It Is?**
 - o China has initiated a [dispute settlement](#)

[process at the WTO](#), claiming that **India's EV subsidy policies** — including tax rebates, incentives under the **PM e-Drive** and [PLI schemes](#) — distort fair competition by **favouring Indian manufacturers** over foreign producers.

- **Parties Involved:**

- o **Complainant:** People's Republic of China (Ministry of Commerce)
- o **Respondent:** Republic of India (Government of India)
- o **Arbitrating Body:** World Trade Organization (WTO), Geneva

- **Reason for Complaint:**

- o China argues that India's EV incentives — including **reduced GST**, **road tax exemptions**, and **PLI-linked support** — give local automakers such as **Tata Motors** and **Mahindra Electric** an **unfair edge** in both domestic and export markets.
- o India's subsidies for EVs amount to **~46% of vehicle cost**, among the **highest globally**, compared to 10–26% in other major economies.
- o China claims this violates [WTO's Agreement on Subsidies and Countervailing Measures \(SCM\)](#) by discriminating against foreign producers and distorting international trade.

- **Process of Resolving the Complaint in WTO:**

- **Consultation (Diplomatic Stage):**

- o The process begins when **China formally requests consultations with India** under WTO rules.
- o Both countries are required to engage in discussions within **30 days** of the request and have up to **60 days** to find a **mutually acceptable solution**.
- o This stage is confidential and aims to resolve the issue diplomatically before escalation.

- **Panel Establishment (Adjudication Stage):**

- o If consultations fail, **China can request the formation of a dispute settlement panel** under the [WTO Dispute Settlement Body \(DSB\)](#).
- o The panel, typically composed of **three independent trade experts**, examines the evidence and determines whether **India's EV subsidies violate WTO's Subsidy and Countervailing Measures (SCM) Agreement**.
- o The panel's findings are presented in a formal report.

- **Appellate Review (Appeal Stage):**

- o Either country can **appeal the panel's decision** to the **WTO Appellate**

Body, which reviews the panel's legal interpretations.

- o However, since the Appellate Body has been **non-functional since 2019**, disputes may instead be reviewed under the **Multi-Party Interim Appeal Arbitration Arrangement (MPIA)**.

- o This stage ensures **legal accuracy and procedural fairness**.

- **Implementation and Enforcement (Compliance Stage):**

- o If the [WTO panel](#) (or appeal) finds India in violation, it must **withdraw or amend the subsidy measures** within a "reasonable period of time."
- o If India fails to comply, **China can request authorization to impose retaliatory trade measures**, such as tariffs, equal in value to the trade loss suffered.
- o This serves as WTO's **ultimate enforcement mechanism** to ensure compliance.

STABLE COIN

Context: Union Finance Minister stated that nations must "prepare to engage with stablecoins," as innovations in [cryptocurrency](#) are reshaping global monetary systems and could force countries to adapt or risk exclusion.



About Stable Coin:

What is a Stablecoin?

- A **stablecoin** is a type of cryptocurrency that is specifically designed to **maintain a stable value** relative to a certain underlying asset, such as a basket of currencies or precious metals, but most commonly, a fiat currency like the U.S. Dollar.
- Unlike highly volatile cryptocurrencies (like [Bitcoin](#)), stablecoins aim for price stability, making them a more **reliable medium of exchange** within the blockchain universe and better suited for transactions.

Types of Stablecoins:

Stablecoins generally fall into two main categories:

1. Fully Reserved Stablecoins:

- o **What it is:** These are backed **one-to-one** by high-quality, liquid assets held in reserve by the issuer.
- o **How it works:** Each coin issued is supported by an equivalent underlying asset, such as fiat currency or short-term government securities. This direct collateralisation helps to stabilize the price, as the holder theoretically has a guaranteed right to redeem the coin for the pegged asset at par value.

2. Algorithmic Stablecoins:

- o **What it is:** These stablecoins are not backed by liquid reserves but are maintained by a set of automated rules.
- o **How it works:** They use **smart contracts** (computerised algorithms) to respond to supply and demand imbalances.
 - If the price trades **above its peg**, the protocol *mints* (creates) additional tokens to increase supply and drive the price down.
 - If the price trades **below its peg**, the protocol *burns* (destroys) tokens to reduce supply and push the price back up.

Key Features:

- **Price Stability:** They offer the **low volatility** necessary for commerce, remittances, and serving as a safe harbor for crypto investors.
- **Efficiency:** They enable **fast and cheap** transactions, especially for cross-border payments, bypassing traditional, slower, and costlier financial intermediaries.
- **Programmability:** As digital, on-chain assets, they can be integrated into **smart contracts** and automated financial systems, accelerating the movement of cash within financial services.
- **Digital Fiat:** They act as a **digital, blockchain-based representation of fiat money**, making them highly compatible with the traditional financial system's need for real-time settlement.

EXTERNAL COMMERCIAL BORROWINGS (ECBS)

Context: The Reserve Bank of India (RBI) will soon release a draft framework to simplify External Commercial Borrowings (ECB) rules, expanding eligibility for borrowers and lenders.



About External Commercial Borrowings (ECBs): What it is?

- External Commercial Borrowings (ECBs) are commercial loans raised by eligible Indian entities from recognised non-resident entities in foreign currency or INR.
- They are governed under the Foreign Exchange Management Act (FEMA), 1999 and associated RBI regulations.

Organisations Involved:

- **RBI** – Regulates [ECB framework](#) and issues guidelines.
- **Borrowers** – Indian corporates, PSUs, NBFCs, eligible trusts and institutions.
- **Lenders** – International banks, multilateral agencies, export credit agencies, foreign equity holders, etc.

Aim of ECBs:

- Provide **Indian entities access to foreign capital** at competitive rates.
- Diversify funding sources beyond domestic markets.
- Facilitate financing of **infrastructure, expansion, and long-term projects**.

Key Features of External Commercial Borrowings (ECBs)

- **Routes:**
 - o **Automatic Route** – Borrowing is allowed directly if standard conditions are met; approved by authorised banks ([AD Category-I](#)).
 - o **Approval Route** – If conditions don't fit the automatic route, the proposal goes to RBI for special approval.
- **Basic Conditions:**
 - o A **minimum maturity period** (loans must be for a set number of years).
 - o A cap on **borrowing costs** (interest + charges).
 - o Rules about **where the borrowed money can and cannot be used**.
 - o **Mandatory reporting** to RBI through Loan Registration Number (LRN) and Form ECB.
- **Permitted Uses:**
 - o To fund **capital expenditure**, large projects, or infrastructure.
 - o To **refinance existing loans**.
 - o **Not allowed** for real estate business, share market investment, or speculative activities.

Public Finance (Fiscal Policy and Budget, Taxation)

THE 8TH CENTRAL PAY COMMISSION

Context: The Union Cabinet has approved the Terms of Reference (ToR) for the 8th Central Pay Commission (CPC) headed by [Justice Ranjana Prakash Desai](#) (Retd.).

A Registry of India's Pay Commission Chairmen

PAY COMMISSION	CHAIRMAN
1st Pay Commission	Srinivasa Varadacharia
2nd Pay Commission	Jaganath Das
3rd Pay Commission	Raghubir Dayal
4th Pay Commission	P.N. Singhal
5th Pay Commission	Justice S. Ratnavel Pandian
6th Pay Commission	Justice B.N. Srikrishna
7th Pay Commission	Justice A K Mathur
8th Pay Commission	Justice Ranjana Prakash Desai

About The 8th Central Pay Commission:

- Definition:**
 - The 8th Central Pay Commission (CPC) is a temporary expert body set up by the Union Government to review and recommend revisions in the salary structure, allowances, and pension benefits of Central [Government employees](#).
- Establishment:** Announced in **January 2025** and formally constituted after Cabinet approval in **October 2025** to ensure timely implementation from 2026.
- Composition:**
 - Chairperson:** Justice Ranjana Prakash Desai (Retd.)
 - Part-time Member:** Prof. Pulak Ghosh, IIM Bangalore
 - Member-Secretary:** Pankaj Jain, Petroleum Secretary
- Tenure:** The Commission will submit its **final report within 18 months** of constitution and may provide **interim recommendations** on specific issues.
- Coverage:** The [8th CPC](#) covers serving and retired employees of the Central Government, defence forces, [All India Services](#), and Union Territories.
- Functions and Mandate:**
 - Pay & Pension Review:** Examine and propose changes in pay scales, allowances,

and pension structures.

- o **Fiscal Prudence:** Consider the overall economic situation and maintain budgetary discipline while recommending pay revisions.
- o **Equity Across Sectors:** Ensure parity between Central services, [PSUs](#), and private sector employees in terms of emoluments and working conditions.
- o **State Finances Impact:** Evaluate how its recommendations affect State Government finances and ensure coordinated implementation.
- o **Sustainability of Pensions:** Address concerns related to non-contributory pension liabilities and their long-term [fiscal implications](#).
- **Expected Implementation:** The recommendations are expected to come into effect from January 1, 2026, continuing the decade-long cycle of pay revisions followed since the First CPC (1946).

PRESUMPTIVE TAXATION

Context: NITI Aayog, in its first [Tax Policy Working Paper](#) (2025), proposed an optional presumptive taxation regime for foreign firms to reduce litigation, simplify compliance, and bring certainty on Permanent Establishment (PE) disputes.



About Presumptive Taxation:

- **Concept:** Taxation based on a fixed deemed profit percentage of gross receipts, instead of detailed profit attribution through transfer pricing or functional analysis.
- **Aim:** Provide certainty, reduce litigation, simplify compliance, and secure predictable revenue.
- **Existing Usage in India:** Already applied in shipping (Sec. 44B), oil & gas services (44BB), airlines (44BBA), and small businesses (44AD/44ADA).

Why Needed in India?

1. **Litigation-heavy regime** – PE disputes take over a decade to resolve (e.g., *Hyatt International* 2025).
2. **Ambiguity in rules** – Broad interpretation of

“business connection” and [Significant Economic Presence \(SEP\)](#) deters investment.

3. **Retrospective taxation legacy** – Vodafone-type cases damaged India’s image.

How the Proposed Scheme Works?

- **Industry-specific deemed profit rates** (e.g., 10% for EPC, 15% for marketing, 20% for services, 30% for digital/e-commerce).
- **Optional & rebuttable** – Firms can opt in, or opt out and file regular returns if actual profits are lower.
- **Safe harbour** – If presumptive scheme is chosen, tax authorities will not separately litigate PE existence.
- **Administrative simplicity** – Reduced need for audits and complex books; compliance burden minimized.
- **Treaty compatibility** – Optional nature ensures alignment with DTAA.

Key Features of NITI Proposal:

1. **Codify PE and profit attribution principles** in domestic law aligned with global norms.
2. **Presumptive taxation rates** designed per sector, calibrated to historical profit margins.
3. **Advance Pricing Agreements (APA) and Mutual Agreement Procedures (MAP)** to reduce disputes.
4. **Safe harbour for digital economy** – special treatment for high-profit, user-intensive platforms.
5. **Capacity building of tax officers** for consistent application of rules.
6. **Public consultation mechanisms** to build investor trust.

Expected Benefits:

- **Reduced litigation** – Faster dispute resolution, less pressure on courts.
- **Improved investor confidence** – Predictability attracts long-term, sustainable FDI.
- **Revenue safeguard** – Ensures minimum tax collection, even from low-profit or digital firms.
- **Ease of Doing Business** – Simpler compliance, alignment with *Make in India*.

Schemes

DRAFT NATIONAL LABOUR & EMPLOYMENT POLICY - SHRAM SHAKTI NITI 2025

Source: [LM](#)

Context: The Ministry of Labour & Employment has released the Draft National Labour & Employment Policy – Shram Shakti Niti 2025 for public consultation.

About Draft National Labour & Employment Policy - Shram Shakti Niti 2025:

What It Is?

- Shram Shakti Niti 2025 is India’s first integrated

National Labour & Employment Policy, aiming to create a fair, inclusive, and future-ready world of work.

Aim: To modernise India’s labour ecosystem by ensuring dignity, protection, and opportunity for every worker while aligning with [Viksit Bharat @2047](#).



Key Features:

1. **Unified Vision and Mission:** Envisions a world of work where every labourer enjoys dignity, safety, and opportunity through seven core objectives — [universal social security](#), occupational safety, gender and youth empowerment, future-readiness, and green jobs.
2. **Digital Public Infrastructure for Employment:** The National Career Service (NCS) will evolve into India’s Employment DPI, offering transparent, AI-driven job matching, credential verification, and career guidance across Tier-II and Tier-III cities.
3. **Universal Social Security:** Establishment of a Universal Social Security Account integrating EPFO, ESIC, [PM-JAY](#), and e-Shram, ensuring portable and lifelong protection for every worker.
4. **Women and Youth Empowerment:** Targets 35% female workforce participation by 2030, while promoting flexible work models, childcare, entrepreneurship, and vocational pathways for youth.
5. **Ease of Compliance and Formalisation:** Launch of a single-window digital compliance portal with risk-based self-certification to reduce paperwork and enhance trust-based governance.
6. **Technology and Green Transitions:** Promotes AI-enabled workplace safety systems, digital upskilling, and creation of green and sustainable jobs in line with India’s climate goals.
7. **Convergence and Good Governance:** Establishes a three-tier institutional structure—National, State, and District Labour Missions—with data-driven dashboards and annual Labour & Employment Policy Evaluation Index (LEPEI) for performance tracking.
8. **Labour and Employment Stack:** Creates a unified digital backbone integrating worker identities, enterprise databases, and social-security entitlements for paperless and portable governance.
9. **Tripartite Dialogue & Cooperative Federalism:**

Ensures Centre–State coordination and dialogue among government, employers, and workers to promote participatory policy implementation.

10. Phased Implementation (2025–2047):

- **Phase I (2025–27):** Institutional setup, digital pilots, and social-security integration.
- **Phase II (2027–30):** Expansion through [Universal Social Security](#) rollout and AI-based job matching.
- **Phase III (Beyond 2030):** Full digital convergence and predictive labour governance.

Miscellaneous

THE NEW DEVELOPMENT BANK (NDB)

Context: The New Development Bank (NDB) — co-founded by BRICS nations in 2015 — marks its 10th anniversary, while Pakistan has formally sought China's support to join the institution to diversify from IMF and [World Bank](#) dependence amid its economic crisis.



About The New Development Bank (NDB):

- **What It Is?**
 - The NDB is a multilateral development bank established by the BRICS countries — Brazil, Russia, India, China, and South Africa — to fund infrastructure and sustainable development projects in [emerging markets and developing economies](#) (EMDCs).
- **Established In:**
 - **Treaty Signed:** July 2014, Fortaleza, Brazil
 - **Came into Force:** July 2015
- **Headquarters:** Shanghai, China
- **Members:**
 - **Founding Members:** Brazil, Russia, India, China, South Africa.
 - **New Members:** Bangladesh (2021), UAE (2021), Egypt (2023), Algeria (2025).
 - **Prospective Members:** Uruguay, Uzbekistan, Colombia (awaiting ratification).
 - **Authorized Capital:** \$100 billion (with \$50 billion subscribed, equally by the founding members).

- Each founding member holds **equal voting rights**, with **no veto power** — ensuring democratic decision-making.
- **Objectives and Function:**
 - **Infrastructure Financing:** Mobilize long-term resources for roads, energy, ports, and digital infrastructure in [BRICS](#) and partner countries.
 - **Sustainable Development:** Ensure projects align with [ESG principles](#), promoting green energy, climate adaptation, and social inclusion.
 - **Reduce Western Dependence:** Provide an alternative to IMF and World Bank lending models, emphasizing equity and sovereignty.
 - **Innovation in Finance:** Issue [green bonds](#) (first in 2016 worth RMB 3 billion) and explore local currency lending.
 - **Emergency Support:** Operated a \$10 billion COVID-19 Emergency Assistance Facility (2020) to help member states recover.

EPF NEW WITHDRAWAL RULES 2025

Context: The Employees' Provident Fund Organisation (EPFO) has announced major reforms simplifying withdrawal rules under EPFO 3.0.



About EPF New Withdrawal Rules 2025:

What it is?

- The revised EPF withdrawal framework simplifies and modernises the provident fund system to provide greater flexibility, ease of access, and faster digital claim settlement for over 30 crore subscribers.

Aim: To streamline withdrawal procedures, enable members to meet urgent financial needs without lengthy documentation, and balance short-term liquidity with long-term retirement security.

New Features:

- **Simplified Categories:** 13 withdrawal purposes merged into **three core types** — Essential Needs (illness, education, marriage), Housing Needs, and Special Circumstances.
- **Enhanced Limits:** Up to **10 withdrawals for education** and **5 for marriage** during service, compared to the

previous combined limit of 3.

- **Minimum Balance Rule:** Members must retain **25% of their EPF corpus** to preserve compounding benefits and ensure retirement savings.
- **Service Tenure Relaxed:** Minimum service period reduced to **12 months for housing** and **7 years for marriage or education**, enhancing accessibility.
- **Full Withdrawal Option:** Members can now withdraw up to **100% of the eligible balance**, including employer and employee shares.
- **Digital Transformation (EPFO 3.0):** Automated, document-free settlements, cloud-based core banking integration, and multilingual self-service portals introduced for faster processing.
- **Vishwas Scheme for Dispute Resolution:** Rationalised penal damages and simplified compliance to reduce litigation for delayed PF remittances.

Significance:

- Promotes financial inclusivity and empowers workers to access funds during emergencies.
- Enhances ease of living by reducing bureaucratic hurdles and promoting real-time online claims.
- Encourages a digitally secure and paperless **provident fund** ecosystem aligned with India's fintech vision.

ECONOMICS NOBEL PRIZE 2025

Context: The 2025 Nobel Prize in Economic Sciences was awarded to Joel Mokyr, Philippe Aghion, and Peter Howitt for their groundbreaking contributions in explaining how innovation drives sustained **economic growth**.



About Economics Nobel Prize 2025:

- **What it is?**
 - Formally known as the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel, the award honors exceptional research in economics that advances understanding of growth, markets, and human welfare.
- **Winners of 2025:**
- **Joel Mokyr (Northwestern University, USA):** Recognized "for identifying the prerequisites for sustained growth through technological progress."
- **Philippe Aghion (Collège de France, INSEAD, and LSE) and Peter Howitt (Brown University, USA):** Jointly awarded "for developing the theory of

sustained growth through **creative destruction**."

Their Work and Contributions

- **Joel Mokyr's Contribution:**
 - Highlighted the role of "useful knowledge" — combining **propositional (theoretical)** and **prescriptive (practical)** understanding — as the foundation of the **Industrial Revolution** and modern growth.
 - Argued that scientific experimentation, reproducibility, and skilled artisanship created a **feedback loop between science and technology**, enabling sustained innovation.
 - **Policy insight:** Emphasized **investment in skills, technical education, and openness to change** as essential for continuous innovation.
 - **Eg:** Britain's early industrial rise due to its network of skilled engineers and artisans converting ideas into practical machinery.
- **Philippe Aghion & Peter Howitt's Contribution:**
 - Developed a **mathematical model of "creative destruction,"** showing how innovation drives progress by replacing outdated technologies with superior ones.
 - Explained that **R&D investment** spurs growth but also displaces incumbents — requiring policies that balance **innovation incentives** with **social stability**.
 - Provided a framework to assess **optimal R&D subsidies**, competition policy, and long-term productivity strategies.

Significance of the 2025 Nobel Work:

- Bridges **economic history and modern growth theory**, showing why the post-Industrial era achieved sustained prosperity.
- Offers **practical policy lessons** — from promoting education and openness to managing creative destruction and fair competition.
- Reinforces innovation as the **core driver of productivity, jobs, and living standards**, guiding 21st-century strategies for inclusive and **sustainable development**.

BHARAT TAXI

Context: The National e-Governance Division (**NeGD**) under the Ministry of Electronics & IT (MeitY) has partnered with Sahakar Taxi Cooperative Ltd. (Bharat Taxi) to develop India's first cooperative-driven, citizen-first national ride-hailing platform, launching in December 2025.



About Bharat Taxi:

- **What it is?**
 - Bharat Taxi is a national ride-hailing platform operated by Sahakar Taxi Cooperative Ltd., envisioned as India's first cooperative-based alternative to global cab aggregators. It aims to offer transparent, inclusive, and citizen-centric mobility services.
 - **Lead Institution:** National e-Governance Division (NeGD), Digital India Corporation, MeitY
 - **Promoting Agencies:** NCDC, IFFCO, [AMUL](#), KRIBHCO, NAFED, NABARD, NDDDB, and NCEL
 - **Aim:** To revolutionize India's ride-hailing ecosystem by combining cooperative ownership with digital innovation, ensuring fair income for drivers and secure, seamless mobility for citizens in line with the [Digital India vision](#).
 - **Key Features:**
 - **Platform Integration:** Unified access through [DigiLocker](#), UMANG, and API Setu for digital identity and document verification.
 - **Cybersecurity & Compliance:** Adheres to Govt's data protection and privacy standards.
 - **UI/UX Design:** Focus on multilingual accessibility and inclusive interface for diverse users.
 - **Advisory Role:** NeGD to guide on technical architecture, governance, and program management.
 - **Launch Timeline:** Nationwide rollout planned for December 2025.
 - **Significance:**
 - Empowers [cooperative](#) institutions as key players in India's digital mobility ecosystem.
- Promotes self-reliance ([Atmanirbhar Bharat](#)) by providing a home-grown alternative to global cab platforms

AGRICULTURE

Agri-marketing

E-NAM EXPANSION

Context: The Government of India has expanded the [National Agriculture Market](#) (e-NAM) by adding 9 new commodities, increasing the total tradable items to 247.



उत्तम फसल, उत्तम इनाम

About e-NAM Expansion:

What It Is?

- The National Agriculture Market (e-NAM) is a pan-India electronic trading portal launched on 14 April 2016 to connect existing [APMC](#) mandis into a unified national market.

Aim: To promote uniformity in agricultural marketing, remove information asymmetry between buyers and sellers, and ensure transparent price discovery based on demand, supply, and quality.

Functions:

- **Digital Marketplace:** Provides an online platform linking APMCs, private markets, and buyers nationwide.
- **Price Transparency:** Enables real-time auctioning and fair price determination for farmers.
- **Quality Assurance:** Introduces quality assaying systems for informed bidding and value-based pricing.
- **Ease of Transaction:** Facilitates online payment, warehouse-based sales, and mobile app access to market data.
- **Inclusive Beneficiaries:** Serves farmers, traders, processors, exporters, and mandis through a single [digital interface](#).

Recent Addition:

- **9 new commodities added:** Green Tea, Tea, Aswagandha Dry Roots, Mustard Oil, Lavender Oil, Mentha Oil, Virgin Olive Oil, [Lavender Dried Flower](#), and Broken Rice.
- This expansion raises the total to **247 commodities**, enhancing trade diversity and boosting rural incomes.

Agri-practices and New Technologies

CRYODIL

Context: Scientists at the [ICAR](#)–National Institute of Animal Nutrition and Physiology (NIANP), Bengaluru, have developed CRYODIL, India's first egg yolk-free semen preservation solution for buffalo breeding, capable of extending semen shelf life to 18 months.



About CRYODIL:

- **What it is?**
 - CRYODIL is a ready-to-use, egg yolk-free semen extender designed to preserve buffalo semen for long durations while maintaining [fertility and motility](#).
- **Developed by:**
 - Developed by scientists at the National Institute of Animal Nutrition and Physiology (NIANP) under the Indian Council of Agricultural Research (ICAR), Bengaluru.
- **Aim:**
 - To provide a safe, efficient, and affordable alternative to traditional egg-yolk-based semen extenders and enhance [buffalo breeding](#) efficiency in India.
- **Features:**
 - **Long Shelf Life:** Preserves semen for up to **18 months** without contamination or loss of motility.
 - **Microbe-Free Solution:** Eliminates risk of [microbial contamination](#) associated with egg yolks.
 - **Stable Composition:** Uses purified **whey proteins** instead of egg yolk, ensuring consistent semen quality.
 - **Cost-Effective:** Cheaper and easier to produce compared to imported commercial extenders.
 - **Field-Tested Innovation:** Successfully tested on **24 buffalo bulls**, showing higher post-thaw sperm movement and fertility potential.
- **Significance:**
 - **Boosts Buffalo Breeding:** Enhances success rate of artificial insemination, crucial for India's dairy productivity.
 - **Promotes Atmanirbhar Bharat:** Reduces

dependence on costly foreign extenders, fostering indigenous innovation.

- **Improves Dairy Economics:** Increases milk yield potential by improving breeding efficiency.

Crops

FIRST-EVER AIR SHIPMENT OF GI TAGGED INDI AND PULIYANKUDI LIMES

Context: The Agricultural and Processed Food Products Export Development Authority (APEDA) facilitated the first-ever air shipment of [GI-tagged](#) Indi Lime (Karnataka) and Puliyanakudi Lime (Tamil Nadu) to the United Kingdom.



About First-Ever Air Shipment of GI Tagged Indi and Puliyanakudi Limes:

- **What is GI Tag?**
 - A Geographical Indication (GI) is a form of Intellectual Property Right (IPR) that identifies goods as originating from a specific geographical region, where their quality, reputation, or other characteristics are essentially linked to that origin.
 - GI tags are registered under the [Geographical Indications of Goods \(Registration and Protection\) Act, 1999](#).
- **Issued by:** the Geographical Indication Registry, Chennai, under the Department for Promotion of Industry and Internal Trade ([DPIIT](#)), Ministry of Commerce and Industry.
- **Aim:** To protect regional products, promote authenticity, enhance market value, and ensure economic benefits for local producers by preventing unauthorised use of registered names.

About Indi Lime (Karnataka):

- **Region:** Cultivated mainly in Vijayapura district, Karnataka.
- **Distinct Features:** Known for high juice yield, zesty aroma, and balanced acidity.
- **Special Attributes:** Valued in culinary, [traditional medicine](#), and cultural practices, reflecting

Karnataka's deep-rooted agrarian heritage.

About Puliyanakudi Lime (Tamil Nadu):

- **Region:** Grown extensively in Tenkasi district, known as the "Lemon City of Tamil Nadu."
- **Variety:** Especially the Kadayam Lime, prized for its thin peel, strong acidity, and high juice content (~55%).
- **Nutritional Value:** Contains 34.3 mg/100g of ascorbic acid, rich in Vitamin C and [antioxidants](#), aiding immunity and digestion.
- **Recognition:** Received GI tag in April 2025, acknowledging its regional uniqueness and superior quality.

Schemes and Organizations

NUTRIENT BASED SUBSIDY SCHEME (NBS)

Context: The Union Cabinet, chaired by Prime Minister, has approved the Nutrient Based Subsidy (NBS) rates for Rabi 2025–26 on Phosphatic and [Potassic \(P&K\) fertilizers](#) to ensure their smooth availability to farmers at affordable prices.



About Nutrient Based Subsidy Scheme (NBS):

Definition:

- The Nutrient Based Subsidy ([NBS](#)) is a centrally sponsored scheme under the Department of Fertilizers, which provides a fixed subsidy per kg of nutrient content (N, P, K, S) in Phosphatic and Potassic (P&K) fertilizers, ensuring affordable access for farmers.

Launch: Introduced on 1st April 2010, replacing the earlier product-based subsidy system for non-urea fertilizers.

Implementing Organization: Administered by the Department of Fertilizers, Ministry of Chemicals and Fertilizers, Government of India.

Aim:

- To make fertilizers available at reasonable prices to farmers.
- To promote balanced fertilizer use based on soil and crop requirements.
- To encourage the [fertilizer industry](#) to adopt efficiency, cost-effectiveness, and competition.

Key Features:

- **Subsidy based on nutrient content:** Fixed subsidy (₹/kg) for N, P, K, and S nutrients instead of per-product subsidy.
- **Freedom in MRP fixation:** Fertilizer companies can set [Maximum Retail Prices \(MRPs\)](#) reasonably, monitored by the government.
- **Coverage:** Applies to **28 grades** of P&K fertilizers, including **Di-Ammonium Phosphate (DAP)** and **NPKS** grades.
- **Special Support:** Government may announce **special packages** (e.g., for DAP) over and above NBS rates to stabilize prices amid global volatility.
- **Urea exception:** Urea remains under [statutory price control](#), with a fixed MRP of ₹242 per 45-kg bag since March 2018.

Significance:

- **Affordable Fertilizers:** Ensures continuous supply of essential P&K fertilizers at subsidized prices to farmers.
- **Nutrient Balance:** Promotes judicious and soil-specific fertilizer use, avoiding over-reliance on [nitrogenous fertilizers](#).
- **Fiscal Efficiency:** Provides transparent and predictable subsidy disbursement to fertilizer companies.

FAO CELEBRATES 80 YEARS OF PARTNERSHIP WITH INDIA

Context: On [World Food Day 2025](#), the Food and Agriculture Organization (FAO) and the Government of India celebrated 80 years of partnership in New Delhi.



**Food and Agriculture
Organization of the
United Nations**

About FAO Celebrates 80 Years of Partnership with India:

- **What It Is?**
 - A milestone event marking eight decades of collaboration between India and FAO in promoting food security, agricultural innovation, and rural livelihoods.
 - Commemorated during World Food Day 2025 under the theme "Hand in Hand for Better Food and a Better Future."
- **India Joined FAO:** India is a **founding member of FAO**, joining the organisation at its inception in 1945.
- **Achievements in 80 Years:**

- o India moved from [food scarcity](#) to self-sufficiency, now feeding 1.4 billion people.
- o Partnership strengthened Green Revolution, National Food Security Act (NFSA), [Minimum Support Price](#) (MSP), and Public Stockholding System.
- o Promoted nutrition-sensitive and climate-resilient agriculture, micro-irrigation, natural farming, and AgriStack for digital governance.

About the Food and Agriculture Organization (FAO):

- **What It Is?**
 - o A specialized UN agency leading global efforts to defeat hunger and improve nutrition, agriculture, forestry, and fisheries.
- **Established In:** Founded on **16 October 1945** in **Quebec City, Canada**, following the Hot Springs Conference of 1943.
- **Headquarters:** Rome, Italy, with offices in 130+ countries.
- **Aim:**
 - o To ensure **food security for all** by promoting sustainable agricultural growth, eliminating hunger, and ensuring access to safe, nutritious, and sufficient food.
- **Core Functions:**
 - o **Global Policy Leadership:** Coordinating international food and agriculture policies.
 - o **Technical Assistance:** Supporting countries through projects in agriculture, fisheries, forestry, and climate adaptation.
 - o **Research & Data:** Publishing the [State of Food Security](#) and Nutrition in the World and FAO Statistical Yearbook.
 - o **Capacity Building:** Training farmers and institutions for sustainable food systems.
 - o **Humanitarian Response:** Partnering with the [World Food Programme](#) (WFP) to address hunger crises.

PRADHAN MANTRI DHAN-DHAANYA KRISHI YOJANA (PMDDKY)

Context: Prime Minister of India today launched the Pradhan Mantri Dhan-Dhaanya Krishi Yojana ([PMDDKY](#)) — a landmark agricultural reform aimed at transforming farming in 100 low-performing districts.



[About Pradhan Mantri Dhan-Dhaanya Krishi Yojana](#)

(PMDDKY):

What it is?

- PMDDKY is a comprehensive agricultural transformation mission launched by the Ministry of Agriculture and Farmers' Welfare to modernize Indian farming through technology, irrigation, credit, and market reforms.

Aim of the Scheme:

- To increase crop productivity by 20–30% and reduce post-harvest losses to below 5%.
- To double farmers' income by 2030 through direct market access and modern techniques.
- To make farming climate-resilient, technology-driven, and sustainable.
- To support women, youth, and small farmers, ensuring equitable agricultural growth.

Eligibility Criteria:

- **Geographic Focus:** 100 underperforming districts identified by [NITI Aayog](#) with low productivity, weak credit access, and poor irrigation.
- **Inclusivity:** Women farmers, youth [agripreneurs](#), and Farmer Producer Organizations (FPOs) are prioritized beneficiaries.

Key Features of PMDDKY:

1. **Massive Budget Allocation:** ₹1.44 lakh crore over six years (₹24,000 crore annually from 2025–31).
2. **Scheme Convergence:** Merges **36 schemes** under a single digital framework for unified implementation.
3. **Smart Agriculture:** Integration of IoT sensors, drones, precision tools, and AI-based dashboards for farm monitoring.
4. **Digital Dashboard:** Tracks **117 Key Performance Indicators (KPIs)** — yields, storage, and irrigation progress.
5. **Infrastructure Development:** Focus on irrigation, storage, cold chains, processing units, and market linkages.
6. **Women Empowerment:** Formation of 10,000 Women Producer Groups, benefitting 5 lakh women farmers.
7. **Training and Global Exposure:** Free workshops via [KVKs](#) and international training for 500 farmers in Israel, Japan, and the Netherlands.
8. **Green Farming Focus:** Encourages organic, sustainable, and climate-smart practices.

Benefits to Districts and Farmers:

- **Improved Productivity:** 20–30% increase through high-yield seeds, efficient irrigation, and mechanization.
- **Higher Incomes:** 20–40% rise via diversified crops and direct market access through e-NAM and PMDDKY apps.
- **Employment Boost:** Creation of 10–15 rural jobs per village in allied sectors like dairy and fisheries.
- **Reduced Post-Harvest Losses:** New warehouses and

cold storages cut wastage by 20%.

- **Financial Access:** Loans of ₹50,000–₹10 lakh at low interest through [Kisan Credit Cards](#) and NABARD.

MISSION FOR AATMANIRBHARTA IN PULSES (2025–26 TO 2030–31)

Context: Prime Minister of India launched the Mission for Aatmanirbharta in Pulses (2025–26 to 2030–31) at the Indian Agricultural Research Institute ([IARI](#)), New Delhi.



About Mission for Aatmanirbharta in Pulses (2025–26 to 2030–31):

- **What it is?**
 - A **national mission** to achieve **complete self-sufficiency in pulses production** and reduce import dependence by **December 2027**.
 - Officially known as the **[Dalhan Aatmanirbharta Mission](#)**, it integrates production, procurement, processing, and marketing strategies to enhance farmers' income and ensure nutritional security.
- **Nodal Ministry:** Ministry of Agriculture & Farmers' Welfare, Government of India.
- **Implementation Partners:**
 - Indian Council of Agricultural Research (ICAR)
 - [Krishi Vigyan Kendras](#) (KVKs)
 - NAFED & NCCF (for procurement)
 - NITI Aayog (policy & cluster recommendations)
 - National Informatics Centre (NIC) (for digital monitoring via SATHI Portal).
- **Implementation Period:** 2025–26 to 2030–31
- **Total Outlay:** ₹11,440 crore
- **Aim and Objectives:**
 - **Self-Reliance Goal:** Scale up pulses production to 350 lakh tonnes by 2030–31.
 - **Area Expansion:** Expand cultivation to 310 lakh hectares, including 35 lakh ha of rice fallows.
 - **Procurement Assurance:** Ensure 100% MSP procurement for Tur (Arhar), [Urad](#), and

Masoor for four years.

- **Seed Support:** Distribute 88 lakh free seed kits and 126 lakh quintals of certified seeds.
- **Farmer Empowerment:** Benefit nearly 2 crore farmers through assured prices and value-chain integration.
- **Key Features:**
 - **Technology & Seeds:**
 - Launch of **[SATHI](#)** (Seed Authentication, Traceability & Holistic Inventory) portal for seed lifecycle monitoring.
 - Development of high-yielding, pest-resistant, climate-resilient varieties by ICAR.
 - **Value Chain & Processing:** Establishment of 1,000 processing and packaging units, with ₹25 lakh subsidy per unit to promote value addition and rural employment.
 - **Institutional Mechanism:**
 - State-specific **rolling five-year seed production plans** under ICAR supervision.
 - Integration with **[PM-AASHA](#)** for assured procurement and farmer price stability.
 - **Cluster-Based Approach:**
 - Implementation on “**One Block – One Seed Village**” model as per NITI Aayog's recommendation.
 - Focus on **[FPO-led clusters](#)** for efficient production and distribution.
 - **Nutrition & Welfare Integration:** Inclusion of pulses in PDS, ICDS, and Mid-Day Meal schemes to improve protein intake.

ENVIRONMENT

Ecology and Functions of an Ecosystem

IUCN FLAGS WESTERN GHATS, MANAS, AND SUNDARBANS AS 'SIGNIFICANT CONCERN' SITES

Context: The International Union for Conservation of Nature (IUCN) in its World Heritage Outlook 4 (2025) report placed [Western Ghats](#), Manas National Park, and Sundarbans National Park under the “Significant Concern” category.



About [IUCN Flags Western Ghats, Manas, and Sundarbans as 'Significant Concern' Sites](#):

About the [IUCN World Heritage Outlook](#)

- The **World Heritage Outlook** is a global assessment published every 3–4 years by the [IUCN](#) to evaluate the conservation status of natural World Heritage sites.
- It assesses **63 natural sites across Asia** under four categories — Good, Good with Some Concerns, Significant Concern, and Critical.
- The 2025 report noted that the share of sites with “significant concern” has **risen from 26% (2020) to 30% (2025)**, highlighting worsening pressures from climate change, tourism, and invasive species.

Indian Sites under Significant Concern:

Site Name	Location	Key Issues
Western Ghats	Spanning Maharashtra, Goa, Karnataka, Kerala, Tamil Nadu	Loss of evergreen forest (~5%), urbanisation, tourism, infrastructure projects
Manas National Park	Assam (India–Bhutan transboundary park)	Habitat degradation, poaching, flood damage, invasive species
Sundarbans National Park	West Bengal (India–Bangladesh transboundary park)	Climate change, sea-level rise, erosion, and tourism pressure

Key Observations from IUCN Outlook 2025:

1. **India's status:** Out of 7 Indian natural World Heritage sites,
 - 1 site ([Khangchendzonga NP, Sikkim](#)) is rated “Good”,
 - 4 sites (Kaziranga, Nanda Devi, Valley of Flowers, Keoladeo, Great Himalayan NP) are “Good with Some Concerns”,
 - 3 sites (Western Ghats, Manas, Sundarbans) are under “Significant Concern.”
2. **Top threats:** Climate change replaced hunting as the **most widespread threat** to Asian sites, followed by

tourism and [invasive alien species](#).

3. **Infrastructure risk:** Roads and railways have newly entered the **top five threats**, causing habitat fragmentation and wildlife mortality.

[Biodiversity](#)

PILOT WHALE

Context: Over two dozen pilot whales were found stranded and dead on New Zealand's remote [Twilight Beach](#), prompting a Maori-led recovery and spiritual closure (rahui).



About Pilot Whale:

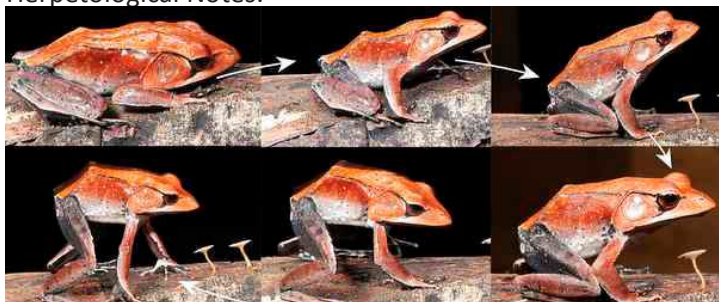
- **What it is?**
 - Pilot whales are large oceanic dolphins belonging to the genus *Globicephala*, known for their strong social bonds and herding behavior that often leads to mass strandings.
- **Scientific Name:** There are two species — [Short-finned Pilot Whale](#) (*Globicephala macrorhynchus*) and [Long-finned Pilot Whale](#) (*Globicephala melas*), both under the Delphinidae family.
- **Habitat:**
 - Short-finned pilot whales thrive in tropical and warm-temperate waters, while long-finned species inhabit cold-temperate and sub-polar oceans.
 - They are found globally across the Atlantic, Pacific, [Indian Oceans](#), and seas near Australia, New Zealand, Japan, and India.
- **Characteristics:**
 - Recognized by their **bulbous, rounded heads** and **curved dorsal fins**.
 - Adult males can reach up to **7 meters in length**, weigh over **2 tonnes**, and form **matrilineal social groups** of 20–100 members.
 - Known for **deep diving** (up to 1,000 meters) and feeding mainly on **squid and small fish**.
 - **Social Behaviour:**
 - ☐ Exhibit **tight family cohesion**, rarely separating from kin.
 - ☐ Males remain in their maternal

pod for life, making them **highly social mammals**.

- **Conservation Status:**
 - Classified as **Least Concern** by the [IUCN Red List](#).
 - Protected under **CITES Appendix II** and the Convention on Migratory Species (CMS).

RARE DEFENCE TRAITS IN INDIAN FROGS

Context: A team from the University of Delhi's Systematics Lab, has documented for the first time rare anti-predator defence behaviours in two Indian [frog species](#), published in Herpetological Notes.



About Rare Defence Traits in Indian Frogs:

- The study uncovers **unique behavioural adaptations** in frogs, including **biting, shrieking, and body-raising**, to deter predators.
- These are among the **first such recorded instances** in [Indian amphibians](#), expanding knowledge of their survival strategies.
- Of the 7,800+ known frog species worldwide, only around **650 exhibit such defence responses**, making the Indian cases scientifically valuable.

Species and Their Behavioural Features:

1. **Apatani Horned Toad (*Xenophrys apatani*)** – **Arunachal Pradesh:**
 - A nocturnal frog with **cryptic, leaf-litter camouflage** that hides it during the day.
 - When threatened, it **inflates its body**, emits a **sharp distress call**, and may **bite predators** — a first-time observation in India.
2. **Bicoloured Frog (*Clinotarsus curtipes*)** – **Western Ghats, Kerala:**
 - A diurnal forest species that **arches its body by stretching limbs vertically**, appearing larger and more menacing.
 - This **body-raising posture** is believed to intimidate [predators](#) and was experimentally verified in the wild.

Implications:

- **New Behavioural Records:** Adds previously unknown defensive behaviours to the global

amphibian database.

- **Evolutionary Insight:** Suggests [adaptive responses](#) evolved to suit diverse Indian ecological niches.
- **Biodiversity Awareness:** Reinforces how much remains undocumented in India's rich amphibian fauna.

IUCN CLASSIFIES INDIAN WOLF AS POTENTIAL DISTINCT SPECIES

Context: The International Union for Conservation of Nature (IUCN) has, for the first time, evaluated the Indian wolf (*Canis lupus pallipes*) as a [potential distinct species](#), listing it as 'Vulnerable' on the Red List with only about 3,000 individuals left in the wild



About IUCN Classifies Indian Wolf as 'Potential Distinct Species':

- **What it is?**
 - The Indian wolf is one of the most ancient and genetically unique wolf lineages in the world, endemic to the Indian subcontinent.
- **Scientific Name:** *Canis lupus pallipes*, commonly referred to as the [Peninsular wolf](#) or Indian grey wolf.
- **IUCN Status (2025):**
 - **Conservation status:** Classified as **Vulnerable** by the International Union for Conservation of Nature (IUCN).
 - **Population estimate:** Only **2,877–3,310 mature individuals** remain in the wild across India and Pakistan.
- **History:**
 - **Once widespread distribution:** The Indian wolf was historically found across northern and western India, from Punjab and Haryana to Rajasthan and Maharashtra, thriving in open plains and [semi-arid regions](#).
 - **Local extinction in several regions:** Due to habitat loss, persecution, and expanding agriculture, the species has now vanished from many areas, including parts of Punjab, Haryana, and Himachal Pradesh.
 - **Ancient evolutionary lineage:** Fossil and genetic studies show it diverged from other wolf species thousands of years ago, making

it one of the oldest wolf lineages in the world.

- **Evolution in India's ecosystems:** The species evolved uniquely in India's semi-arid and [grassland ecosystems](#), long before human civilization spread across the subcontinent.
- **Physical Characteristics:**
 - **Smaller and leaner build:** The Indian wolf is smaller and slimmer than Himalayan or [Eurasian wolves](#), reflecting adaptation to open and dry landscapes.
 - **Distinct coat coloration:** It has a light brown-grey coat and short fur, which helps it camouflage in scrub and grassland habitats.
 - **Adaptation to heat:** The wolf lacks the thick undercoat found in northern wolves, enabling it to survive in high temperatures and low-rainfall regions.
 - **Agile and long-limbed:** Its long limbs and narrow body allow for speed and endurance during hunting in open terrains.

Other Species and Their Updated IUCN Status (2025)

1. **Hooded Seal** – Upgraded to Endangered
2. **Bearded Seal** – Now classified as Near Threatened
3. **Harp Seal** – Now classified as Near Threatened
4. **Green Turtle** – Now classified as Vulnerable (Downgraded)

THE TIGERS OUTSIDE TIGER RESERVES (TOTR) PROJECT

Context: During Wildlife Week 2025 celebrations at the Forest Research Institute (FRI), Dehradun, Union Environment Minister launched five major conservation projects and four national-level wildlife monitoring programmes.



About The Tigers Outside Tiger Reserves (TOTR) Project:

What it is?

- The Tigers Outside Tiger Reserves (TOTR) is a new national-level initiative by the Ministry of Environment, Forest and Climate Change (MoEFCC) and the National Tiger Conservation Authority (NTCA).
- The project will be implemented over **2025–28**,

with a total outlay of **₹88.7 crore**, coordinated centrally by [NTCA](#) and executed through **state forest departments**.

Aim:

- To reduce [human-tiger conflicts](#) in non-reserve landscapes by ensuring safe coexistence between people and dispersing tigers.
- To protect tigers that move beyond reserve boundaries due to habitat fragmentation, growing populations, and shrinking corridors.
- To foster a landscape-level conservation approach, balancing ecological sustainability with human safety and livelihoods.

Key Features of the Project:

- **Geographical Coverage:**
 - Encompasses 80 forest divisions in 17 tiger-range states, including Madhya Pradesh, Maharashtra, Karnataka, Uttarakhand, Assam, Kerala, Tamil Nadu, West Bengal, and Arunachal Pradesh.
 - Focuses on buffer and corridor areas adjoining high-density tiger reserves.
- **Scientific Monitoring & Technology Use:** Deployment of AI-based early warning systems, camera traps, GPS-enabled patrolling, and data analytics for wildlife tracking.
- **Community & Youth Involvement:** Formation of **Rapid Response Teams (RRTs)** with **local youth**, equipped with rescue tools, tranquilization gear, and vehicles.
 - Launch of “**Bagh Mitra**” (**Tiger Friends**) outreach programmes and jungle camps for students to promote coexistence.
- **Institutional Mechanism:**
 - **NTCA** will oversee project implementation.
 - **Chief Wildlife Wardens (CWLWs)** and State CAMPA authorities will manage funds and execution at the ground level.

About Other Conservation Projects Launched:

1. **Project Dolphin (Phase II):** Conservation of river and marine cetaceans, including the endangered Ganga River Dolphin and [Indus Dolphin](#).
2. **Project Sloth Bear:**
 - Establishing the **first-ever national conservation framework** for **sloth bears**, which face habitat loss and poaching threats.
 - **Features:** Habitat protection, mitigation of bear-human conflict, rescue and rehabilitation centres, and awareness campaigns.
3. **Project Gharial:** Strengthening recovery of the **critically endangered gharial** population in river ecosystems such as the Chambal and Gandak.
4. **Centre of Excellence for Human-Wildlife Conflict Management (CoE-HWC)**
 - **Location:** Sálim Ali Centre for Ornithology

- and Natural History (SACON).
- o **Role:** Serve as a **research and policy hub** to develop AI-based conflict prediction models, field-based mitigation tools, and capacity-building for forest officials and communities.

SOUTHEAST ASIA'S FIRST CORAL LARVAE CRYOBANK

Context: The Philippines has launched Southeast Asia's first coral larvae cryobank, a pioneering initiative to freeze and preserve coral "seeds" to protect marine biodiversity and revive [damaged reefs](#).



About Southeast Asia's First Coral Larvae Cryobank:

What it is?

- A scientific facility that freezes and stores coral larvae at ultra-low temperatures to preserve their genetic material for future use in reef restoration or research.
- Functions as a "genetic seed vault" for corals, helping safeguard biodiversity that could be lost due to [climate change](#) and coral bleaching.

Nations Involved:

- The project is part of a regional network under the Coral Research & Development Accelerator Platform.
- Participating countries include the **Philippines, Taiwan, Indonesia, Malaysia, and Thailand**.

How It Works?

- **Collection of Coral Larvae:** Coral larvae — the free-swimming reproductive stage — are collected during spawning events.
- **Cryoprotection:** The larvae are exposed to [cryoprotective solutions](#) that prevent ice crystal formation during freezing.
- **Vitrification Process:** Using a rapid freezing technique, larvae are plunged into **liquid nitrogen at -196°C** , turning them into a glass-like state without crystallisation.
- **Revival Process:** When needed, **laser-based rapid warming** thaws the samples within seconds, preventing cell damage.

- **Rehydration & Growth:** Revived larvae are rehydrated in seawater, monitored for movement and settling, then transferred to controlled tanks for coral regrowth.

Features:

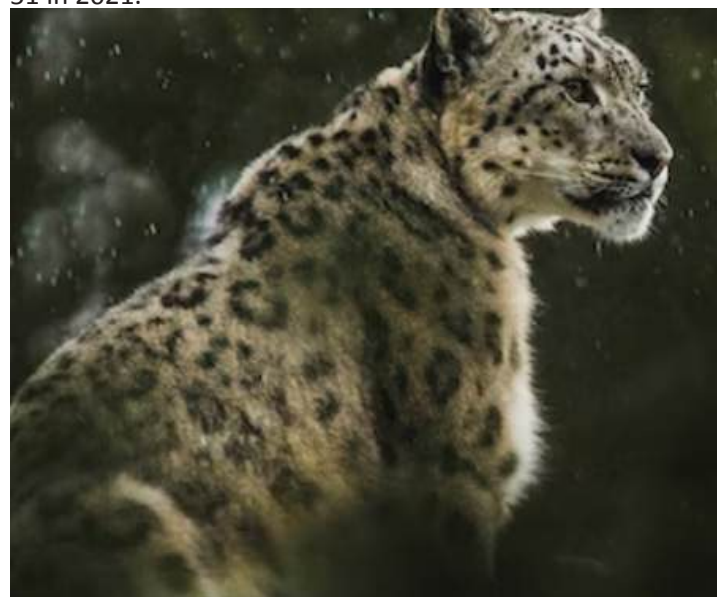
- **Preserves Coral Genetic Diversity:** Maintains coral genotypes for decades, even if species vanish in the wild.
- **Climate-Resilient Restoration:** Enables **reef revival** using cryopreserved material, supporting adaptive restoration in warming oceans.
- **Research Resource:** Provides a **long-term data bank** for studying coral evolution, reproduction, and stress resistance.
- **Collaborative Network:** Integrates regional expertise to create a Coral Triangle Cryobank Network, ensuring shared protocols and data.
- **Model Species Approach:** Begins with hardy corals like Pocillopora, Acropora, and Galaxsia before expanding to endangered ones.

Limitations:

- **Technical Complexity:** [Coral larvae](#) are large, lipid-rich, and heat-sensitive, making vitrification challenging.
- **Species-Specific Protocols:** Each coral species requires different freezing and revival parameters.
- **Low Survival Rates:** Not all thawed larvae survive or successfully recolonise reefs.
- **Infrastructure and Cost:** Requires specialised labs, [liquid nitrogen](#) systems, and expert training, limiting scalability in developing nations.

SNOW LEOPARD

Context: A new survey by the Himachal Pradesh Forest Department recorded 83 snow leopards in the state, up from 51 in 2021.



About Snow Leopard (*Panthera uncia*):

What it is?

- A large, elusive wild cat, often called the “ghost of the mountains” due to its natural camouflage and secretive behaviour.
- It is the **State Animal of Himachal Pradesh** and an important indicator species for fragile [high-altitude ecosystems](#).

Found in:

- Native to the **high mountains of Central and South Asia**, across 12 countries including Afghanistan, China, India, Nepal, and Mongolia.
- **In India:** Found in Western Himalayas (J&K, Ladakh, Himachal Pradesh, Uttarakhand) and Eastern Himalayas (Sikkim, Arunachal Pradesh).

IUCN Status: Listed as **Vulnerable (VU)** on the IUCN Red List.

Characteristics of Snow Leopard:

- **Physical Traits:**
 - **Fur & Camouflage:** Thick, white-grey coat with dark rosettes helps it blend with snow-covered rocky slopes—earning the name “Ghost of the Mountains.”
 - **Strength & Agility:** Powerful hind legs allow leaps **up to six times its body length**, helping chase prey in [steep terrain](#).
- **Biological Traits:**
 - **Diet:** Strictly carnivorous—feeds on **blue sheep, Himalayan ibex, marmots, pikas, hares**, and other high-altitude prey.
 - **Territory Size:** Needs very large ranges due to low prey density—ranges vary from **5 sq. miles in Nepal** to **over 190 sq. miles in Mongolia**.
- **Social & Behavioral Traits:**
 - **Lifestyle:** Mostly **solitary** and territorial, except during mating season or when mothers rear cubs.
 - **Habitat Preference:** Inhabits **high-altitude cold deserts** and rugged slopes above **3,000 m**, often up to 5,500 m.
 - **Elusiveness:** Naturally shy and nocturnal, with very **low population density**, making sightings extremely rare.

Environmental Pollution

CLOUD SEEDING IN DELHI

Context: For the first time in over five decades, the Delhi government, in collaboration with IIT-Kanpur, has conducted a cloud seeding trial to induce artificial rain and combat the city’s severe air pollution.

- The experiment involved a [Cessna 206H aircraft](#) dispersing flares loaded with seeding material over north and east Delhi.



About Cloud Seeding in Delhi:

What it is?

- Cloud seeding is a weather modification technique aimed at artificially inducing rainfall by dispersing certain chemicals into [clouds](#) to enhance precipitation. It is being tested in Delhi as a scientific measure to reduce air pollution by settling [suspended pollutants](#) through rainfall.

Organizations Involved: The project is a joint initiative between the Delhi Government and the Indian Institute of Technology (IIT) Kanpur.

Chemicals Used:

- Silver iodide (AgI)
- Potassium iodide (KI)
- [Sodium chloride](#) (NaCl)

These act as “seed particles” or **condensation nuclei** around which water vapour condenses to form raindrops.

How Cloud Seeding Works?

- **Identification of Suitable Clouds:** Meteorologists first monitor weather conditions using radar and satellite data to identify clouds with sufficient moisture content and depth. Only these clouds can sustain the process of [artificial rain formation](#).
- **Deployment of Aircraft/Drones:** A small aircraft or drone (in Delhi’s case, a Cessna 206H) carries seeding flares containing specific chemical agents such as silver iodide, potassium iodide, or sodium chloride.
- **Release of Seeding Agents:** Once the aircraft reaches the targeted altitude, flares are ignited and released into the base or interior of the clouds. Each flare, weighing around 2–2.5 kg, contains fine particles that act as condensation or ice nuclei.
- **Nucleation and Condensation Process:** The released particles attract surrounding water vapour. In warm clouds, [water droplets](#) form and grow around the salt particles; in cold clouds, ice crystals form around silver iodide. These microphysical processes increase droplet size and density.
- **Droplet Growth and Coalescence:** As more droplets collide and merge, they become **heavier and larger**, accelerating their downward fall due to gravity. This process eventually results in **precipitation**—either rain or snow, depending on temperature.
- **Artificial Rainfall and Pollution Washout:** The induced rainfall helps settle airborne pollutants such

as PM_{2.5}, [PM10](#), and dust particles, temporarily improving air quality and visibility.

- In Delhi's case, eight flares (2–2.5 kg each) were fired into clouds with 15–20% humidity, targeting areas such as Burari, Karol Bagh, and Mayur Vihar.

Result: Attempts to induce rain through cloud seeding in parts of Delhi on Tuesday were “not completely successful” because the moisture content in the clouds was low.

Limitations:

- **Dependence on weather:** Requires **sufficient cloud cover and moisture**, which are often lacking in Delhi's dry winter months.
- **Short-term relief:** Even if successful, rainfall offers **only temporary pollution reduction**, without addressing root causes like emissions and stubble burning.
- **Environmental concerns:** Residual **silver iodide** may pose **toxicity risks** to soil and water ecosystems.

GREEN CRACKERS

Context: As Diwali approaches, discussions around the environmental impact of fireworks have resurfaced, with experts highlighting that [green crackers](#)—though less polluting—are not entirely clean.



About Green Crackers:

What it is?

- Green crackers are **eco-modified firecrackers** developed by [CSIR–NEERI](#) to reduce emissions of particulate matter, toxic gases, and noise levels compared to conventional fireworks. They aim to provide a safer alternative that maintains festivity while [minimizing pollution](#).

Chemical Components: They are formulated without **barium nitrate**, a major toxic component, and instead use safer substitutes like [potassium nitrate](#), [strontium salts](#), [zeolite](#), and [iron oxide](#). These additives help capture soot and reduce metallic residues such as aluminium and copper in emissions.

How it works?

- The redesigned chemical composition enables **controlled oxidation** and **reduced combustion temperature**, producing light and sound with 30–

40% lower PM_{2.5}, SO₂, and [NO_x emissions](#).

- Compounds like zeolite act as absorbents for dust and gaseous by-products, limiting pollutant release.

Features:

- Developed under the **CSIR–NEERI certification system** with a QR code for authenticity.
- Include variants such as [SWAS \(Safe Water Releaser\)](#), [STAR \(Safe Thermite Cracker\)](#), and [SAFAL \(Safe Minimal Aluminium\)](#).
- Reduce harmful metal oxides and heavy metal toxicity.
- Comply with Supreme Court-mandated emission limits and [Pollution Control Board](#) norms.
- Designed to maintain traditional colours and brightness with safer chemistry.

Significance:

- Green crackers represent a transitional innovation toward sustainable celebrations, reducing air, soil, and noise pollution during festivals.
- They align with India's [net-zero](#) and clean air goals, making the country the only nation with a formal government-backed programme

GRADED RESPONSE ACTION PLAN (GRAP)

Context: The Commission for Air Quality Management (CAQM) invoked Stage II of the Graded Response Action Plan ([GRAP](#)) across Delhi-NCR as the city's Air Quality Index ([AQI](#)) crossed 300 (“very poor”).



About Graded Response Action Plan (GRAP):

What it is?

- The **Graded Response Action Plan (GRAP)** is a statutory framework that specifies **stage-wise measures** to be implemented to combat deteriorating air quality in the National Capital Region. It provides predefined actions based on the severity of pollution.

Established in: GRAP was first introduced in **2017** under the directives of the **Supreme Court of India** and the [Environment \(Protection\) Act, 1986](#).

- Later revised by the [CAQM](#) in **December 2024** to

include predictive action based on IMD and IITM forecasts.

Aim: The plan aims to create a **graded and preemptive response system** for air quality management by identifying specific interventions to be taken as the AQI worsens in Delhi-NCR.

Criteria / Stages: GRAP classifies air quality into four categories based on AQI levels and corresponding actions:

Stage	Category	AQI Range	Actions
Stage I	Poor	201–300	Dust control, waste removal, enforcement of vehicle norms
Stage II	Very Poor	301–400	Mechanical sweeping, C&D monitoring, DG set regulations
Stage III	Severe	401–450	Restrictions on BS-III/IV vehicles, construction limits
Stage IV	Severe+	Above 450	Ban on truck entry, WFH orders, halting C&D projects

Key Features of GRAP:

- **Dynamic implementation:** Actions are activated dynamically based on real-time AQI data and IMD/IITM forecasts, allowing authorities to respond before pollution peaks.
- **Cumulative approach:** Each higher stage includes all measures from lower stages, ensuring progressive tightening of restrictions as air quality worsens.
- **Inter-agency coordination:** Implementation involves coordinated efforts among CAQM, CPCB, SPCBs, [Urban Local Bodies](#) (ULBs), and Traffic Police, ensuring accountability at every level.
- **Predictive enforcement:** Measures are invoked in advance when forecasts show a likely rise in AQI, promoting preventive rather than reactive air quality management.

ENVIRONMENTAL SURVEILLANCE

Context: ICMR announced a plan to start wastewater surveillance for 10 viruses across 50 Indian cities, expanding [India's disease monitoring system](#).



About Environmental surveillance:

What It Is?

- **Environmental surveillance** is the monitoring of pathogens (viruses, bacteria, parasites) in environmental samples like **sewage, wastewater, soil, and air**.
- It supplements traditional clinical case detection by identifying **hidden and asymptomatic infections** in communities.

How It Works?

- **Sample Collection:** Samples are drawn from sewage plants, hospitals, airports, and public spaces, ensuring wide coverage of community health indicators.
- **Pathogen Detection:** Tests identify viruses, bacteria, and parasites shed in stools, urine, or respiratory secretions, revealing hidden infections.
- **Genome Sequencing:** [Whole-genome sequencing](#) helps track mutations and emerging variants, crucial for pandemic preparedness.
- **Comparison Over Time:** Daily pathogen load analysis provides trends of spread, offering advance notice of rising infections in populations.

Features:

- **Non-invasive:** Monitors entire communities without testing individuals, ensuring privacy and broad inclusivity.
- **Cost-effective:** Single [wastewater](#) tests reflect thousands of people's health status, making it low-cost and scalable.
- **Time-sensitive:** Detects infection surges 7–10 days before clinical cases rise, enabling early interventions.
- **Scalable:** Applicable to multiple diseases — from cholera and polio to COVID-19, enhancing surveillance reach.
- **Tech-enabled:** AI/ML tools analyse patterns, and smart sensors/cough-audio monitoring extend surveillance beyond wastewater.

Significance:

- **Early Warning System:** Allows governments to prepare healthcare response in advance.
- **Better Public Health Planning:** Helps allocate vaccines, medicines, and hospital capacity.

Climate Change

SWITZERLAND

Context: Swiss [glaciers](#) lost 3% of their total ice mass in 2024–25, marking the fourth-largest reduction on record, according to GLAMOS.



About Switzerland:

- **Location:**
 - A landlocked country in Central Europe.
 - Lies at the hydrographic center of Europe, forming sources of major rivers.
- **Capital:** Bern (administrative) and **Lausanne** (judicial).
- **Bordering Nations:** France, Germany, Italy, Austria & Liechtenstein.
- **Physical Features:**
 - **Glaciers** – About 1,400 glaciers in the Alps, but one-quarter of volume lost since 2015;
 - The largest glacier in Switzerland is the **Aletsch Glacier** (also known as the **Great Aletsch Glacier** or *Grosser Aletschgletscher*).
 - **Rivers** – Source of Rhône (to Mediterranean) and Rhine (to North Sea), also Ticino (to Po) and Reuss (to Aare).
 - **Mountains** – **Alps** dominate; major peaks include Dufourspitze (4,634 m), Matterhorn (4,478 m), Weisshorn, and Dom. Jura Mountains lie in northwest; Mittelland plateau in between.
 - **Uniqueness:**
 - Multilingual nation (German, French, Italian, Romansh).
 - Tradition of neutrality and home to **UN** bodies in Geneva.
 - Famous for precision industries (watches, pharmaceuticals, banking) and direct democracy with referenda.
 - Hosts Gotthard Base Tunnel, world's longest rail tunnel.

Indian Laws/Schemes/Acts

INDIA'S NATIONAL RED LIST ROADMAP

Context: At the [IUCN World Conservation Congress 2025](#) in Abu Dhabi, Union MoS for Environment launched India's

National Red List Roadmap and Vision 2025–2030.



About India's National Red List Roadmap:

What It Is?

- A national initiative to create an integrated Red List assessment system for identifying, classifying, and conserving India's threatened species — aligned with IUCN global standards.

Organisation involved:

- Zoological Survey of India ([ZSI](#)) and Botanical Survey of India (BSI), in collaboration with IUCN-India and the Centre for Species Survival (CSS), India.

Aim:

- To establish a nationally coordinated, inclusive, and science-based red-listing system for accurate species assessment, evidence-based conservation planning, and informed policymaking.
- To fulfil India's commitments under the Convention on Biological Diversity (CBD) and the [Kunming-Montreal Global Biodiversity Framework](#) (KMGBF).

Key Features:

- **Comprehensive multi-taxa coverage:** First-of-its-kind national effort assessing **both flora and fauna**, including terrestrial and marine biodiversity.
- **Publication of National [Red Data Books](#)** for flora and fauna by 2030.
- **Integration of traditional knowledge** for community-driven biodiversity documentation.
- **Science-based threat assessment** and conservation prioritization using IUCN's globally accepted methodologies.
- **Collaborative structure** involving taxonomists, conservation scientists, and policymakers for unified national data.

About Vision 2025–2030 Document:

What It Is?

- A strategic vision framework outlining India's roadmap for biodiversity assessment and conservation for the period 2025–2030, aligned with UN [Sustainable Development Goals](#) and KMGBF targets.

Objectives:

- To create a centralised biodiversity database and promote data-driven conservation

decisions.

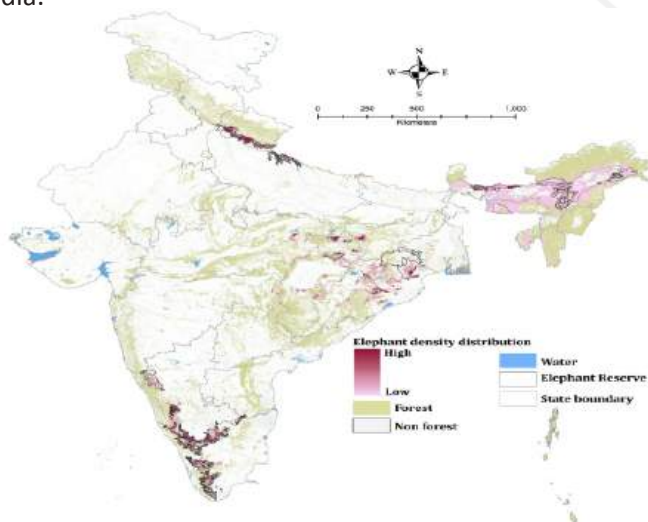
- o To strengthen species identification and taxonomy through collaboration among experts.

- **Key Features:**

- o Establishes a **national coordination network** connecting scientific, academic, and local institutions.
- o Promotes **baseline data generation** for threatened species to guide future **Wildlife Action Plans**.
- o Encourages **use of digital tools and GIS mapping** for species monitoring.
- o Emphasizes **equity and inclusivity**, ensuring representation of local and indigenous communities.
- o Sets a **2030 target** for publishing India's **comprehensive Red Data Books** and updating threat categories.

SYNCHRONOUS ALL INDIA ELEPHANT ESTIMATION (SAIEE) 2021-25

Context: After over a year's delay, the Synchronous All India Elephant Estimation (SAIEE) 2021-25 results were released in Dehradun by the Union Environment Ministry and Wildlife Institute of India (WII), reporting 22,446 elephants across India.



About Synchronous All India Elephant Estimation (SAIEE) 2021-25:

- **What it is?**
 - o SAIEE is India's **nationwide synchronized census of Asian elephants (Elephas maximus)** conducted every five years to estimate their population, distribution, and habitat health.
- **Published by:** Jointly released by the **Ministry of Environment, Forest and Climate Change (MoEFCC)** and the **Wildlife Institute of India (WII)**.
- **Aim:** To create a **harmonized, data-driven baseline**

for elephant population monitoring by synchronizing it with the **tiger estimation framework** to ensure scientific accuracy and comparability.

- **Key Results:**
- **Total Elephant Population:** 22,446 individuals across India.
- **Regional Distribution:**
 - o **Western Ghats:** 11,934 elephants – largest cluster in the country.
 - o **Northeastern Hills & Brahmaputra Plains:** 6,559 elephants.
 - o **Shivalik Hills & Gangetic Plains:** 2,062 elephants.
 - o **Central India & Eastern Ghats:** 1,891 elephants.
- **Top States by Population:** Karnataka (6,013), Assam (4,159), Tamil Nadu (3,136), Kerala (2,785), Uttarakhand (1,792).
- **Population Trends:**
 - o Decline in **Jharkhand (-68%)** and **Odisha (-54%)** due to mining and habitat degradation.
 - o Rise in **Chhattisgarh (+82.6%)** and **Madhya Pradesh**, attributed to migration from disturbed eastern regions.

State/Landscape	Population
Karnataka	6,013
Tamil Nadu	3,136
Kerala	2,785
Western Ghats	11,934
Jharkhand	217
Odisha	912
Madhya Pradesh	97
Chhattisgarh	451
Maharashtra (Western Ghats & Gadchiroli)	63
West Bengal (South)	31
Andhra Pradesh	120

Central India & Eastern Ghats	1,891
Uttarakhand	1,792
Uttar Pradesh	257
Bihar	13
Shivalik Hills & Gangetic Plains	2,062
Arunachal Pradesh	617
Assam	4,159
Manipur	9
Meghalaya	677
Mizoram	16
Nagaland	252
Tripura	153
West Bengal (North)	676
North Eastern Hills & Brahmaputra Flood Plains	6,559
TOTAL	22,446

- **Significance:**
 - o Provides a new baseline estimate using advanced tiger census methodology (camera trapping, [DNA analysis](#), and sampling).
 - o Helps design corridor-based conservation strategies, crucial for reducing [human-elephant conflict](#).

CRITICAL MINERAL RECYCLING INCENTIVE SCHEME

Context: The Ministry of Mines has issued detailed guidelines for the ₹1,500 crore Critical Mineral Recycling Incentive Scheme, a key component of the [National Critical Mineral Mission](#), to promote domestic recycling and reduce import dependence.

About Critical Mineral Recycling Incentive Scheme:

What it is?

- A centrally sponsored incentive scheme under the Ministry of Mines designed to promote recycling of critical minerals from secondary sources such as e-waste and spent lithium-ion batteries.

Parent Scheme: National Critical Mineral Mission (NCMM)

Aim:

- To reduce import dependence for essential minerals used in [EVs](#), batteries, electronics, and renewable energy systems.

- To build [circular economy](#) capacity by encouraging extraction and reuse of critical minerals from waste streams.



PRELIMS PRISM
FOR UPSC PRELIMS 2025

TOPIC: NATIONAL CRITICAL MINERAL MISSION (NCMM)

Why in news?

The Union Cabinet, has approved the National Critical Mineral Mission (NCMM) with an expenditure of ₹16,300 crore and an additional ₹18,000 crore investment from PSUs.

About National Critical Mineral Mission (NCMM):

- **Ministry:** Ministry of Mines
- **Announced in:** Union Budget 2024-25
- **Budget:** ₹34,300 crore (₹16,300 crore from the government + ₹18,000 crore from PSUs & private sector)
- **Objective:** Strengthen India's supply chain for critical minerals through domestic exploration, overseas asset acquisition, and technological innovation.
- **Aims of NCMM:**
 - o Boost Domestic Exploration & Processing: Expand critical mineral exploration onshore and offshore, fast-track mining approvals, and set up mineral processing parks and recycling hubs.
 - o Promote R&D and Innovation: Invest in advanced mineral processing technologies and establish Centres of Excellence to drive innovation and sustainability.
- **Key features of NCMM:**
 - o Comprehensive Value Chain Development: Covers exploration, mining, beneficiation, processing, and recycling of critical minerals.
 - o Financial Incentives: Offers monetary support for exploration and sustainable mineral recovery.
 - o Stockpile Strategy: Develops a national reserve of critical minerals for long-term security.
 - o Industry Collaboration: Encourages PSUs and private firms to invest in global mining projects.

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Key Features:

1. **Financial Outlay:** ₹1,500 crore total incentive allocation.
2. **Eligibility:** Covers **new units, capacity expansion, and modernisation** of existing recycling units.
3. **Feedstock Source:** Includes **e-waste, spent lithium-ion batteries**, and other metal-rich scraps.
4. **Beneficiaries:** Both **large recyclers and start-ups**, with ceilings of ₹50 crore and ₹25 crore respectively (including Capital Expenditure + Operational Expenditure support).
5. **Focus Area:** Incentives limited to the **actual extraction of critical minerals**, excluding black mass production stage.
6. **Expected Outcomes:**
 - o Develop 270 kilo tonnes/year recycling capacity.
 - o Yield 40 kilo tonnes of [critical minerals](#) annually.
 - o Mobilise ₹8,000 crore private investment.
 - o Create 70,000 direct and indirect jobs.

Significance:

- **Strategic Independence:** Reduces reliance on China and other nations for critical minerals essential for EVs and renewable technologies.

Circular Economy Boost: Encourages sustainable reuse

of resources, aligning with India's LiFE ([Lifestyle for Environment](#)) mission

International Policies/Efforts

CENTRAL ASIAN MAMMALS INITIATIVE (CAMI)

Context: Central Asian nations, including India, have endorsed a six-year transboundary conservation plan under the [Central Asian Mammals Initiative \(CAMI\)](#) to protect 17 migratory mammal species.



About Central Asian Mammals Initiative (CAMI): What it is?

- The Central Asian Mammals Initiative (CAMI) is a collaborative conservation framework under the Convention on the Conservation of Migratory Species of Wild Animals (CMS), aimed at protecting migratory and [nomadic mammals](#) across Central Asia's vast steppe, desert, and mountain ecosystems.

Established in: Launched in **2014** during [COP11 of CMS](#) held in Quito, Ecuador, and later revised at COP13 (Gandhinagar, India, 2020).

Aim: To preserve migratory connectivity, combat threats such as habitat fragmentation, poaching, and climate change, and enhance cross-border cooperation among Central Asian nations for shared species conservation.

Key Features:

- Covers **17 flagship species**, including **Saiga antelope, Snow leopard, Wild camel, Urial, Argali sheep, Bukhara deer**, and [Persian leopard](#).
- Encourages **regional coordination** through national action plans, data sharing, and removal of physical migration barriers.
- Promotes **ecosystem-level management** rather than isolated species protection.
- Engages **governments, NGOs, IUCN**, and local communities in a multi-stakeholder approach.

Significance:

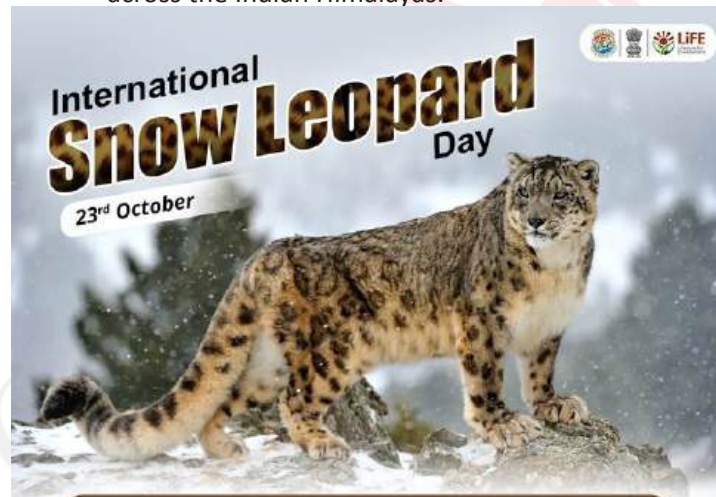
- Preserves the "Serengeti of the North", one of the world's largest remaining landscapes for long-distance ungulate [migrations](#).

- Enhances transboundary ecological connectivity vital for species adapting to climate change.

'23FOR23' INITIATIVE

Context: India celebrated International [Snow Leopard Day](#) (October 23, 2025) with the nationwide '#23for23' campaign.

- Government also unveiled the **first-ever national Snow Leopard Census**, recording 718 individuals across the Indian Himalayas.



#23for23: 23 Minutes for Snow Leopards

A global digital campaign that invites individuals, institutions, and communities worldwide to dedicate **23 minutes of physical activity** — such as walking, running, cycling, yoga, or stretching — to honour the snow leopard, the ultimate mountain athlete.

moefcc moefccgci moef.gov.in

About '23for23' Initiative: What it is?

- A nationwide awareness campaign launched by the Ministry of Environment, Forest and Climate Change (MoEFCC) to engage citizens in snow leopard conservation through community-driven participation.

Aim:

- To raise awareness about snow leopard habitats and conservation challenges.
- To inspire public involvement in protecting India's high-altitude ecosystems under the Global Snow Leopard and Ecosystem Protection Programme ([GSLEP](#)).

Key Findings of the Snow Leopard Census in India (2025):

- Total Count:** The census recorded **718 individual snow leopards** across India's Himalayan landscape — marking the **first official nationwide estimate**.
- Regional Distribution:**
 - Ladakh:** 477 individuals — the highest population in India.
 - Himachal Pradesh:** 51 individuals.
 - Uttarakhand:** 71 individuals.

- **Arunachal Pradesh & Sikkim:** 61 individuals combined.
- **Jammu & Kashmir (excluding Ladakh):** 58 individuals.
- **Collaborating Agencies:** Led by MoEFCC, supported by WWF-India, Snow Leopard Trust, and local communities under the [Project Snow Leopard](#) framework.

About Snow Leopard:

- **What it is?**
 - A **medium-sized big cat species** native to the **high-altitude mountain ranges of Central and South Asia**, known for its elusive behavior and crucial ecological role as a **keystone species** in the Himalayan ecosystem.
- **Scientific Name:** *Panthera uncia*
- **IUCN Status:** Vulnerable
- **Habitat (Global):** Found across **12 countries** including India, Nepal, China, Mongolia, Pakistan, Afghanistan, and Kazakhstan, typically between 3,000–5,000 meters in elevation in cold, arid, and rocky terrains.
- **Habitat (India):** Distributed across the [Himalayan states](#) and UTs — **Ladakh, Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Sikkim, and Arunachal Pradesh** — covering major high-altitude ecosystems.
- **Characteristics:**
 - Height: ~60 cm; Length: 100–130 cm; Weight: 35–55 kg.
 - Smoky-grey fur with dark rosettes; **excellent camouflage** against rocky slopes.
 - **Solitary and crepuscular** (active at dawn and dusk).
 - **Silent predator** — unlike other big cats, snow leopards **cannot roar**.
 - **Breeds every two years**, giving birth to 1–2 cubs, making population recovery slow.
 - Known as the **“Ghost of the Mountains”** due to its stealth and rarity.

AMAZONFACE EXPERIMENT

Context: Scientists in Brazil have launched the AmazonFACE “climate time machine” experiment near Manaus to study how the [Amazon rainforest](#) will respond to future levels of atmospheric carbon dioxide.



About AmazonFACE Experiment:

What It Is?

- AmazonFACE (Free-Air CO₂ Enrichment) is a **large-scale climate simulation project** designed to assess how [tropical rainforests](#)—especially the Amazon—will react to elevated CO₂ levels expected by **2050–2060**. It is the **first experiment of its kind in tropical forests**.

How It Works?

- Six **steels tower rings** are installed around groups of **50–70 mature trees**.
- In three rings, trees are **fumigated with CO₂** concentrations matching **future climate forecasts**, while the remaining serve as control plots.
- Continuous sensors record data on [photosynthesis](#), **oxygen release**, and **water vapor exchange** every 10 minutes.
- The goal is to recreate the **“atmosphere of the future”** and observe ecosystem-level responses.

Key Features:

- **Location:** Conducted near Manaus, Brazil, supported by INPA (National Institute for Amazon Research) and Universidade Estadual de Campinas, with collaboration from the UK government.
- **Scientific Innovation:** First large-scale FACE experiment in a **natural tropical forest**, extending earlier FACE trials in temperate regions like the U.S.
- **Continuous Monitoring:** Real-time environmental data tracking rain, storms, [CO₂ absorption](#), and respiration.
- **Climate Modelling Application:** Helps predict changes in forest carbon storage, biodiversity, and resilience under future atmospheric conditions.
- **Policy Linkage:** Provides crucial input for climate policy deliberations at COP30, especially regarding rainforest conservation and [carbon budgeting](#).

Significance:

- **Climate Adaptation Insight:** Helps predict how the Amazon rainforest will respond to rising CO₂ levels, guiding global climate adaptation strategies.
- **Scientific Breakthrough:** Marks the world’s first large-scale CO₂ enrichment experiment in a tropical rainforest ecosystem, expanding the scope of climate modeling.
- **Policy Relevance:** Provides critical data for [COP30 negotiations](#) and strengthens Brazil’s leadership in global climate science and carbon sequestration research.

IUCN KENTON MILLER AWARD 2025

Context: Dr. Sonali Ghosh, Field Director of [Kaziranga National Park](#) and Tiger Reserve, became the first Indian to win the IUCN WCPA Kenton Miller Award 2025, announced at the IUCN World Conservation Congress in Abu Dhabi.



About IUCN Kenton Miller Award 2025:

- **What it is?**
 - A prestigious international award that honours individuals demonstrating innovation and excellence in the sustainability of protected areas management.
- **Named after:** Dr. Kenton R. Miller, pioneer conservationist and former IUCN Director-General.
- **Provided by:** IUCN [World Commission on Protected Areas](#) (WCPA).
- **Launched in:** 1999, to celebrate creativity and leadership in park governance.
- **Aim:**
 - **Promote Innovation:** Encourage novel approaches in planning, monitoring, capacity-building, and financing of protected areas.
 - **Recognize Impact:** Highlight individuals whose work has demonstrably improved the sustainability of natural and cultural heritage sites.
- **Eligibility Criteria:**
 - Open to **protected-area managers, researchers, and educators** across all forms of governance (governmental, community, indigenous, private).
 - **Preference given** to candidates without prior international awards.
 - Includes a **USD 5,000 grant**, global citation, and funded attendance at the [IUCN World Congress](#).
- **2025 Winner:** [Dr. Sonali Ghosh](#) (India) — Field Director, Kaziranga National Park & Tiger Reserve, Assam.
- **Awarded for:**
 - Integrating **local communities** into park stewardship.
 - Developing **eco-friendly tourism** models ensuring livelihood security and wildlife protection.
 - Strengthening **anti-poaching operations and habitat connectivity** across Kaziranga–Orang–Manas landscape.
 - Promoting **gender inclusion** in field conservation teams.
- Her work positions India as a global leader in biodiversity governance and grassroots ecological

innovation.

ARMENIA JOINS IUCN

Context: Armenia has officially joined the International Union for Conservation of Nature (IUCN) during the [IUCN World Conservation Congress 2025](#) in Abu Dhabi, marking its entry into the global coalition for biodiversity protection.



About Armenia Joins IUCN:

- **What it is?**
 - A **landlocked transcontinental country** situated in the [South Caucasus region](#), at the crossroads of **Europe and Asia**.
- **Capital:** Yerevan (Erevan).
- **Bordering Nations:** Georgia, Azerbaijan, Iran, Turkey and Nakhchivan exclave (Azerbaijan) to the southwest.
- **Physical and Geographical Features:**
 - **Terrain:** Predominantly **mountainous**, with an **average elevation of 1,800 m**; lacks true lowlands.
 - **Highest Peak:** **Mount Aragats (4,090 m)** — an extinct volcanic peak.
 - **Major Basin:** [Lake Sevan Basin](#) — one of the largest freshwater alpine lakes in Eurasia.
 - **Rivers:** Includes **Aras, Hrazdan, Arpa, and Vorotan**, which provide hydropower and irrigation.
 - **Soils:** Rich in volcanic minerals (nitrogen, potash, phosphates); supports agriculture in highlands despite [rocky terrain](#).

INDIA WILL HOST THE 8TH INTERNATIONAL SOLAR ALLIANCE (ISA)

Context: India will host the 8th International Solar Alliance

(ISA) Assembly from October 27–30, 2025, at Bharat Mandapam, New Delhi.



About India will host the 8th International Solar Alliance (ISA):

What It Is?

- The International Solar Alliance (ISA) is a global intergovernmental organisation that promotes solar energy deployment worldwide to ensure energy access, energy security, and climate resilience.
- It serves as a collaborative platform for governments, industry, and financial institutions to accelerate the [solar transition](#) in developing nations.

Launched: 2015

Origin: Joint initiative by **India and France** during the [COP21 Climate Summit](#) in Paris.

Headquarters: Gurugram, India — making ISA the first international organisation headquartered in India.

Members:

- 124 member and signatory countries (as of 2025), including over 90 full members.
- Open to all UN member states after a 2020 framework amendment.

Aim:

- To mobilise USD 1 trillion in solar investments by 2030.
- To deliver clean energy access to 1 billion people and install 1,000 GW of solar capacity globally.
- To promote low-cost, sustainable, and equitable energy systems through solar power, especially in [Least Developed Countries](#) (LDCs) and Small Island Developing States (SIDS).

Functions:

- **Policy & Advocacy:** Supports governments in designing solar-friendly policies and regulations through “Ease of Doing Solar” analytics and annual solar investment reports.
- **Programmatic Support:** Implements and scales solar projects in agriculture, health, transport, and energy sectors — including replication of India’s [PM-KUSUM](#) and PM Surya Ghar models in Africa and island nations.
- **Financing Mechanisms:**
 - Operates the **Africa Solar Facility**

(Ahmedabad-based) to provide **risk guarantees** and attract private capital for mini-grids and solar pumps.

- Aims to **leverage \$200 million** by 2026 to mobilise up to **\$2–4 billion in investments**.
- **Capacity Building:** Runs Solar Technology and Application Resource Centres ([STAR-C](#)) to train engineers, entrepreneurs, and policymakers in solar technologies.
- **Knowledge & Collaboration:** Works with MDBs, DFIs, private sector, and civil society to share data, innovation, and technology for affordable solar access.

Miscellaneous

ZOMBIE DEER DISEASE

Context: Health officials in Florida have confirmed new cases of [Chronic Wasting Disease](#) (CWD)—popularly known as “Zombie Deer Disease”—marking the state’s second detected instance of the fatal neurological infection in wild deer.



About Zombie Deer Disease:

- **What it is?**
 - A fatal neurological disorder that affects deer, elk, and moose, caused by abnormal prion proteins that damage the brain and [nervous system](#).
 - Classified under Transmissible Spongiform Encephalopathies (TSEs) — the same group as mad cow disease (BSE).
- **Origin:**
 - First detected in Colorado, USA, in the 1960s, it has now spread across 34 U.S. states, including Florida (2023, 2025), Canada, and parts of Europe.
 - The 2025 detection marks its geographical expansion into the southeastern U.S.
- **Vector (Causative Agent):**
 - Caused by [infectious prions](#), misfolded proteins that trigger the breakdown of normal brain proteins.

- These prions are resistant to heat, radiation, and disinfectants, making them extremely persistent in the environment.
- **Spread Through:**
 - **Direct animal contact** via saliva, urine, or feces.
 - **Environmental contamination** from infected carcasses, soil, and plants where prions can survive for years.
 - **Scavengers and hunters** may spread infection through tools, carcasses, or deer-urine lures.
 - **No human cases reported**, but health agencies urge **caution and limited exposure**.
- **Symptoms:**
 - Drastic weight loss (wasting), unsteady movement, and loss of fear of humans.
 - Drooling, lethargy, blank stares, and abnormal behaviour similar to “zombie-like” movements.
 - **Disease progression** is slow but irreversible, leading to death.
- **Treatment and Control:** No vaccine or cure exists; management focuses on **containment and surveillance**.

sensitive wildlife corridors.

- To ensure safe train operations and improve [human-wildlife coexistence](#).
- To integrate technology-driven conservation measures into railway management.

How it Works?

- The system uses **vibration-sensitive fibre optic cables** laid along railway tracks.
- When an elephant or large animal moves near the tracks, the vibrations trigger **real-time signals**.
- These signals are transmitted to **control rooms and train drivers**, enabling **immediate speed regulation or halting** of trains.
- The alerts are also used to monitor [wildlife movement](#) trends for **long-term conservation planning**.

Key Features:

- **Coverage:** Operational in four pilot sections across Alipurduar, Lumding, Rangiya, and Tinsukia Divisions, covering **64.03 km of elephant corridors**.
- **Expansion Plan:** To be extended to an additional **146.4 km by April 2026**, taking the total network to **210 km**.
- **Dual Functionality:** Provides **wildlife protection** while maintaining **operational efficiency**.
- **Real-time alerts:** Allows instant communication between [field sensors](#) and central monitoring systems.
- **Data integration:** Enables long-term data collection for route planning and habitat preservation.

INTRUSION DETECTION SYSTEM (IDS)

Context: The Northeast Frontier Railway (NFR) has implemented an Intrusion Detection System (IDS) across key elephant corridors to prevent elephant deaths caused by train collisions.



About Intrusion Detection System (IDS):

What it is?

- An AI- and sensor-based surveillance mechanism that uses [optical fibre cables](#) to detect movement of elephants or other wildlife near railway tracks and alert control rooms instantly to prevent collisions.

Launched by: The initiative has been launched by the Northeast Frontier Railway (NFR) under the Ministry of Railways.

Aim:

- To reduce elephant fatalities due to train collisions in

BLUE FLAG BEACHES

Context: [Five beaches in Maharashtra](#) — Shrivardhan, Nagaon, Parnaka, Guhagar, and Ladghar — have been awarded the international Blue Flag certification by the Foundation for Environmental Education (FEE), Denmark



About Blue Flag Beaches:

What it is?

- The Blue Flag is a globally recognised eco-label awarded to beaches, marinas, and sustainable boating tourism operators that meet stringent standards of environmental quality, safety, and management.

Organisation Involved: The certification is granted by the **Foundation for Environmental Education (FEE)**, Denmark, an international non-profit organisation working to promote sustainable environmental practices through education and certification.

India Joined In: India officially joined the [Blue Flag Programme](#) in 2018.

Aim:

- The Blue Flag programme aims to promote sustainable coastal tourism, protect marine ecosystems, and ensure safe, clean, and eco-friendly recreation spaces for visitors and local communities.

Criteria (Six Key Areas):

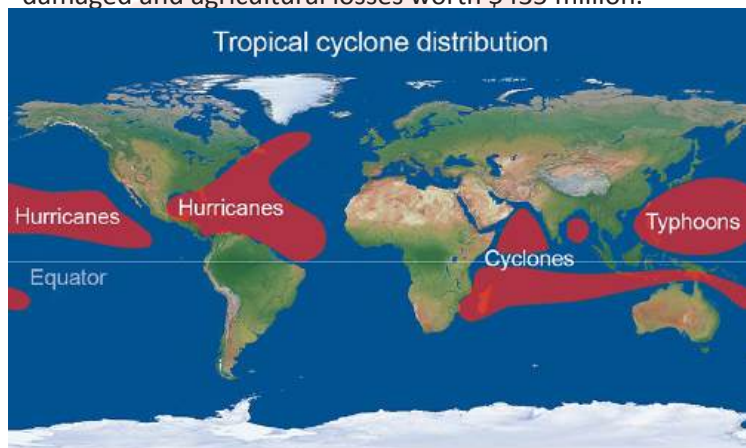
- Environmental Education and Engagement:** Promotes local ecosystem awareness and community participation.
- Climate Action:** Encourages [energy-efficient infrastructure](#) and resilience to coastal erosion and sea-level rise.
- Biodiversity Management:** Focuses on protecting wildlife habitats and managing coastal vegetation responsibly.
- Pollution and Water Quality:** Mandates top-grade water testing, waste segregation, and control of plastic and oil pollution.
- Accessibility:** Requires facilities and services to be inclusive and accessible for all, including [persons with disabilities](#).
- Safety and Services:** Enforces lifeguards, first-aid, and emergency plans for visitors' safety.

Current India Blue Flag Status (as of 2025):

- Total Certified Beaches:** 13 + 5 New (total 18 Beaches) Blue Flag beaches across India.
- Recent Additions:** Five beaches from Maharashtra — Shrivardhan, Nagaon, Parnaka, Guhagar, and Ladghar — received certification in 2025.

TYPHOON BUALOI

Context: The death toll in [Vietnam](#) from Typhoon Bualoi and subsequent floods has risen to 36, with over 210,000 houses damaged and agricultural losses worth \$435 million.



About Typhoon Bualoi:

What it is?

- A tropical cyclone (Category 2-equivalent at peak) in the Northwest Pacific Ocean, locally called Typhoon Opong in the Philippines.
- It was the 20th named storm and the 9th typhoon of the 2025 Pacific [typhoon season](#).

Origin:

- Formed from a disturbance north of **Yap**.
- Named *Opong* by PAGASA (Philippines) and *Bualoi* by JMA (Japan Meteorological Agency).
- Made multiple **landfalls in the Philippines** before intensifying into a typhoon and hitting **Hà Tĩnh, Vietnam**.

Features:

- Brought strong winds, storm surges, and heavy rainfall, leading to widespread flooding.
- Destroyed infrastructure like roads, schools, and power grids, leaving tens of thousands without electricity.
- Caused devastation to crops (51,000 hectares lost) and impacted [fishing communities](#).

Difference between Cyclone, Typhoon, and Hurricane

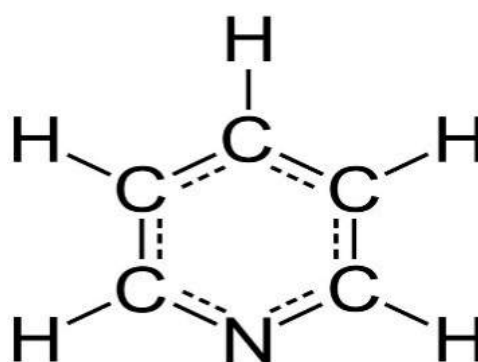
Term	Region of Occurrence
Hurricane	North Atlantic, Central & Eastern North Pacific
Typhoon	Northwest Pacific Ocean (East & Southeast Asia)
Cyclone	South Pacific & Indian Ocean

SCIENCE AND TECHNOLOGY

Chemistry

BENZENE

Context: Two centuries after its discovery, [benzene](#) remains a cornerstone of modern chemistry and industry. Yet, it stands as a double-edged molecule — the foundation of modern materials but also a source of grave environmental and health risks.



About Benzene:
What it is?

- Benzene (C_6H_6) is a colorless, volatile, aromatic hydrocarbon that forms the structural foundation of countless [industrial compounds](#) including plastics, dyes, detergents, and pharmaceuticals. Its unique ring structure makes it the cornerstone of aromatic chemistry.

Discovered by:

- It was first isolated in **1825** by **Michael Faraday** from the oily residue of illuminating gas in London and later structurally explained by **August Kekulé (1865)**, who proposed its cyclic hexagonal ring — a revolutionary concept in [organic chemistry](#).

Characteristics:

- **Chemical Stability:** Despite being unsaturated (C_6H_6), it exhibits remarkable stability due to delocalized π -electrons — a phenomenon known as *aromaticity*.
- **Physical Properties:** Colorless, sweet-smelling, [highly flammable liquid](#); insoluble in water but miscible with organic solvents.
- **Industrial Derivatives:** Forms the base for styrene, phenol, cyclohexane, nylon, and polystyrene.

Limitations:

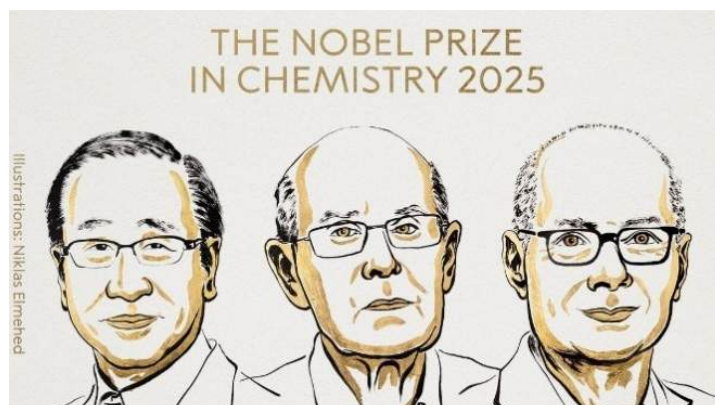
- **Toxicity:** Benzene is a known carcinogen, causing leukaemia and bone marrow disorders upon prolonged exposure.
- **Environmental Persistence:** Its volatility and resistance to breakdown contribute to air and groundwater contamination.
- **Occupational Hazard:** Historically, exposure in refineries and chemical plants led to widespread industrial diseases, prompting global regulation.

Applications:

- **Petrochemicals:** Key feedstock for BTX compounds (benzene, toluene, xylene) — used in plastics, rubber, and fibers.
- **Pharmaceuticals:** Base for synthesis of drugs like aspirin, sulfa drugs, and antihistamines.
- **Synthetic Materials:** Used in making [nylon](#), resins, and polymers — essential for automobiles, textiles, and electronics.
- **Dyes and Detergents:** Integral to aromatic intermediates for coloring agents and surfactants.
- **Modern Electronics:** Used in conducting polymers and [OLEDs](#), showcasing its evolving role in nanomaterials and flexible electronics.

NOBEL PRIZE IN CHEMISTRY 2025

Context: The 2025 [Nobel Prize](#) in Chemistry has been awarded to Susumu Kitagawa, Richard Robson, and Omar Yaghi for creating Metal–Organic Frameworks (MOFs) — a revolutionary class of porous materials that can trap, store, and release molecules with high precision.



About Nobel Prize in Chemistry 2025:

What It Is?

- The **Nobel Prize in Chemistry**, established by **Alfred Nobel's 1895 will**, honours scientists who make **groundbreaking contributions to chemical science benefiting humanity**.
- The 2025 award recognises innovations that have redefined [materials chemistry](#) and opened new possibilities for sustainable technologies.

Winners of 2025:

- **Susumu Kitagawa (Japan)** – Kyoto University
- **Richard Robson (Australia)** – University of Melbourne
- **Omar Yaghi (Jordan–US)** – University of California, Berkeley

Their Work:

- The trio pioneered **Metal–Organic Frameworks (MOFs)** — crystalline materials made by linking **metal ions with organic molecules** to form **ultra-porous 3D structures**.
- **Robson (1970s)** first conceptualised porous molecular networks.
- **Kitagawa (1990s)** proved these could be flexible and “breathe” gases in and out.
- **Yaghi (2000s)** stabilised the frameworks and developed **reticular chemistry**, enabling MOFs to capture water from air and store gases like CO_2 or [methane](#).

About Metal–Organic Frameworks (MOFs):

What They Are?

- **MOFs** are special materials made by combining **metal atoms** (like copper or zinc) with **organic molecules** to create a solid structure full of **tiny, evenly spaced holes**.
- Think of them like **sponges at the atomic level** — strong and flexible, with countless microscopic spaces that can **trap, store, or filter** different substances such as gases, water, or chemicals.

Key Features:

- **Super Porous:** MOFs have an enormous number of tiny holes — just one gram can have the surface area of several football fields.

- **Custom-Made Design:** Scientists can adjust the hole size and chemical nature of MOFs to catch exactly what they want, like a lock made for a specific key.
- **Breathing Materials:** Some MOFs can expand or shrink when they absorb or release gases — much like a lung breathing in and out.
- **Strong and Reusable:** They can withstand heat and chemicals, so they last long and can be used again and again.
- **Easy to Make:** MOFs can be produced using simple, eco-friendly, and low-cost methods, making them practical for real-world use.

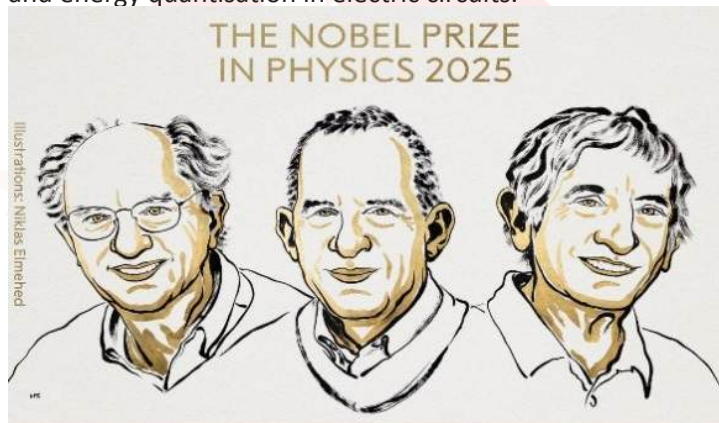
Applications:

- **Capturing Carbon:** MOFs can soak up carbon dioxide (CO₂) from factories or the air, helping fight climate change.
- **Making Water from Air:** They can pull water vapour from dry desert air, offering a new way to get clean drinking water.
- **Clean Energy Storage:** MOFs can store [hydrogen](#) or methane, providing safe, lightweight fuel for future green energy.
- **Cleaning Pollution:** They help remove harmful chemicals and toxins like PFAS or heavy metals from drinking water.
- **Helping in Medicine and Chemistry:** MOFs can speed up chemical reactions (as catalysts) or carry medicines safely to specific parts of the body.

Physics

NOBEL PRIZE IN PHYSICS 2025

Context: The 2025 Nobel Prize in Physics was awarded to John Clarke, Michel H. Devoret, and John Martinis for their pioneering discovery of macroscopic quantum tunnelling and energy quantisation in electric circuits.



About Nobel Prize in Physics 2025:

- **What It Is?**
 - The Nobel Prize in Physics, instituted in 1901, honours groundbreaking contributions in the field of [physical sciences](#) that advance human understanding of the universe.

- Awarded annually by the Royal Swedish Academy of Sciences, it carries global prestige and a monetary prize of 11 million SEK (approx. ₹8.5 crore).

Winners:

- **John Clarke** – Professor at University of California, Berkeley (USA).
- **Michel H. Devoret** – Professor at Yale University (USA).
- **John Martinis** – Researcher at the University of California, Santa Barbara (USA).

About Quantum Tunnelling:

What It Is?

- **Quantum tunnelling** means tiny particles (like electrons) can pass through barriers that, in normal physics, they shouldn't be able to cross.
- Imagine rolling a ball up a hill — in classical physics, if it doesn't have enough energy, it rolls back. But in the quantum world, the ball can *magically appear* on the other side.
- This happens because particles act like [waves](#), and a small part of that wave can “leak” through the barrier and continue on the other side.

How It Works?

- When an electron hits a wall of energy, some part of its wave passes through — it's as if the particle “sneaks” through the wall.
- In [superconductors](#), two paired electrons (called **Cooper pairs**) can move through an insulating layer — creating an electric current even though the barrier should block it.
- The Nobel-winning scientists **Clarke, Devoret, and Martinis** showed that not just single particles, but **entire electrical circuits** can do this — they can jump between different energy levels as if tunnelling through invisible walls.

Key Features:

- **Not normal physics:** It breaks everyday rules — you never see a football pass through a wall, but at the atomic level, it happens!
- **Fixed energy steps:** The system can only have specific energy values, not anything in between — like a staircase, not a ramp.
- **Easily disturbed:** Even tiny vibrations or heat can stop the tunnelling effect, so it needs very controlled conditions (like [ultra-cold temperatures](#)).
- **Big scale discovery:** For the first time, scientists saw this strange quantum trick happening in large circuits made of billions of atoms, not just in single particles.

Biotechnology

MAM01 (MONOCLONAL ANTIBODY AGAINST MALARIA)

Context: A new monoclonal antibody named [MAM01](#) has shown strong protective effects against malaria in an early clinical trial by U.S. researchers.



About MAM01 (Monoclonal Antibody Against Malaria): What it is?

- MAM01 is a novel [monoclonal antibody](#) (mAb) engineered to prevent malaria infection by neutralising the *Plasmodium falciparum* parasite before it enters the bloodstream.
- It represents a [passive immunisation](#) strategy, distinct from traditional vaccines that trigger an active immune response.

Developed by:

- Created by the University of Maryland School of Medicine's Center for Vaccine Development and Global Health (CVD), USA.

Aim:

- Designed to provide **immediate and long-lasting protection** against malaria, particularly for **young children and pregnant women** in endemic regions.
- Seeks to overcome the limitations of existing malaria vaccines that require **multiple doses and boosters**.

Key Features:

- **Targets a conserved region** of the [Plasmodium falciparum](#) circumsporozoite protein (CSP) — a critical molecule that enables the parasite to infect liver cells.
- **Single-dose administration** offers **months-long protection** with minimal side effects.
- **Phase 1 trial** involved 38 malaria-naïve adults aged 18–50 in a **randomised, double-blind, placebo-controlled study**.
- Provided **100% protection at the highest dose**, with no severe adverse reactions reported.
- Demonstrates **dose-dependent efficacy**, showing higher protection with increasing [antibody concentration](#).

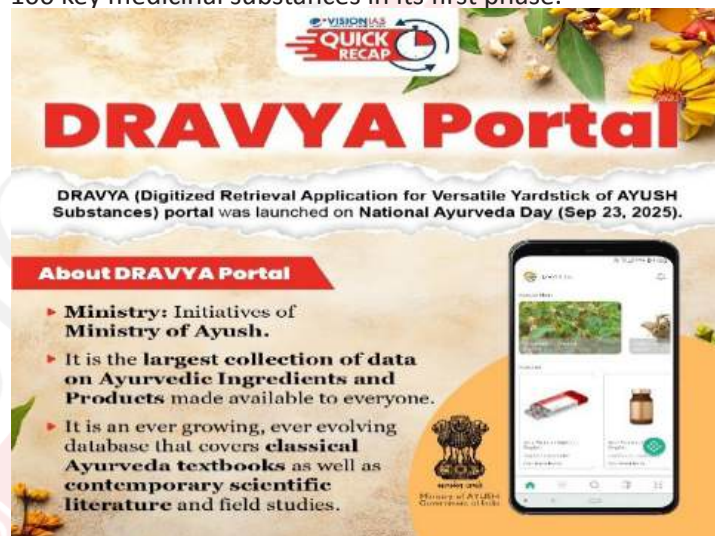
Significance:

- A breakthrough approach that could transform malaria prevention, especially in sub-Saharan Africa, where over 600,000 deaths occur annually.
- Contributes to the global health goal of malaria elimination under [WHO's Global Technical Strategy \(GTS\) 2025–2030](#).

Health

DRAVYA PORTAL

Context: The Ministry of Ayush has launched the “DRAVYA” (Digitised Retrieval Application for Versatile Yardstick of [Ayush](#)) portal, developed by CCRAS, to digitally catalogue 100 key medicinal substances in its first phase.



About DRAVYA Portal:

What It Is?

- DRAVYA is an AI-ready digital knowledge repository that consolidates information on Ayush medicinal substances drawn from both classical Ayurvedic texts and modern scientific research.
- It serves as a dynamic, open-access platform designed to make authentic, evidence-based data on Ayurveda and related systems easily searchable and globally accessible.

Organisation Involved: Developed by the Central Council for Research in Ayurvedic Sciences ([CCRAS](#)) under the Ministry of Ayush.

Aim:

- To digitise and unify classical and modern knowledge on Ayush substances for evidence-based research and innovation.
- To promote cross-disciplinary collaboration between Ayurveda, botany, chemistry, and pharmacology.
- To ensure authenticity, accessibility, and scientific validation of traditional medicinal data.

Key Features:

- **Comprehensive Catalogue:** Covers 100 key medicinal

substances in its first phase, expanding continuously.

- **AI-ready architecture:** Enables data analytics, research mapping, and integration with future [digital health tools](#).
- **QR code integration:** For use in medicinal plant gardens and drug repositories, ensuring standardised display of verified data.
- **Multi-dimensional data:** Includes pharmacotherapeutics, botany, chemistry, pharmacy, pharmacology, and safety information.
- **User-friendly interface:** Facilitates easy search, retrieval, and comparison of data across Ayush systems.
- **Interlinking with Ayush Grid:** Enhances interoperability with other digital initiatives and research databases.

Key Features:

- **Funding Support:** ₹5–25 crore per project (up to ₹50 crore for exceptional cases) for startups, MSMEs, academic, hospital, and industry collaborations.
- **Broad Scope:** Covers devices, diagnostics, implants, [AI/ML-based tools](#), robotics, and assistive technologies.
- **Enabling Frameworks:** Includes Patent Mitra for [IP protection](#), MedTech Mitra for regulatory clearances, and a Clinical Trial Network for validation.
- **Two-Stage Selection:** Concept notes (Sept–Nov 2025) followed by full proposals (from Dec 2025).

Significance:

- Strengthens India's [Atmanirbhar Bharat vision](#) in medical technology.
- Promotes industry–academia collaboration and research translation from lab to market.

MAHA MEDTECH MISSION

Context: The Anusandhan National Research Foundation ([ANRF](#)), in collaboration with the ICMR and the Bill & Melinda Gates Foundation, has launched the Maha MedTech Mission to boost India's medical technology ecosystem.



About Maha MedTech Mission:

What it is?

- The [Mission for Advancement in High-Impact Areas](#) (MAHA)–MedTech is a national initiative to accelerate innovation, manufacturing, and commercialization of cutting-edge medical technologies in India, enhancing access and affordability in healthcare.

Organisations involved:

- Jointly launched by the Anusandhan National Research Foundation (ANRF), the Indian Council of Medical Research (ICMR), and the Bill & Melinda Gates Foundation.

Aim:

- To reduce India's dependence on high-cost medical imports, strengthen domestic capacity, and ensure equitable access to affordable and high-quality medical devices and diagnostics aligned with [national health priorities](#) such as tuberculosis, cancer, and neonatal care.

PM-ABHIM

Context: The Pradhan Mantri–Ayushman Bharat Health Infrastructure Mission ([PM-ABHIM](#)) was highlighted by the Ministry of Health and Family Welfare for its significant progress in building pandemic-ready [healthcare infrastructure](#) across India.



About PM-ABHIM:

What it is?

- The Pradhan Mantri–Ayushman Bharat Health Infrastructure Mission (PM-ABHIM) is a pan-India health infrastructure programme aimed at creating a resilient, accessible, and self-reliant public health system.
- It focuses on pandemic preparedness, [disease surveillance](#), and comprehensive healthcare delivery from primary to tertiary levels.

Launched in: October 25, 2021 by the Prime Minister of India under the broader Ayushman Bharat initiative.

Implemented by: The Ministry of Health and Family Welfare (MoHFW).

Objectives:

- To build robust public health infrastructure capable of managing pandemics and health emergencies.

- To develop an IT-enabled disease surveillance system integrated across national, regional, and local levels.
- To contribute to [Universal Health Coverage](#) (UHC) and Sustainable Development Goal-3 (SDG-3).

Key Features:

- **Financial Outlay:** ₹64,180 crore for 2021–26.
 - It has both Centrally Sponsored and Central Sector components (Hybrid model).
- **Surveillance Network:** A real-time, IT-enabled National Disease Surveillance Platform linking local, state, and central labs.
- **Integration with National Health Frameworks:** Builds upon the National Health Policy 2017, [National Health Mission](#) (NHM), and [Ayushman Bharat](#) Scheme for a unified healthcare model.
- **Focus Areas:** Rural and urban health centres, research on infectious diseases, and community health capacity building.

Significance:

- **Pandemic Preparedness:** Equips India to tackle future [epidemics](#) with decentralised and rapid response systems.
- **Healthcare Access:** Ensures affordable and equitable health services for both rural and urban populations.

POLIO

Context: India has been placed on high alert after a rise in [polio cases in Pakistan](#) and Afghanistan, the only two remaining endemic countries.



EXPERTS CALL FOR CAUTION

Disease remains endemic in only two countries, Afghanistan and Pak

The number of wild polio cases has fallen by **99.9%** from 1988, saving an estimated 1.5 million lives, apart from treatment costs

188 POLIO CASES recorded between January 1 and October 5, 2025, compared to 562 cases in 2024; 1,253 in 2020; and 106 in 2015

POLIO FATAL. CAN CAUSE IRREVERSIBLE PARALYSIS. CHILDREN UNDER 5 MOST AT RISK. NO CURE, BUT SAFE AND EFFECTIVE VACCINES ARE AVAILABLE.

INDIA DECLARED POLIO-FREE BY WHO ON MARCH 27, 2014

LAST CASE OF WILD POLIOVIRUS IN HOWRAH, WEST BENGAL (2011)

AFGHANISTAN & PAK REPORTED 36 TOTAL WILD POLIOVIRUS CASES IN 2025

About Polio:

What it is?

- Polio (Poliomyelitis) is a highly infectious viral disease that primarily affects the nervous system, leading to paralysis or even death in severe cases.
- The disease mainly targets children under 5 years of age, but unvaccinated individuals of any age remain at risk.

Vector and Transmission:

- The poliovirus spreads mainly through the faecal-oral route, i.e., via [contaminated food](#) or water, and multiplies in the intestine.
- It can also spread person-to-person, particularly in areas with poor sanitation and hygiene.

Symptoms:

- Early symptoms include **fever, fatigue, headache, vomiting, stiffness of the neck, and pain in the limbs.**
- **1 in 200 infections** leads to [irreversible paralysis](#) (often in the legs), and **5–10%** of those paralysed die due to immobilisation of breathing muscles.

Treatment and Prevention:

- There is **no cure** for polio — it can only be **prevented through vaccination.**
- **Two types of vaccines are used:**
 - [Oral Polio Vaccine \(OPV\)](#): Easy to administer; provides intestinal immunity.
 - [Inactivated Polio Vaccine \(IPV\)](#): Injectable form; provides systemic protection.
- Multiple doses ensure **lifelong immunity.**

India and Polio Eradication:

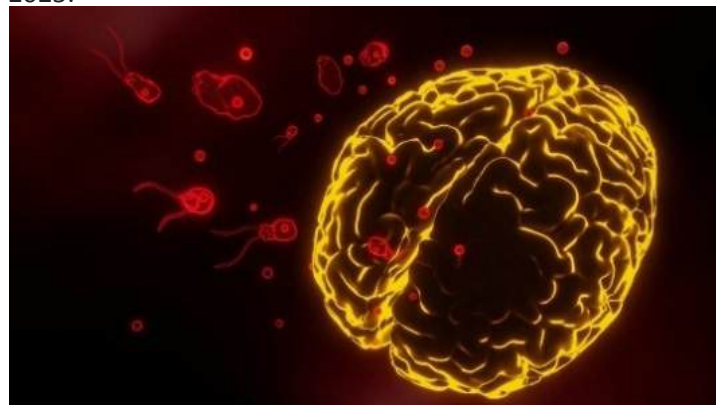
- **Last case reported:** January 13, 2011 (West Bengal).
- **Polio-free certification:** Granted by **WHO in 2014**, after three years without any new cases.
- Achieved through Pulse Polio Immunisation Programme, Mission Indradhanush, and Intensified Mission Indradhanush, supported by strong surveillance systems.

WHO and Global Initiatives:

- The [Global Polio Eradication Initiative](#) (GPEI) was launched in **1988**, reducing cases by **over 99%**, from **350,000 cases in 125 countries** to fewer than 50 today.
- **Polio-free regions:** Americas (1994), Western Pacific (2000), Europe (2002), South-East Asia (2014), and Africa (2020).
- Ongoing [WHO surveillance](#) and emergency response continue to target **Afghanistan and Pakistan**, the only countries with **endemic wild poliovirus**

AMOEBIC MENINGOENCEPHALITIS

Context: Kerala has reported another death due to [amoebic meningoencephalitis](#), taking the state's toll to 27 cases in 2025.



About Amoebic meningoencephalitis:

- **What it is?**

- Amoebic meningoencephalitis, or **Primary Amebic Meningoencephalitis (PAM)**, is a **rare but fatal brain infection** caused by a free-living amoeba that destroys brain tissue, leading to severe inflammation and swelling.
- **Causative Agent:** It is caused by **Naegleria fowleri**, commonly known as the “**brain-eating amoeba**.”
- **Vector and Transmission:**
 - The disease is **not spread person-to-person**.
 - Infection occurs when **contaminated freshwater** (from lakes, ponds, or unchlorinated pools) enters the **nasal cavity**, allowing the amoeba to travel to the brain via the olfactory nerve.
 - It thrives in **warm freshwater** and soil, particularly during **summer months**.
- **Found in:** Naegleria fowleri is found in **warm freshwater bodies**—such as **lakes, rivers, hot springs, and poorly maintained swimming pools**—especially in tropical and subtropical regions.
- **Symptoms:**
 - Early symptoms (1–9 days post-exposure): **Headache, fever, nausea, vomiting**.
 - **Advanced symptoms:** Stiff neck, confusion, loss of balance, seizures, hallucinations, and coma—leading to death within days if untreated.
- **Treatment:**
 - Treatment is challenging; mortality exceeds **95%**.
 - Some survivors have recovered with **early administration of amphotericin B, miltefosine, and supportive care**.
 - **Prevention** includes avoiding swimming in untreated freshwater, using **nose clips**, and maintaining proper chlorination of pools.

About Pradhan Mantri Jan Arogya Yojana (PM-JAY):

- **What it is?**
 - PM-JAY, a component of Ayushman Bharat, is the **world’s largest government-funded health assurance scheme**, providing free secondary and tertiary healthcare to India’s poorest families.
- **Launch:** Launched on **23rd September 2018** in Ranchi, Jharkhand.
- **2025 Best State Implementation:** Chhattisgarh topped national rankings with 97% empanelled hospitals active, 32,000+ audits for fraud control.
- **Aim:**
 - To provide **cashless and paperless access** to quality healthcare for **12 crore vulnerable families (~55 crore people)** covering the bottom 40% of the Indian population, and to **prevent catastrophic medical expenditure** that pushes millions into poverty annually.
- **Key Features:**
 - ₹5 lakh annual health cover per family on a **family floater basis** (no limit on family size, age, or gender).
 - **Cashless treatment** across public and private empanelled hospitals nationwide.
 - Covers **1,929 medical procedures**, including diagnostics, surgery, implants, ICU, and medicines.
 - Includes **3 days of pre-hospitalisation** and **15 days of post-hospitalisation care**.
 - **Portability:** Benefits can be availed in any empanelled hospital across India.
 - **Pre-existing diseases** covered from day one.
 - Fully funded by Government — cost shared between **Centre and States**.
- **PM-JAY Beneficiaries:**
 - Eligibility under **PM-JAY** is primarily based on SECC-2011 data, expanded to include **senior citizens aged 70+ years**.

PRADHAN MANTRI JAN AROGYA YOJANA (PM-JAY)

Context: At the National Health Authority (NHA) Conclave 2025 held in Bhopal, Chhattisgarh was awarded as the best-performing state in implementing the Pradhan Mantri Jan Arogya Yojana (PM-JAY) for achieving near-zero claim pendency.



SPARK– 4.0

Context: The Central Council for Research in Ayurvedic Sciences (CCRAS) under the Ministry of Ayush has launched SPARK–4.0 (2025–26).



About SPARK- 4.0:

- **What it is?**
 - SPARK-4.0 (Studentship Program for Ayurveda Research Ken) is the **fourth edition** of CCRAS's flagship initiative to encourage **research orientation** among BAMS undergraduates.
- **Organisation involved:** Implemented by the Central Council for Research in Ayurvedic Sciences (CCRAS) under the Ministry of Ayush, Government of India.
- **Aim:** To cultivate scientific curiosity and develop a research mindset in young Ayurveda scholars while bridging classical knowledge with modern scientific methods.
- **Key features:**
 - **300 BAMS students** to be awarded **₹50,000 studentships** (₹25,000 per month for two months).
 - Open to students from [National Commission for Indian System of Medicine NCISM-recognized colleges](#) across India.
 - Involves **faculty-guided, short-term independent research projects**.
 - Students receive a **certificate** after successful completion.
- **Significance:**
 - Strengthens the **research ecosystem** within the Ayush sector.
 - Builds a **pipeline of trained researchers** for future innovation and integration of traditional medicine into [public health](#).

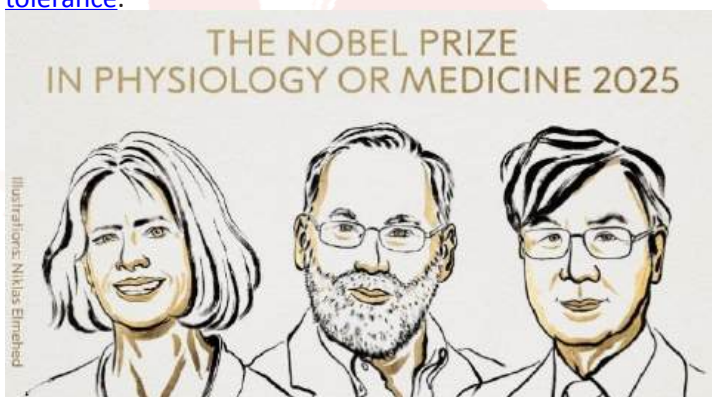
- Mary E. Brunkow (Institute for Systems Biology, USA)
- Frederick J. Ramsdell (Sonoma Biotherapeutics, USA)

Their Work:

- **Regulatory T Cells (Tregs) and Peripheral Tolerance**
 - In 1995, **Shimon Sakaguchi** discovered a special kind of immune cell — **regulatory T cells, or Tregs** — that act like **police officers** of the immune system.
 - These cells **stop other immune cells** from attacking the body's own healthy tissues. When the thymus (an immune organ) was removed in baby mice, they developed autoimmune diseases, but when normal T cells were added back, they became healthy again — proving such "policing" cells exist.
- **FOXP3 — The Master Control Gene of Tregs**
 - Scientists **Mary Brunkow** and **Fred Ramsdell** studied "**scurfy**" mice that developed severe autoimmune diseases and found a single faulty gene called **FOXP3** caused it.
 - This gene acts like a **switch** — turning normal T cells into regulatory ones. Without FOXP3, Tregs can't form, and the body **starts attacking itself**, leading to autoimmune disorders like [IPEX syndrome](#) in humans.
- **Peripheral Immune Tolerance**
 - The immune system has two levels of control: "**central tolerance**" (inside the thymus, where bad cells are removed) and "**peripheral tolerance**" (in the rest of the body).
 - Tregs are key to **peripheral tolerance** — they constantly **guard tissues**, prevent unnecessary inflammation, and stop the immune system from going out of control.

NOBEL MEDICINE PRIZE 2025

Context: The 2025 Nobel Prize in Physiology or Medicine was awarded to Mary E. Brunkow, Frederick J. Ramsdell, and Shimon Sakaguchi for discoveries on peripheral [immune tolerance](#).



About Nobel Medicine Prize 2025:

What it is?

- The world's top biomedical award, conferred by the **Nobel Assembly at Karolinska Institute**; prize money ~**SEK 11 million** and a gold medal.

Winners:

- Shimon Sakaguchi (Osaka University, Japan)

Scientific Significance:

- **Cancer therapy:** Many tumors recruit Tregs to shield themselves. Strategies that deplete or disable Tregs in the tumor microenvironment can boost anti-tumor immunity and improve checkpoint inhibitors or [CAR-T](#) outcomes.
- **Autoimmune diseases:** Expanding or engineering Tregs (e.g., FOXP3+ Treg cell therapies) offers targeted ways to calm pathogenic immunity in conditions like type 1 diabetes, IBD, MS, and lupus.
- **Transplantation & tolerance:** Treg-based approaches may reduce long-term immunosuppression, lowering infection and toxicity risks after organ or cell transplants.
- **Diagnostics & biomarkers:** FOXP3 and Treg signatures aid disease stratification, response prediction, and trial design.
- **Balanced risk awareness:** Inhibiting Tregs can unmask autoimmunity; boosting Tregs may increase risks of infection or tumor escape—guiding safer, precision dosing and monitoring.

SCHEDULE M NORMS

Context: The Union Health Ministry has directed strict enforcement of the revised Schedule M norms under the [Drugs and Cosmetics Act, 1940](#).

- The move follows reports of child deaths linked to a cough syrup adulterated with **diethylene glycol (DEG)**, highlighting serious lapses in manufacturing quality.



About Schedule M Norms:

What it is?

- Schedule M is a section of the *Drugs and Cosmetics Act, 1940*, prescribing Good Manufacturing Practices (GMP) for pharmaceutical products in India.
- It defines the minimum requirements for facilities, equipment, quality systems, documentation, and personnel to ensure safe, effective, and consistent [drug production](#).

Origin and Evolution:

- Origin:** Introduced under the *Drugs and Cosmetics Rules, 1945*, to regulate drug manufacturing quality across India.
- Earlier Framework:** Focused mainly on **facility hygiene and record-keeping**, with limited emphasis on process validation or data integrity.
- Recent Revision (2023–24):** The revised Schedule M brings Indian GMP norms in **alignment with WHO-GMP and PIC/S standards**, strengthening India's position as a [global pharmaceutical hub](#).
- Implementation Deadline:** All units must achieve compliance by **December 31, 2025**.

Key Features of Revised Schedule M:

- Pharmaceutical Quality System (PQS):** Mandatory adoption of a structured quality and risk management framework across all manufacturing stages.
- Quality Risk Management (QRM):** Identification and mitigation of product risks through scientific and evidence-based evaluation.
- Data Integrity – ALCOA+ Principles:** All records

must be **Attributable, Legible, Contemporaneous, Original, Accurate, Complete, Consistent, Enduring, and Available**.

- Pharmacovigilance System:** Compulsory reporting and tracking of **adverse drug events** to ensure post-market surveillance.
- Equipment & Process Validation:** Lifecycle-based validation (Design, Installation, Operation, Performance Qualification).
- Supply Chain & Vendor Traceability:** Complete raw material traceability with supplier audits and digital monitoring systems.
- Infrastructure Modernisation:** Requirement for computerised storage systems, controlled environments, and regular self-inspections.

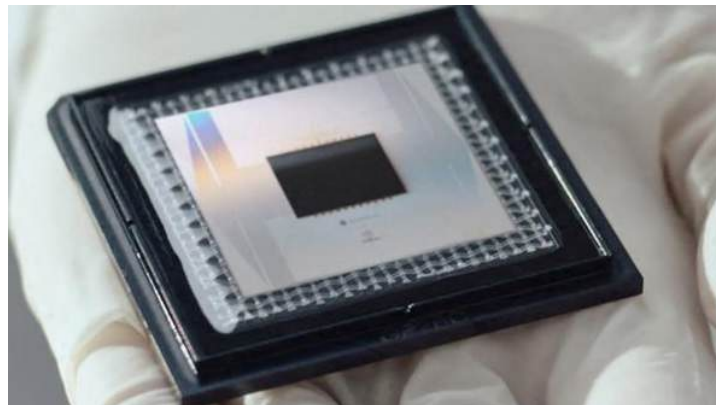
About Diethylene Glycol (DEG):

- Definition**
 - Diethylene Glycol (DEG) is a colorless, odorless, syrupy organic chemical compound (formula: $C_4H_{10}O_3$).
 - It is a synthetic industrial solvent, belonging to the glycol family, and is not approved for pharmaceutical or food use.
 - Chemically, DEG is a by-product of ethylene oxide hydrolysis, often used where water-miscible, low-volatility liquids are required.
- Applications:**
 - Antifreeze and Coolants:** Used as a **de-icing and coolant agent** in automobile and aircraft industries.
 - Paints and Plastics:** Acts as a **solvent** in paints, plasticizers, resins, and polyurethane foams.
 - Brake Fluids and Lubricants:** Used to maintain fluid stability in hydraulic and brake systems.
- Pharmaceutical contamination occurs when **industrial-grade DEG** is mistakenly or fraudulently substituted for **pharmaceutical-grade glycerine or propylene glycol** during drug formulation — often due to poor quality control or cost-cutting.

COMPRESSIVE ASPHYXIA

Context: A stampede at actor-politician Vijay's [rally in Karur](#), Tamil Nadu, killed 41 people including nine children.

- Most deaths occurred due to compressive asphyxia, a dangerous form of oxygen deprivation in overcrowded situations.



About Compressive asphyxia:

What it is?

- **Compressive asphyxia** is a type of **mechanical asphyxiation** where external force presses on the chest or abdomen.
- This prevents the lungs and diaphragm from functioning normally, leading to lack of oxygen supply.

How it Occurs?

- Common in **stampedes**, **crowd crushes**, or when **heavy weight presses the torso**.
- In dense crowds (>6–7 persons per square metre), chest compression restricts the diaphragm's ability to expand and contract, blocking normal breathing.

Symptoms:

- Shortness of breath, chest tightness, dizziness, bluish skin or lips (cyanosis).
- Severe cases cause hypoxia (oxygen shortage), hypercapnia (CO₂ build-up), unconsciousness, organ failure, and death.

Treatment:

- Immediate removal from the crushing force/crowd.
- Provide oxygen support, **CPR**, or advanced airway management in emergencies.
- Hospital care may include ventilation, treatment for organ damage, and monitoring for respiratory complications.

Emerging Technologies

QUANTUM ECHOES ALGORITHM

Context: Google announced that its **quantum processor "Willow"** has achieved the first-ever verifiable quantum advantage using a new algorithm called Quantum Echoes, running 13,000 times faster than the world's best **supercomputers**.

About Quantum Echoes Algorithm:

What it is?

- Quantum Echoes is an advanced quantum algorithm based on the principle of out-of-time-order correlators (OTOC). It is designed to study how information spreads, scrambles, and reverses in a quantum system — essentially acting as a time-reversal experiment to detect hidden quantum interactions.

Developed by: Created by the Google Quantum AI and Collaborators Team.

Aim:

- To demonstrate a verifiable **quantum advantage**, where quantum hardware outperforms classical supercomputers in a measurable and repeatable way.
- To model complex quantum interactions with unprecedented precision for use in physics, chemistry, and materials research.

How it Works?

- The algorithm sends a **quantum signal** into a system of qubits, lets it evolve, then **reverses time evolution** to produce a measurable "echo."
- This echo reveals how information was **scrambled and restructured** during the process.
- By adding a small "perturbation" midway and observing how the system reacts, scientists can measure **interference effects**, confirming the **quantum nature** of the **computation**.
- The process, run on the **Willow quantum processor**, was verified as a **true quantum interference phenomenon**, impossible for classical systems to replicate efficiently.

Key Characteristics:

- **Verifiable performance:** Results can be independently confirmed by other quantum systems.
- **Extreme speed:** Executes 13,000× faster than leading classical algorithms on supercomputers.
- **High precision:** Accurately models atomic and **molecular interactions** with minimal error.
- **Quantum interference proof:** Demonstrates constructive interference — the hallmark of genuine quantum computation.

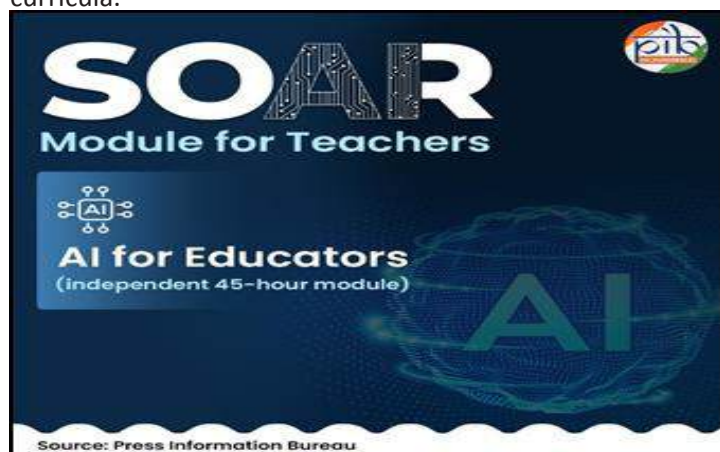
- **Scalable framework:** Opens the path for large-scale quantum verifiability in future applications.

Applications:

- **Drug Discovery:** Enables molecular modelling and understanding of how medicines interact at the atomic level.
- **Materials Science:** Helps design advanced materials, including superconductors, polymers, and quantum components.
- **Chemical Structure Analysis:** Enhances [Nuclear Magnetic Resonance](#) (NMR) techniques to map molecular geometries beyond current limits.
- **Fundamental Physics:** Offers new ways to study quantum chaos, [entanglement](#), and information flow in complex systems.

SOAR PROGRAM

Context: The Government of India launched the Skilling for AI Readiness (SOAR) programme in July 2025 to integrate [artificial intelligence](#) education and training into school curricula.



About SOAR Program:

What it is?

- A flagship initiative under the [Skill India Mission](#), designed to strengthen **AI literacy and competency** among students (Classes 6–12) and educators. The programme includes structured AI modules, hands-on learning, and ethics-based training to prepare India's youth for AI-driven careers.

Implemented by: The Ministry of Skill Development and Entrepreneurship (MSDE) in coordination with the Ministry of Education.

Aim:

- To create AI awareness among school students and educators.
- To equip India's youth with industry-relevant AI skills for self-reliance under [Atmanirbhar Bharat](#).
- To bridge the digital skill gap between urban and rural learners.

Key Features:

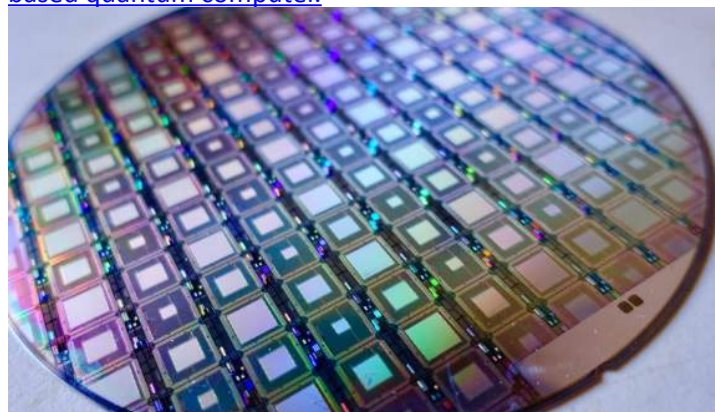
- **Structured Learning Modules:** Three 15-hour AI modules for students and one 45-hour advanced module for educators.
- **Ethical AI Training:** Emphasis on responsible and ethical use of artificial intelligence.
- **Centre of Excellence in AI:** ₹500 crore allocated in **Union Budget 2025–26** to establish a dedicated [Centre of Excellence for AI in Education](#).
- **Industry Integration:** Collaboration with IITs, AICTE, and private sector partners to offer specialised AI and ML courses.
- **Digital Access:** Integration with the [Skill India Digital Hub](#) (SIDH) to ensure accessibility for students across rural and urban areas.
- **Apprenticeship Support:** Under **NAPS-2**, 1,480 apprentices trained between FY 2022–26 in AI-related roles such as **AI Data Engineer** and **Machine Learning Engineer**.

Significance:

- **Promotes AI literacy:** Embeds AI knowledge in early education, fostering innovation and curiosity.
- **Bridges skill divide:** Ensures equitable access to AI education across socio-economic backgrounds.
- **Supports Viksit Bharat Vision:** Advances India's goal of becoming a developed nation by 2047 through technology-led empowerment.

CERTIFIED RANDOMNESS TECHNIQUE USING ONE QUBIT

Context: Researchers at the Raman Research Institute (RRI), Bengaluru, have demonstrated a new certified randomness generation technique using a single qubit on [IBM's cloud-based quantum computer](#).



About Certified Randomness Technique Using One Qubit:

What it is?

- The **certified randomness technique** is a **quantum-based random number generation method** that leverages the intrinsic unpredictability of quantum mechanics.
- It produces **truly random numbers** that cannot be replicated or faked by classical systems, ensuring

absolute unpredictability for cryptography and secure communications.

Developed by: Raman Research Institute (RRI), Bengaluru, in collaboration with IBM.

How it Works?

- The method uses **one qubit** in a simple quantum circuit with a series of single-qubit gate rotations.
- Measurements are made at **three different times** to test the **Leggett–Garg Inequality (LGI)** — a temporal version of the Bell inequality.
- **Violation of the LGI**, along with adherence to the “no-signalling-in-time” condition, confirms that the randomness arises purely from quantum processes.
- Error-mitigation and readout correction ensure results are free from classical or hardware-induced noise.

Key Features:

- **Single-Qubit Simplicity:** Requires only one qubit and shallow circuits, making it accessible on current cloud-based quantum processors.
- **Device-Independent Certification:** Guarantees that **randomness is quantum**-generated, independent of the device’s internal architecture.
- **Error-Resilient Design:** Incorporates error-mitigation techniques to enhance reliability and match theoretical predictions.
- **Scalable Implementation:** Can be expanded for benchmarking qubits or integrated into real-time secure systems.

Significance of the Discovery:

- **Quantum Advantage in Practice:** Demonstrates that quantum-certified randomness can be achieved on existing noisy intermediate-scale quantum (NISQ) machines.
- **Cybersecurity Breakthrough:** Provides tamper-proof random numbers crucial for data encryption, **cryptographic keys**, and secure communications.
- **Foundational Validation:** Confirms Leggett–Garg inequality violations on a real quantum device, reinforcing quantum theory.

INDIA MOBILE CONGRESS (IMC) 2025

Context: Prime Minister of India inaugurated the 9th edition of the India Mobile Congress (IMC) 2025 at Yashobhoomi, New Delhi — Asia’s largest telecom, media, and technology forum.

About India Mobile Congress (IMC) 2025:

- **What it is?**
 - India Mobile Congress (IMC) is **Asia’s largest digital communications and technology exhibition**, serving as a global platform for showcasing advancements in telecom, IT, media, and innovation.

- It brings together governments, industry leaders, startups, and academia to discuss future technologies shaping **India’s digital landscape**.



- **Organised by:** Jointly organised by the **Department of Telecommunications (DoT)** and the **Cellular Operators Association of India (COAI)** under the Ministry of Communications.
- **Theme (2025):** The 2025 edition is themed “**Innovate to Transform**”.
- **Aim:**
 - To showcase India’s achievements in 5G, 6G, AI, semiconductors, and quantum communication.
 - To strengthen global collaboration and attract investment in the digital economy.
 - To promote research, innovation, and indigenous technology development aligned with the Digital India and **Atmanirbhar Bharat missions**.
- **Features:**
 - **Global Participation:** Over 1.5 lakh visitors from 150+ countries and 400+ companies.
 - **Tech Showcases:** More than 1,600 new use cases across telecom, AI, smart mobility, cybersecurity, and green tech.
 - **Focus Areas:** Optical communications, 6G, quantum technologies, **semiconductors**, and fraud risk mitigation.
 - **International Cooperation:** Delegations from Japan, UK, Russia, Canada, Austria, and Ireland participating.
- **Significance:**
 - **Digital Leadership:** Positions India as a global hub for telecom innovation and **future-ready technologies**.
 - **Economic Growth:** Catalyses investment in 5G/6G infrastructure, startups, and manufacturing.

SARAL TOOL

Context: The Anusandhan National Research Foundation (**ANRF**) launched the SARAL tool to simplify scientific research papers.

- It uses AI to generate layperson summaries and

make research more accessible to society.

TOPIC: ANUSANDHAN NATIONAL RESEARCH FOUNDATION (ANRF)

About Anusandhan National Research Foundation (ANRF):

- The Anusandhan National Research Foundation (ANRF) is an apex statutory body established under the ANRF Act, 2023 to provide strategic direction and funding for scientific research, innovation, and entrepreneurship in India.

- Established In:** The ANRF Act was enacted in 2023 and aims to operate with a ₹50,000 crore budget over five years (2023–2028).
- Successor of:** Replaces the Science and Engineering Research Board (SERB).
- Ministry:** The Department of Science and Technology (DST).
- Objectives of ANRF:**
 - Promote cutting-edge research and innovation across disciplines.
 - Increase private sector investment in R&D.
 - Strengthen research capabilities in state universities and colleges.
 - Bridge gaps between scientific output and capital-intensive technologies.
 - Facilitate international collaborations and India's presence in global science.
- Chairperson and Key Members:**
 - Chairperson: Prime Minister of India
 - Vice Presidents: Union Minister of Science & Technology and Education
 - Member Secretary: Principal Scientific Advisor (PSA) to the Government
- Functions of ANRF:**
 - Draft short, medium, and long-term R&D roadmaps.
 - Fund peer-reviewed research proposals across disciplines.
 - Upgrade R&D infrastructure in educational and research institutions.
 - Promote entrepreneurship and commercialization of research outcomes.
 - Conduct annual research surveys on outcomes and spending.
 - Facilitate public-private partnerships for research funding.

PRELIMS PRISM
FOR UPSC PRELIMS 2025



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About SARAL Tool:

What it is?

- SARAL (Simplified and Automated Research Amplification and Learning) is an AI-based tool that converts complex research papers into easy-to-understand summaries.

Launched by: Developed by the Anusandhan National Research Foundation (ANRF).

Aim:

- To make **scientific knowledge more inclusive and accessible**, enabling citizens, policymakers, and industry to understand and apply research outputs.

Features:

- Uses **AI to extract key insights** from research publications.
- Generates **videos, podcasts, posters, and presentations** for wider outreach.
- Linked to the creation of an **AI Science and Engineering Open India Stack** for applications in drug discovery, aerospace, climate science, and advanced materials.

Significance:

- Bridges the science-society gap by making research understandable for non-specialists.
- Boosts research dissemination and innovation adoption in industry and academia.
- Supports the ₹1 lakh crore Research Development and Innovation Scheme, aligning with India's vision of deep-tech start-ups and **global R&D** leadership.

Space

GSAT-7R SATELLITE

Context: The Indian Space Research Organisation (ISRO) is set to launch the CMS-03 (GSAT-7R) communication satellite in November, aboard the [Launch Vehicle Mark-3](#) (LVM-3) from Sriharikota.



About GSAT-7R Satellite:

What it is?

- GSAT-7R, also called CMS-03, is a next-generation military communication satellite developed by ISRO to replace the aging GSAT-7A. It ensures robust, encrypted, and long-range communication links for the Indian Navy, Air Force, and Army.

Developed by: The Indian Space Research Organisation (ISRO).

Aim:

- To provide **reliable, real-time communication** for naval operations, air defence, and strategic command control across a wide oceanic and terrestrial region. It strengthens India's network-centric warfare and maritime domain awareness.

Key Features:

- Multi-Band Communication:** Operates across Ku, Ka, and UHF bands to ensure redundancy and resilience against jamming.
- Wide Coverage:** Provides secure communication coverage over the **entire Indian Ocean Region**, extending to the Eastern coast of Africa and [Southeast Asia](#).
- Heaviest Indian Communication Satellite:** Weighing ~4,400 kg, it is the largest ISRO-built satellite launched to Geosynchronous Transfer Orbit (GTO) from Indian soil.
- Advanced Encryption:** Features anti-jamming, frequency hopping, and encrypted data links for secure military operations.
- Launch Vehicle:** Deployed via LVM-3, India's most powerful operational launch vehicle, previously used in the [Chandrayaan-3 mission](#) (2023).

Significance:

- Enhances India's strategic and **naval communication network** across the Indo-Pacific.

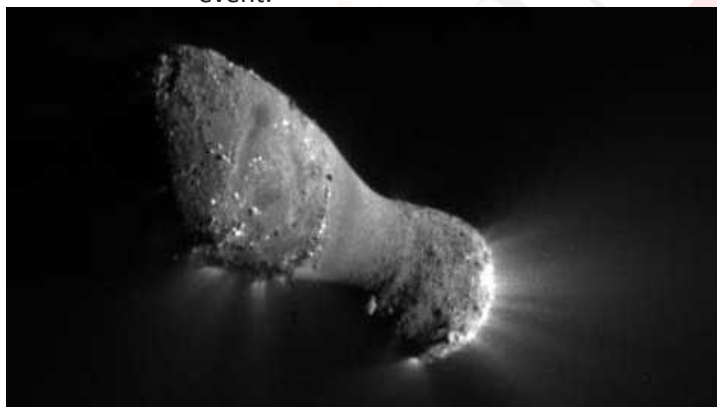
- Supports jointness and interoperability among the three-armed forces under theatre commands.
- Strengthens India's maritime security, crucial amid increasing Indo-Pacific tensions and surveillance needs.
- Reinforces India's self-reliance under [Aatmanirbhar Bharat](#) in Space Defence Systems.

COMETS IN THE NEWS

Context: Two rare celestial visitors — [Comet C/2025 R2 \(SWAN\)](#) and Comet C/2025 A6 (Lemmon) — have been captured over Indian skies this week, marking a rare dual appearance of bright comets.

About Comets in the News:

1. **Comet C/2025 R2 (SWAN):**
 - Detected by the **Solar and Heliospheric Observatory's SWAN instrument**.
 - Has a faint but visible tail; will not return for **nearly 20,000 years**.
 - Currently visible above the [Sagittarius constellation](#) in the southern horizon.
2. **Comet C/2025 A6 (Lemmon):**
 - Brighter of the two, with a **magnitude of 4.5**, near visual threshold.
 - Can be seen near the **Bootes constellation**, close to the Big Dipper.
 - Expected to return only in **3175**, making this appearance a once-in-a-millennium event.



About Comets:

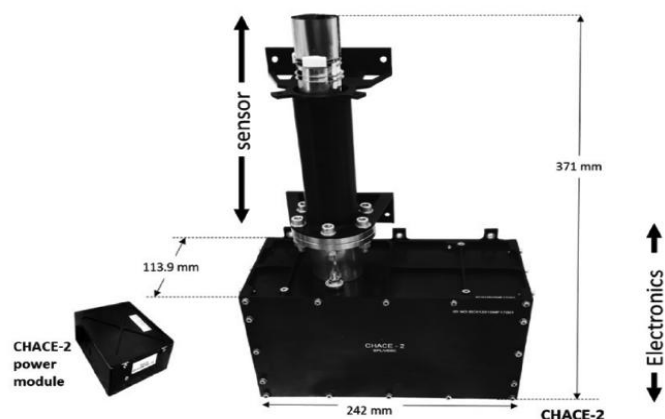
- **What They Are?**
 - Comets are **cosmic snowballs** made of frozen gases, dust, and rocky material that orbit the Sun. When heated by sunlight, they release gases and form a glowing **coma and tail**.
- **How They Occur?**
 - Most originate from two distant reservoirs:
 - ❑ The **Kuiper Belt** — source of **short-period comets** (orbit < 200 years).
 - ❑ The **Oort Cloud** — home of **long-period comets**, which may take

millions of years to complete an orbit.

- **Features:**
 - **Nucleus:** Frozen solid core of ice and dust.
 - **Coma:** Cloudy atmosphere formed when ice vaporizes near the Sun.
 - **Tails:** Two distinct tails — a **dust tail** and an **ion tail** — that always point **away from the Sun**.
- **Importance:** Comets are **remnants from the solar system's formation (4.6 billion years ago)** and may have delivered **water and organic compounds** to early Earth, aiding life's origin.
- **Naming:** According to the [International Astronomical Union \(IAU\)](#), comets are named after their **discoverer(s)** or the **spacecraft/instrument** that first detected them — e.g., Comet NEOWISE, Comet Lemmon, or Comet SWAN.

CHANDRA'S ATMOSPHERIC COMPOSITION EXPLORER-2 (CHACE-2) PAYLOAD

Context: ISRO announced that the CHACE-2 payload aboard Chandrayaan-2's lunar orbiter has made the first-ever direct observation of the Sun's [Coronal Mass Ejection \(CME\)](#) impact on the Moon.



About [Chandra's Atmospheric Composition Explorer-2 \(CHACE-2\) Payload:](#)

What it is?

- CHACE-2 is a neutral gas mass spectrometer payload onboard the Chandrayaan-2 orbiter, developed by [ISRO](#) to study the composition and dynamics of the Moon's extremely thin atmosphere, known as the lunar exosphere.

Launched in: The payload was launched on **July 22, 2019**, as part of India's Chandrayaan-2 mission aboard the [GSLV Mk-III M1 rocket](#).

Aim:

- Its primary goal is to analyze the chemical composition, spatial and temporal variations, and

density of the lunar exosphere in the mass range of 1–300 amu, along with detecting water vapour and heavier molecules to understand lunar surface–exosphere interactions.

Key Features:

- Successor to **CHACE (Chandrayaan-1)** and **MENCA (Mars Orbiter Mission)** instruments.
- Equipped to measure **neutral gases and isotopic abundances** on the Moon.
- Provides **real-time in situ data** on exosphere composition and variations.
- Designed to detect **noble gases** like **Argon-40**, and study their spatial distribution.
- Helps in modeling **lunar surface processes and space weather influences**.

Discoveries Made Now:

- Recorded the first-ever evidence of a CME-induced rise in lunar exosphere pressure on May 10, 2024, when solar ejecta struck the Moon.
- Observed a tenfold increase in total number density of **neutral atoms**, confirming long-predicted theoretical models.
- Provided insights into how **solar activity** alters lunar atmospheric conditions, crucial for future lunar base planning and space weather prediction.

CELESTIAL BODY – CHIRON

Context: Astronomers have, for the first time, observed ring formation around the icy celestial body Chiron, a minor planet orbiting between **Saturn** and Uranus, marking a historic discovery of a ring system evolving in real time.



About Celestial Body – Chiron

- **What it is?**
 - Chiron, officially designated **(2060) Chiron**, is a **centaur object** — a hybrid between an **asteroid and a comet** — orbiting the Sun in the region between **Jupiter and Neptune**.
- **Discovery:** Discovered in **1977** by astronomer **Charles Kowal**, Chiron was the first-known centaur, leading to the

identification of several similar **icy-rocky bodies** in the outer solar system.

Key Features:

- **Orbit & Size:** Roughly **200 km in diameter**, taking **about 50 years** to complete one orbit around the Sun.
 - **Composition:** Primarily made of **rock, water ice, and organic compounds**, exhibiting occasional **comet-like activity** such as gas and dust ejection.
 - **Ring System:** The new study revealed **four rings**—three dense inner rings (at 273 km, 325 km, and 438 km from its center) and a fourth, diffuse outer ring about **1,400 km away**, composed mainly of **water ice and dust**.
 - **Formation Mechanism:** The rings likely formed from **a collision or debris ejected by Chiron itself**, providing insights into **ring evolution and small-body dynamics**.
- **Significance:**
- **Scientific Importance:** Offers a unique glimpse into ring formation around small solar system bodies, helping astronomers understand disk dynamics, moon formation, and **planetary evolution**.
 - **Comparative Insight:** Chiron joins Chariklo, Haumea, and Quaoar as the only known small bodies with ring systems, expanding our understanding that ring formation is a universal process, not limited to giant planets like Saturn.

CREW ESCAPE SYSTEM (CES)

Context: The Indian Space Research Organisation (**ISRO**) has highlighted the working of the Crew Escape System (CES) — a critical safety mechanism of the Gaganyaan Mission.



About Crew Escape System (CES):

- **What it is?**
 - The Crew Escape System is a **rapid-acting**

safety mechanism developed to eject the **crew module** carrying astronauts away from a malfunctioning launch vehicle during an emergency.

- **Developed by:** It has been designed and developed by ISRO as part of the Gaganyaan human spaceflight programme.
- **Aim:** Its objective is to ensure **astronaut survival** during critical launch phases by separating the crew module to a safe distance within seconds, even before a catastrophic failure.
- **How it works?**
 - Positioned at the **forward end of the LVM3 rocket**, CES uses **multiple high-burn solid motors** that generate greater acceleration than the rocket.
 - In case of a detected anomaly, the **Integrated Vehicle Health Management (IVHM)** system triggers the CES.
 - The crew module is then **pulled away rapidly**, followed by **multi-stage parachute deployment** to ensure a controlled sea splashdown.
- **Types:**
 - **Puller Type (used by ISRO):** CES pulls the crew module away using solid motors — adopted in Gaganyaan, Soyuz, and [Saturn V missions](#).
 - **Pusher Type:** Uses liquid-fuel engines to push the module away — employed in [SpaceX Falcon 9](#).
- **Significance:**
 - Ensures **crew survival even before lift-off** or during early ascent, the riskiest flight phase.
 - Demonstrates **India's human-rated launch capability** and adherence to international astronaut safety norms.

Defence and Security

DEFENCE PROCUREMENT MANUAL (DPM) 2025

Context: Defence Minister released the [Defence Procurement Manual \(DPM\) 2025](#) in New Delhi. Effective from November 1, 2025, the new manual aims to simplify revenue procurement procedures worth nearly ₹1 lakh crore annually.



About [Defence Procurement Manual \(DPM\) 2025](#): What it is?

- The Defence Procurement Manual 2025 is a comprehensive guideline for revenue procurement by the [Armed Forces](#) and other MoD establishments, replacing the earlier DPM 2009. It standardises procedures for acquiring goods and services essential for operational preparedness.

Aim:

- To streamline and simplify procurement processes across all defence services.
- To promote ease of doing business and encourage [MSMEs](#) and start-ups in defence manufacturing.
- To ensure fairness, accountability, and transparency in procurement operations.

Key Features:

- **Ease of Business:** Revised procedures to expedite decision-making and minimise bureaucratic delays.
- **Relaxed Penalties:** [Liquidated Damages](#) (LD) capped at **10% for major delays** and **0.1% per week** for indigenisation projects (earlier 0.5%).
- **Long-term Orders:** Provision for **assured orders up to 5 years and beyond** for items developed indigenously.
- **No NOC Required:** The need for an **NOC from the [Ordnance Factory Board](#)** has been removed, simplifying vendor participation.
- **Procurement Thresholds:** **Limited Tender Enquiry** allowed up to ₹50 lakh; beyond that, permissible in exceptional cases.
- **Growth Provisions:** Upfront 15% growth allowed for ship repairs and aviation overhaul work to ensure **platform readiness**.
- **Structured Format:** Divided into **two volumes** — Volume I (main provisions) and Volume II (forms, appendices, and government orders).
- **New Chapters Added:**
 - Promoting Self-Reliance through Innovation and Indigenisation
 - [Information & Communication Technology](#) Procurement
 - Consultancy and Non-Consultancy Services

Significance:

- Strengthens the [Aatmanirbhar Bharat](#) vision by promoting indigenous design and technology.
- Enhances uniformity and transparency across all wings of the Armed Forces.
- Facilitates timely and accountable procurement, boosting defence readiness.

INS VIKRANT

Context: Prime Minister of India celebrated Diwali with [Indian Navy](#) personnel onboard INS Vikrant, India's first indigenous aircraft carrier, and lauded the armed forces for their valour and success in [Operation Sindoor](#).



About INS Vikrant:

What it is?

- **INS Vikrant (IAC-1)** is India's first indigenously built aircraft carrier, symbolising the nation's technological self-reliance and naval modernization under the Aatmanirbhar Bharat initiative.
- Named after the historic [INS Vikrant](#) that served with distinction during the [1971 Indo-Pak War](#), it embodies India's maritime legacy and strategic aspirations.

Commissioned in:

- Officially **commissioned on 2 September 2022** by Prime Minister at Kochi, marking a milestone in India's defence manufacturing capabilities.

Built by:

- Constructed by Cochin Shipyard Limited (CSL) under the Indian Navy's Indigenous Aircraft Carrier (IAC) programme, designed by the Directorate of Naval Design (DND).

Aim:

- To enhance India's blue-water naval capability, ensuring dominance and surveillance across the [Indian Ocean Region](#) (IOR).
- Strengthen India's sea-based deterrence, power projection, and humanitarian assistance capacities during regional crises.

Key Features:

- **Dimensions:** 262 metres long, 62 metres wide, and 18 decks high — roughly equal to two football fields.
- **Displacement:** Around **45,000 tonnes**, making it the **largest warship ever built in India**.
- **Aircraft Capacity:** Can carry 30 aircraft, including MiG-29K fighter jets, Kamov-31, MH-60R Seahawk helicopters, and indigenous aircraft in the future.
- **Crew and Facilities:** Houses **1,600 personnel**, a **16-bed hospital**, and **2,400 compartments**, functioning as a "city at sea."
- **Operational Capability:** Achieved full operational clearance in 2024, now part of the Western Naval Command.
- **Propulsion:** Powered by **four gas turbines**, enabling speeds of up to **28 knots (52 km/h)**.

SAKSHAM COUNTER-UNMANNED AERIAL THREAT GRID SYSTEM

Context: The [Indian Army](#) has begun induction of the 'Saksham' Counter-Unmanned Aerial System (UAS) Grid, an indigenous real-time drone detection and neutralisation network.



About Saksham Counter-Unmanned Aerial Threat Grid System:

What It Is?

- **'Saksham'** (Situational Awareness for Kinetic Soft and Hard Kill Assets Management) is a modular, AI-driven Command and Control (C2) System designed to detect, track, identify, and neutralise hostile drones and [unmanned aerial systems](#) (UAS) in real time.
- It forms the **backbone of India's Counter-UAS Grid**, securing both ground and low-altitude airspace known as the **Tactical Battlefield Space (TBS)**.

Developed By:

- The system has been indigenously designed and developed by Bharat Electronics Limited (BEL), Ghaziabad, in collaboration with the Indian Army's Corps of Air Defence.
- Approved for induction under the **Fast Track Procurement (FTP)** route for rapid rollout across all field formations.

Aim:

- To strengthen India's defence preparedness against drone-based surveillance, weapon delivery, and airspace incursions.
- To ensure integrated airspace control up to 3,000 metres (10,000 feet) — the Air Littoral zone — enhancing situational awareness and response capability in modern hybrid warfare.

How It Works:

- Operates over the **secure Army Data Network (ADN)**, integrating real-time inputs from all sensors, drones, and counter-UAS systems.
- Provides a **GIS-based unified air picture** that merges data from friendly, hostile, and neutral aerial entities.
- Integrates seamlessly with the **Akashteer System**, India's automated air defence network, to intercept and neutralise threats instantly.
- Employs **AI-based fusion technologies** for automated threat classification and soft/hard kill decision-making.

Key Features:

1. **Real-Time Detection & Neutralisation:** Detects, tracks, identifies, and neutralises hostile drones up to 3,000 m (Air Littoral) instantly.
2. **AI-Driven Fusion Technology:** Uses **AI/ML** to classify drones as friendly, neutral, or hostile and trigger soft/hard kill responses automatically.
3. **Integrated Command & Control System:** Combines sensors, radars, and weapons on a GIS-based digital grid for unified airspace control.
4. **Secure Army Data Network Connectivity:** Operates over the **encrypted ADN**, enabling real-time, cyber-secure data sharing across formations.
5. **Interoperability with Akashteer:** Linked with Akashteer Air Defence System for automated interception of aerial threats.
6. **Modular & Upgradable Design:** Built for **plug-and-play integration** of new sensors, jammers, or laser/EMP systems.
7. **Unified Threat Picture:** Displays combined air and ground threats on a single operational dashboard.
8. **Dual Soft & Hard Kill Capability:** Employs jamming/spoofing (soft kill) and kinetic destruction (hard kill) based on threat level.

AYNI AIR BASE IN TAJIKISTAN

Context: India withdrew from the Ayni air base in [Tajikistan](#) in 2022 after the lease agreement with Tajikistan was not renewed, reportedly due to pressure from Russia and China.



About Ayni Air Base in Tajikistan: What it is?

- The Ayni air base, also known as the **Gissar Military Aerodrome (GMA)**, is a **strategically located airbase** in **Tajikistan** that India helped develop and operate jointly with the Tajik government since **2002**. It was India's **first overseas military facility**, giving it a strategic presence in Central Asia.

Located in: The base lies **just west of Dushanbe**, Tajikistan's capital, and around 20 km from Afghanistan's Wakhan Corridor, which borders [Pakistan-occupied Kashmir \(PoK\)](#) and China.

History:

- Originally built during the **Soviet era**, the base fell into disuse after the USSR's collapse.
- India redeveloped it in **2001-2002**, with key roles played by **NSA Ajit Doval**, **Air Chief Marshal B.S. Dhanoa**, and the [Border Roads Organisation \(BRO\)](#).
- Funded by the **Ministry of External Affairs**, India spent about **\$100 million** extending the runway to **3,200 metres**, building hangars, refuelling facilities, and maintenance units.
- The base was occasionally used by the **Indian Air Force (IAF)** for **humanitarian and evacuation missions**, including during the **Afghanistan crisis in 2021**.

Strategic Importance:

- Provided India a military foothold in Central Asia—a region of high strategic interest.
- Enabled **surveillance and operational reach** over **Pakistan and Afghanistan**.
- Located near the [Wakhan Corridor](#), it offered India leverage in regional security and counter-terror operations.
- Strengthened India's role as a security partner in Central Asia amid growing China-Pakistan proximity.

Current Status:

- The **lease expired in 2021**, and Tajikistan declined renewal under Russian and Chinese influence.
- India **completed withdrawal in 2022**, and by **early 2023**, **Russian forces reportedly took over operations** at the base.

- Though the base is no longer Indian-operated, **India continues to maintain diplomatic and security engagement** in [Central Asia](#).

ICG FAST PATROL VESSELS: ICGS AJIT & ICGS APARAJIT

Context: The Indian Coast Guard (ICG) achieved a major milestone with the launch of two new Fast Patrol Vessels (FPVs) — [ICGS Ajit](#) and ICGS Aparajit — at Goa Shipyard Limited (GSL).



About ICG Fast Patrol Vessels: ICGS Ajit & ICGS Aparajit

- Name and Builder:**
 - Vessels:** ICGS *Ajit* and ICGS *Aparajit*
 - Built by:** Goa Shipyard Limited (GSL), under the [Make in India initiative](#).
 - Series:** Part of the **eight** FPVs being constructed indigenously for the Indian Coast Guard.
- Dimensions and Design:**
 - Length:** 52 metres
 - Displacement:** 320 tonnes
 - Hull and superstructure:** Designed and built entirely in India, showcasing indigenous shipbuilding expertise.
- Propulsion System:**
 - Equipped with [Controllable Pitch Propellers](#) (CPP) — the first of their kind in this class in India — ensuring superior manoeuvrability, speed, and fuel efficiency.
 - Designed for **multi-mission flexibility** in diverse maritime conditions.
- Operational Roles:**
 - Primary Missions:** Coastal patrol, fisheries protection, anti-smuggling, anti-piracy, and [search & rescue \(SAR\) operations](#).
 - Operational Area:** Particularly effective around India's Exclusive Economic Zone (EEZ) and island territories, ensuring round-the-clock maritime security.
- Significance:**
 - Strengthens India's **blue-water surveillance** and enhances **response readiness** against

maritime threats.

- Demonstrates India's **self-reliance in [naval defence production](#)** under **Atmanirbhar Bharat**.
- Contributes to the ICG's mission of ensuring **safe, secure, and clean seas** for national and regional stability.

INDO-TIBETAN BORDER POLICE (ITBP)

Context: Prime Minister of India extended greetings to the Indo-Tibetan Border Police ([ITBP](#)) on its 64th Raising Day, lauding its courage, discipline, and humanitarian service in guarding India's Himalayan frontiers.



About Indo-Tibetan Border Police (ITBP):
What it is?

- The Indo-Tibetan Border Police (ITBP) is a specialised Central Armed Police Force (CAPF) under the Ministry of Home Affairs, primarily tasked with guarding the India-China border and maintaining internal security.
- It is popularly known as the '**Himveers**' for its service in the icy Himalayan frontiers.

Established in:

- The ITBP was raised on October 24, 1962, following the India-China war, to strengthen border intelligence and security along the [Indo-Tibetan frontier](#).
- Initially formed under the CRPF Act, it gained independent status through the ITBPF Act, 1992, and operational rules framed in 1994.

History and Expansion:

- The force began with **four battalions** and gradually expanded to meet emerging security needs.
- In **2004**, under the Government's "**One Border, One Force**" policy, ITBP was assigned the entire **3,488 km-long India-China border**, replacing the **Assam Rifles** in Sikkim and Arunachal Pradesh.

Aims and Motto:

- Motto:** "Shaurya — Dridhata — Karma Nishtha"

(Valour – Determination – Devotion to Duty).

- To ensure [border security](#), maintain vigilance along high-altitude regions, and act as a first line of defence in the Himalayas.
- To conduct mountaineering, rescue, and relief operations, and contribute to internal security and counter-insurgency duties.

Functions:

- **Border Guarding:** Secures the India-China border from Karakoram Pass (Ladakh) to Jachep La (Arunachal Pradesh), at altitudes ranging between 9,000–18,800 feet.
- **Disaster Relief:** Provides humanitarian aid and rescue operations during natural disasters such as earthquakes and [flash floods](#).
- **Training and Specialisation:** Trains personnel in mountaineering, skiing, tactical warfare, and survival in sub-zero conditions.
- **Internal Security:** Deployed in [anti-Naxal operations](#), elections, and VIP protection duties when required.
- **Civic and Cultural Engagement:** Conducts medical camps, awareness drives, and promotes civil-military harmony in border villages.

THE MILITARY COMBAT PARACHUTE SYSTEM (MCPS)

Context: The Military Combat Parachute System (MCPS), indigenously developed [by DRDO](#), was successfully tested at an altitude of 32,000 feet, marking the first Indian-made parachute system capable of high-altitude deployment above 25,000 feet.



About The Military Combat Parachute System (MCPS):

- **What It Is?**
 - The MCPS is an advanced [high-altitude military parachute](#) system designed for combat freefall operations by special forces and paratroopers in extreme conditions. It enables safe, controlled, and precise landings from high altitudes during tactical missions.
- **Developed By:** The system has been jointly developed by two DRDO laboratories —

- Aerial Delivery Research and Development Establishment (ADRDE), Agra, and
- Defence Bioengineering and Electromedical Laboratory (DEBEL), Bengaluru.

- **Aim:** To create a fully indigenous, high-performance aerial delivery system that enhances India's [strategic and operational autonomy](#) by eliminating dependence on imported parachutes for special operations.

Key Features:

- **High-Altitude Capability:** Operates efficiently **above 25,000 ft**, tested at **32,000 ft** — the highest for any Indian system.
- **Enhanced Safety:** Features a **lower rate of descent** and **superior steering control**, ensuring stable, accurate landings.
- **Navigation Compatibility:** Integrated with [NavIC](#) ([Navigation with Indian Constellation](#)) for precise geolocation without reliance on foreign satellites.
- **Operational Flexibility:** Allows **pre-determined altitude deployment** and accurate zone navigation under combat conditions.
- **Maintenance Advantage:** Quick turnaround and easy repairability, offering higher lifetime utility than imported systems.

Significance:

- Marks a major leap in [Atmanirbhar Bharat](#) (self-reliance) in aerial delivery systems.
- Reduces strategic vulnerability by ending dependence on foreign suppliers for airborne combat gear.

MILITARY EXERCISES IN NEWS

Context: India and South Korea conducted the inaugural edition of their bilateral naval exercise at Busan Naval Harbour marking a major milestone in Indo-Pacific maritime cooperation.

- Simultaneously, India also began [AUSTRAHIND 2025](#) with Australia and [INDRA 2025](#) with Russia, showcasing its expanding defence partnerships.



About Military Exercises in News:

[India–Republic of Korea Navy Bilateral Exercise:](#)

- **Nations Involved:** India and South Korea

- **Host Place:** Busan Naval Harbour, South Korea
- **Aim:** To enhance naval interoperability, strengthen maritime partnership, and promote regional stability in the Indo-Pacific.
- **Key Features:**
 1. Conducted in two phases—**harbour phase** (cross-deck visits, training) and **sea phase** (joint operations between INS *Sahyadri* and ROKS *Gyeongnam*).
 2. Focus on **mutual learning, operational synergy, and maritime security cooperation** under India's [Act East Policy](#).

Military Exercise 'AUSTRAHIND 2025':

- **Nations Involved:** India and Australia
- **Host Place:** Perth, Australia
- **Aim:** To enhance military cooperation and interoperability in **sub-conventional warfare** and urban operations.
- **Key Features:**
 1. Joint **company-level tactical drills** in open and semi-desert terrains.
 2. Emphasis on **integration of emerging technologies** and combined operations between the two armies.

Military Exercise 'INDRA 2025':

- **Nations Involved:** India and Russia
- **Host Place:** Mahajan Field Firing Range, Bikaner, Rajasthan
- **Aim:** To improve counter-terrorism coordination and operational readiness between the Indian and Russian forces.
- **Key Features:**
 1. Includes **live-fire exercises, UAV reconnaissance, and precision strikes** under desert conditions.
 2. Focus on **hostage-rescue missions, artillery coordination, and joint tactical planning** for modern conflict scenarios.

About AMRAAM Missile:

What it is?

- The AIM-120 AMRAAM (Advanced Medium-Range Air-to-Air Missile) is a [beyond-visual-range](#) (BVR), radar-guided missile developed by the U.S. Air Force and Raytheon in the 1980s.
- It provides "**fire-and-forget**" capability, allowing pilots to disengage after launch while the missile autonomously tracks its target using onboard radar.

Nations involved in the deal:

- United States (Raytheon Technologies) and Pakistan.
- Other international users include **U.S., U.K., Japan, Germany, Australia, and several NATO allies.**

Key Features:

- **Type:** Beyond-visual-range (BVR) [radar-guided missile](#).
- **Range:** Up to **160 km** (for C8/D3 variants).
- **Speed:** Up to **Mach 4**.
- **Guidance:** Inertial navigation + active radar homing.
- **Variants supplied:** **C8 and D3** (latest generations).
- **Platforms:** Compatible with **F-15, F-16, F-35, Eurofighter Typhoon, Gripen**, etc.
- **Strengths:** High precision, multi-target capability, all-weather use, and electronic countermeasure resistance.

Similar Missile in India:

India does not operate AMRAAM but has indigenously developed the [ASTRA BVR missile](#) by DRDO, featuring:

- **Range:** 80–110 km.
- **Speed:** Over **Mach 4**.
- **Guidance:** Inertial navigation + active radar homing.
- **Platforms:** [Su-30 MKI](#), Tejas, and future Indian fighters.

AMRAAM MISSILE

Context: The United States has included Pakistan in a modified arms contract with Raytheon to supply AIM-120 AMRAAM ([Advanced Medium-Range Air-to-Air Missiles](#)).



INDIAN RADIO SOFTWARE ARCHITECTURE (IRSA) STANDARD 1.0

Context: The [DRDO](#) has launched the Indian Radio Software Architecture (IRSA) Standard 1.0, a national framework to enhance interoperability, self-reliance, and standardisation across India's military communication systems.



About Indian Radio Software Architecture (IRSA) Standard 1.0:

- **What it is?**
 - IRSA 1.0 is India's first **national software architecture standard** for **Software Defined Radios (SDRs)** used by the Army, Navy, and Air Force.
 - It provides a unified framework for developing, integrating, and upgrading [secure communication systems](#).
- **Developed by:** Formulated jointly by **DRDO**, the Integrated Defence Staff (IDS), and the Tri-Services.
- **Aim:**
 - To ensure **interoperability** among SDR platforms across all three services.
 - To enable **waveform portability** and seamless communication between different defence systems.
- **Key Features:**
 - **Unified Standard:** Common software architecture for all military SDRs.
 - **Waveform Portability:** Allows reuse of communication waveforms across multiple platforms.
 - **Scalability:** Designed to integrate next-generation technologies like [AI and 5G](#) for future warfare.
 - **Interoperability:** Enables cross-platform and cross-service communication.
 - **Certification Framework:** Includes testing and conformance standards for security and reliability.
- **Significance:**
 - **Strategic Autonomy:** Reduces dependence on foreign communication systems.
 - **Operational Synergy:** Enhances joint operations across the Army, Navy, and Air Force.
 - **Defence Export Potential:** Positions India to supply **IRSA-compliant SDRs** to friendly nations.

About Indian Air Force Day 2025:

What It Is?

- **Air Force Day** is observed annually on **October 8** to commemorate the **foundation of the Indian Air Force (IAF)** and to honour the air warriors who safeguard the nation's skies.
- The **93rd Air Force Day (2025)** was celebrated with parades, aerial displays, and tributes to martyrs at the **National War Memorial** and [Hindon Air Base](#).
- The event highlights the IAF's commitment to national security, humanitarian assistance, and its growing global stature as a modern air power.

History:

- The **Indian Air Force was established on October 8, 1932**, during British rule.
- Its **first operational flight** took off on **April 1, 1933**, comprising six Royal Air Force-trained officers and 19 Havai Sepoys (air soldiers).
- The initial fleet included **four Westland Wapiti biplanes**, forming the nucleus of **No. 1 Squadron** at Drigh Road (now in [Pakistan](#)).
- Over the decades, the IAF evolved from a small auxiliary unit to the **fourth-largest air force in the world**, playing pivotal roles in wars (1947, 1965, 1971, [Kargil 1999](#)), rescue operations, and peacekeeping missions.

Significance:

- **Tribute to air warriors:** Recognises the courage and sacrifices of IAF personnel who protect India's sovereignty.
- **Farewell to legacy aircraft:** The 2025 celebrations mark the retirement of the [MiG-21](#), India's longest-serving fighter jet.
- **Symbol of unity:** Reinforces the IAF's motto — "*Nabha Sparsham Deeptham*" (Touch the Sky with Glory) — reflecting strength, discipline, and service to the nation.

INDIAN AIR FORCE DAY 2025

Context: India is celebrating the 93rd Air Force Day on October 8, 2025, honouring the bravery, sacrifice, and professionalism of Indian Air Force ([IAF](#)) personnel.



EXERCISE IN NEWS

Context: The Indian Coast Guard and Indian Navy are conducting two major maritime exercises — NATPOLREX-X (2025) off Chennai and Exercise Konkan-25 off the western coast — to strengthen India's preparedness.



About Exercise in News:

NATPOLREX-X 2025

- **Host & Organiser:** Conducted by the [Indian Coast Guard](#) (ICG) from **October 5–6, 2025**, off the coast of **Chennai, Tamil Nadu**.
- **Participants:** Central ministries, coastal state governments, major ports, oil-handling agencies, maritime organisations, and over **40 foreign observers from 32 countries**.
- **Aim:** To assess and enhance India's national capability to respond to marine oil spills and test inter-agency coordination under the [National Oil Spill Disaster Contingency Plan](#) (NOSDCP).
- **Features:**
 - Deployment of ships and aircraft equipped with pollution-control technology.
 - Demonstration of India's **multi-tiered pollution response strategy**.
 - Focus on sustainable maritime practices and environmental protection.

Exercise KONKAN-25:

- **Host & Nations Involved:** A bilateral naval exercise between the Indian Navy and the Royal Navy (United Kingdom), conducted from October 5–12, 2025, off India's western coast.
- **Aim:** To improve interoperability, maritime domain awareness, and joint operational readiness between the two navies.
- **Features:**
 - Two phases — **harbour** and **sea phase** — including professional exchanges, joint working groups, and complex maritime drills.
 - **Focus areas:** anti-air, anti-surface, and anti-submarine warfare, flying operations, and seamanship evolutions.
 - **Assets:** Indian aircraft carrier [INS Vikrant](#) and UK's [HMS Prince of Wales](#) (UK Carrier Strike Group 25), along with assets from **Norway and Japan**.

Miscellaneous

INTERNATIONAL CONVENTION AGAINST DOPING IN SPORT

Context: India has been re-elected as Vice-Chairperson of the Bureau for the Asia-Pacific (Group IV) at the 10th Session of the Conference of Parties (COP10) to the [UNESCO International Convention against Doping in Sport](#), held in Paris marking the 20th anniversary of the Convention.



About International Convention against Doping in Sport:

- **What it is?**
 - The UNESCO International Convention against [Doping in Sport](#) (2005) is a multilateral treaty through which States commit to adopt national and international measures to prevent and eliminate doping in sports, ensuring fair and ethical competition.
- **Established in:** Adopted during the 33rd UNESCO General Conference on 19 October 2005, it entered into force on 1 February 2007.
 - Today, it has 192 States Parties, making it UNESCO's second most ratified treaty.
- **Aim:**
 - To harmonize anti-doping laws and standards worldwide.
 - To ensure a level playing field for athletes.
 - To promote integrity, [ethics](#), and health in sports by curbing performance-enhancing drug use.
- **Key Features:**
 - **Legal Framework:** Mandates States to align national anti-doping measures with [WADA's Code](#).
 - **Global Cooperation:** Encourages international collaboration among governments, sports bodies, and scientific institutions.
 - **Funding Mechanism:** Establishes the [Anti-Doping Fund](#) for capacity-building and awareness programs.
 - **Ethical Oversight:** Reviews emerging issues like gene doping and traditional pharmacopoeia to preserve sport values.
 - **Governance Reforms:** COP sessions elect a Bureau and Approval Committee to oversee compliance and financing.
- **Significance:**
 - Reinforces the global fight against doping, protecting athletes' health and sports credibility.
 - Serves as a platform for policy coordination among 190+ countries and global agencies like WADA and [IOC](#).

CHILDREN'S BOOKER PRIZE

Context: The [Booker Prize Foundation](#) announced the launch of the Children's Booker Prize, a new global award for fiction written for children aged 8 to 12, to debut in 2027 with a £50,000 prize.



About Children's Booker Prize:

What it is?

- The Children's Booker Prize is a new global literary award recognising fiction written for children aged 8–12 years, either in English or translated into English.
- It marks the first time children's fiction will be recognised under the Booker brand.

Organisation Involved:

- Established by the Booker Prize Foundation (UK) and funded by the AKO Foundation, a non-profit supporting arts, education, and environment.

Aim:

- To inspire reading among children and nurture a new generation of lifelong readers and writers.
- To expand the global influence of literary excellence beyond adult fiction and encourage storytelling for younger audiences.

Key Features:

- **Eligibility:** Open to fiction from any country, written for ages 8–12, published in the UK or Ireland.
- **Languages:** Both original English works and translations are eligible.
- **Prize Money:** £50,000 (same as the adult Booker), funded by the [AKO Foundation](#).

Difference Between Booker Prize and International Booker Prize:

Parameter	Booker Prize	International Booker Prize
Established	1969	2005 (revamped in 2016)
Scope	Awarded for the best original novel written in English and published in the UK or Ireland.	Awarded for the best translated fiction (novel or short story collection) published in the UK or Ireland.

Parameter	Booker Prize	International Booker Prize
Eligibility	Authors of any nationality, but the book must be written in English.	Authors and translators of works written in other languages and translated into English.
Prize Money	£50,000 awarded solely to the author; £2,500 to each shortlisted author.	£50,000 shared equally between author and translator; £2,500 to each shortlisted pair.
Objective	To celebrate the finest in English-language fiction.	To promote cross-cultural literary exchange and honour translation as an art form.
Indian Winners	1. Salman Rushdie (1981) – <i>Midnight's Children</i> 2. Arundhati Roy (1997) – <i>The God of Small Things</i> 3. Kiran Desai (2006) – <i>The Inheritance of Loss</i> 4. Aravind Adiga (2008) – <i>The White Tiger</i>.	1. Geetanjali Shree (2022) – <i>Tomb of Sand</i> (Hindi, tr. Daisy Rockwell); 2. Banu Mushtaq (2025) – <i>Heart Lamp</i> (Kannada, tr. Deepa Bhasthi).

AHMEDABAD RECOMMENDED FOR 2030 COMMONWEALTH GAMES

Context: The Commonwealth Sport Executive Board (2025) has recommended Ahmedabad, Gujarat, as the host city for the 2030 Centenary [Commonwealth Games](#), bringing the prestigious event back to India after 20 years.



About Ahmedabad recommended for 2030 Commonwealth Games:

Nature of the Event:

- The **Commonwealth Games** is a **quadrennial multi-sport event** uniting athletes from **56 member nations** of the Commonwealth.
- It promotes **peace, friendship, and inclusivity** among former British Empire territories.
- The 2030 edition will mark the **100th anniversary** of the Games' inception in **Hamilton, Canada (1930)**.

2030 Host Recommendation:

- Ahmedabad** has been recommended as the **proposed host city**, defeating Nigeria's **Abuja** in the evaluation process.
 - The **final decision** will be taken at the **Commonwealth Sport General Assembly in Glasgow** on **November 26, 2025**.

Selection Authority:

- The final decision will be made by **Commonwealth Sport's full membership** at the **General Assembly in Glasgow**.
- The **Commonwealth Games Federation (CGF)** oversees the voting, guided by criteria such as **athlete experience, technical readiness, infrastructure, and governance**.

Historical Evolution:

- Began as **British Empire Games (1930)** → later renamed **Commonwealth Games (1978)**.
- India hosted once before, the **2010 New Delhi Games**, marking a milestone in its sporting journey despite organisational challenges.

India's Proposal and Infrastructure Readiness:

- Ahmedabad's proposal showcased **modern sports complexes** like the **Sardar Vallabhbhai Patel Sports Enclave** and the **Narendra Modi Stadium**, alongside new aquatics and football arenas.
- The bid aligns with India's "**Viksit Bharat 2047**" vision and aims to position Gujarat as a **global sports capital**.

- It envisions a "Government-owned, Industry-managed" model for vocational training to make India's workforce globally competitive.



Nodal Ministry: Ministry of Skill Development and Entrepreneurship (MSDE)

Aim:

- To upgrade 1,000 government ITI's nationwide and align them with current and future skill needs of industries.
- To bridge the gap between classroom learning and global employability, enabling India's youth to meet **international skill demands**.

Key Features:

- Hub-and-Spoke Model:** 200 ITI's designated as **Hubs**, each connected to four **Spokes** (total 800).
- Modern Infrastructure:** Advanced machinery, digital learning systems, smart classrooms, and innovation centres.
- Industry Partnership:** Each cluster will be **anchored by an industry partner** (CII, **FICCI**, local associations) for training, placements, and production units.
- Skill Innovation Ecosystem:** Hubs to serve as centers for trainer training, R&D, production, and start-up incubation.
- Sectoral Focus:** Targeted sectors include manufacturing, agriculture, hospitality, and new-age technologies.
- Funding:** ₹60,000 crore total project cost over **2025–28**, jointly supported by the Centre and States.

Significance:

- Global Employability:** Connects India's youth with international industry needs and global supply chains.
- Skilling Revolution:** Strengthens India's ITI network to create a future-ready, digitally skilled workforce.
- Economic Growth:** Supports **MSMEs** and local industries through skilled manpower, promoting Atmanirbhar Bharat.

PM-SETU SCHEME

Context: Recently Prime Minister of India launched the PM-SETU (Prime Minister's Scheme for Empowerment through Technology Upgradation).

About PM-SETU Scheme:

What It Is?

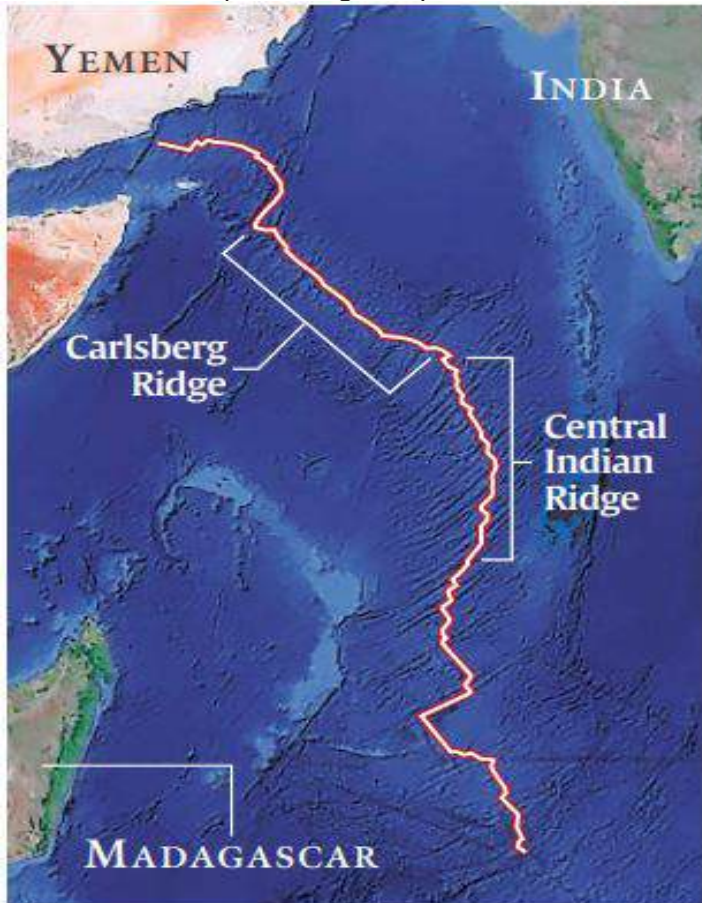
- PM-SETU (Prime Minister's Scheme for Empowerment through Technology Upgradation) is a centrally sponsored flagship initiative aimed at transforming India's skill ecosystem through modernized, industry-driven **ITIs**.

MAPPING

INDIA'S SECOND MINERAL EXPLORATION CONTRACT

Context: India has secured a second exploration contract from the International Seabed Authority (ISA) for [Polymetallic Sulphides](#) (PMS) in the Carlsberg Ridge, Indian Ocean.

- This makes India the **first country with two PMS contracts**, commanding the largest allocated area for PMS exploration globally.



About India's Second Mineral Exploration Contract:

What it is?

- Signed with **ISA** under [UNCLOS framework](#) for a **10,000 sq. km** area in Carlsberg Ridge.
- Exploration will be carried out by the **National Centre for Polar and Ocean Research (NCPOR)** from 2026.

Aim:

- To secure **strategic minerals** critical for India's energy transition, high-tech manufacturing, and **resource security**.
- To strengthen India's role in the [Blue Economy](#) and **Deep Ocean Mission**.

Features:

- Builds on India's **first PMS contract (2016)** in Central & Southwest Indian Ridge.
- Exploration plan:

- Reconnaissance surveys** (ship-mounted tools).
 - Near-seabed surveys** (AUVs, ROVs).
 - Resource evaluation** of deposits.
- Supported by India's **Samudrayaan mission** and deep-sea technology development.

About Carlsberg Ridge:

What it is?

- A **major mid-ocean ridge system** in the Indian Ocean formed by **seafloor spreading**.

Located in:

- Extends from the **triple junction of African, Indian & Australian plates** (near 2°N, 66°E) towards the **Gulf of Aden**.
- Separates [Arabian Sea](#) (NE) from **Somali Basin** (SW).

Features:

- Formed **~40 million years ago**, with a **spreading rate of 2.4–3.3 cm/year**.
- Depth:** 1,800–3,600 m below sea surface.
- Has **median valley, rugged topography**, typical of slow-spreading ridges.
- Known for **hydrothermal vent systems**, rich in **PMS deposits**.
- Closer to India (~2°N) than earlier exploration sites (~26°S).
- Lies in a **seismically active zone**, linked to the **East African Rift System**.

About Polymetallic Sulphides (PMS):

What it is?

- Mineral deposits** formed on ocean floors near **hydrothermal vents**.
- Created when cold seawater interacts with magma, ejects hot mineral-rich fluids, depositing solids on seabed.

Found in: Along mid-ocean ridges and hydrothermal vent fields at depths of 2,000–5,000 m.

Composition: Rich in copper, zinc, lead, silver, gold, and trace amounts of rare/precious metals.

Applications:

- Electronics & high-tech industries (copper, [rare metals](#)).
- Green energy systems (zinc, silver for solar & batteries).
- Strategic use in aerospace, defence, and clean-tech manufacturing.

SIR CREEK

Context: Defence Minister of India warned Pakistan of a decisive response to any misadventure in the Sir Creek sector, citing its growing military build-up in the disputed region.



About Sir Creek:

What it is?

- Sir Creek is a 96-km long tidal estuary, once called Ban Ganga, situated in the Indus River Delta.
- It is a marshy, uninhabited stretch where seawater mixes with river waters, making the terrain unstable and ecologically fragile.

Located in:

- Lies on the **India–Pakistan border**, separating **Kutch region** of Gujarat (India) from Sindh province (Pakistan).
- The creek opens into the **Arabian Sea**, thus directly influencing **maritime boundaries** and **fishing zones** of both nations.

Features:

- It is a narrow, muddy, and shifting water channel prone to changes in its course due to tidal activity.
- The region is part of the Indus Delta wetlands, home to migratory birds and **marine biodiversity**.
- Control over Sir Creek is crucial as it impacts the demarcation of **Exclusive Economic Zones (EEZs)** and the continental shelf, which determine rights over fishing, oil, and gas exploration.

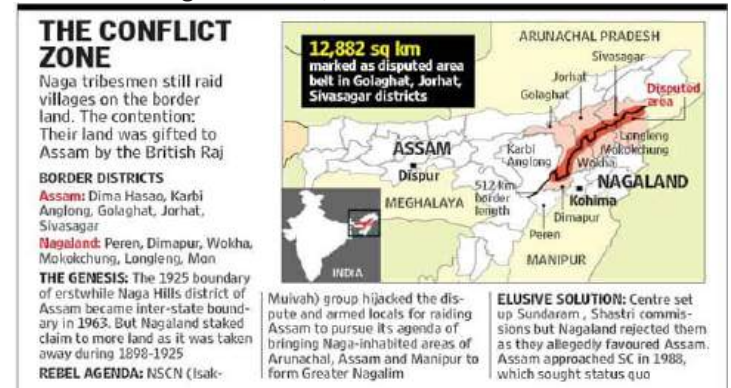
History of the Dispute:

- The issue dates back to a **1914 resolution** between the **Government of Bombay (under British India)** and the **Ruler of Sindh**.
 - **Pakistan's claim:** The resolution placed the boundary on the **eastern bank**, giving the entire creek to Sindh (and hence Pakistan after 1947).
 - **India's claim:** The resolution invoked the **thalweg principle** (boundary runs through the middle of the navigable channel), making the border lie mid-stream.
- After Partition (1947), Gujarat remained with India, Sindh with Pakistan, making this boundary contested.
- In **1968**, an international tribunal settled much of

the **Rann of Kutch border**, but Sir Creek was left unresolved.

ASSAM-NAGALAND BORDER DISPUTE

Context: The Assam–Nagaland border flared up after armed miscreants allegedly from Nagaland torched nearly 100 houses in a minority-dominated village in the disputed B Sector of Golaghat district, Assam.



About Assam–Nagaland Border Dispute:

What it is?

- The **Assam–Nagaland border dispute** revolves around territorial claims made by Nagaland over parts of Assam's **Golaghat, Jorhat, and Sivasagar districts**, especially in the **Disputed Area Belt (DAB)**—a stretch of reserved forests and forest land.
- Both states claim ownership, while the **CRPF** has been deployed as a neutral force since 1979.

Historical Background:

1. **Colonial demarcations (1826–1925):** Post-**Treaty of Yandabo** (1826), British created **Naga Hills District (1866)**. Subsequent notifications redefined boundaries without consulting Nagas.
2. **Post-Independence tensions (1947–1963):** Nagas declared independence in 1947; later, the **Naga Hills–Tuensang Area Act (1957)** and **Nagaland State Act (1962)** formalized Nagaland's statehood but **without a clear boundary settlement**.
3. **Commissions & Agreements:**
 - **Sundaram Commission (1972):** led to **four Interim Agreements** to maintain status quo.
 - **Shastri Commission (1985), J.K. Pillai Commission (1997), Variava & Chatterjee Commissions (2006)** attempted boundary resolution but failed.

About Disputed Area Belt:

The border dispute centers on the **territorial claims** of Nagaland over significant tracts of land that legally fall

within the administrative boundaries of Assam.

- **Disputed Area Belt (DAB):** The conflict is concentrated in the **Disputed Area Belt (DAB)**—forest land (Reserved Forests) that runs along the 512.1 km inter-state boundary, primarily spanning Assam's **Golaghat, Jorhat, Sivasagar, and Karbi Anglong districts.**
- **The Claim:**
 - Assam maintains the constitutional boundary as defined at the time of Nagaland's statehood in 1963.
 - Nagaland, however, insists on a boundary based on historical pre-colonial or colonial agreements (like the [16-Point Agreement of 1960](#)), which would involve the "restoration" of Naga ancestral territories transferred out of the Naga Hills district by the British for administrative convenience.

Assam alleges that Nagaland has encroached upon over 60,000 hectares of its territory in the DAB.

NAMCHIK NAMPHUK COAL BLOCK

Context: Arunachal Pradesh launched its first commercial coal mine at the Namchik-Namphuk coal block in Changlang district.



About Namchik-Namphuk Coal Block:

- **What it is?**
 - The Namchik-Namphuk coal block is Arunachal Pradesh's first commercial coal mining project and part of India's broader push to develop domestic energy resources under Atmanirbhar Bharat.
- **Location:** Situated in **Changlang district**, southeastern Arunachal Pradesh, within the **Upper Assam coal belt** region.
- **Reserves:** Holds an estimated **1.5 crore tonnes of coal reserves**, sufficient for long-term production.
- **Features:**
 - Expected to generate ₹100 crore annual revenue for the state.
 - Will create local employment opportunities

and curb illegal mining.

- Emphasises eco-sensitive mining under "[Mission Green Coal Regions](#)," ensuring land reclamation and afforestation.
- Supports [PM EAST vision](#) — **Empower, Act, Strengthen, Transform** — for balanced Northeast development.

About Commercial Coal Mining in India:

- **What it is?**
 - Commercial coal mining allows private players to mine coal for open market sale, ending the monopoly of Coal India Ltd. (CIL).
- **Origin:**
 - Concept introduced under the **Coal Mines (Special Provisions) Act, 2015** and operationalised in **2020** under the [AatmaNirbhar Bharat](#) reforms.
 - Aimed at increasing competition, efficiency, and self-reliance in the coal sector.
- **Law Governing:**
 - Governed by the **Mines and Minerals (Development and Regulation) Act, 1957**, [Coal Mines \(Special Provisions\) Act, 2015](#), and related environmental and land laws.
 - Auction process is regulated by the **Ministry of Coal**, ensuring **transparency and accountability**.
- **Objectives:**
 - Boost domestic coal production and reduce imports.
 - Encourage private investment, [technology adoption](#), and environmental stewardship.
 - Ensure sustainable mining practices with community participation and rehabilitation.

PORT OF PASNI

Context: Pakistan has proposed allowing the United States to build and operate a commercial deep-water port at Pasni, [Balochistan](#), aimed at exporting critical minerals like copper and rare earths.



About Port of Pasni:

What it is?

- The **Port of Pasni** is a small **deep-water harbour** in Balochistan's Gwadar district, equipped with a fish harbour, cargo jetty, and a Pakistan Maritime Security Agency (PMSA) base.
- Originally designed for fisheries and coastal trade, it now figures in Pakistan's proposal as a **strategic mineral export terminal**.

Location:

- Situated on the [Arabian Sea](#), about **70 miles east of China-backed Gwadar Port** and **100 miles from the Iran-Pakistan border**.
- Its proximity to India's [Chabahar Port](#) in Iran (**≈300 km**) places it at the heart of South Asia's emerging geostrategic maritime triangle — Chabahar (India-Iran), Gwadar (China-Pakistan), and Pasni (US-Pakistan).

Aim of the Proposal:

- Pakistan seeks to reduce dependence on China's Belt and Road Initiative (BRI) and attract US investment through a purely commercial project.
- It aims to export critical minerals such as copper, antimony, and neodymium, essential for defence and green technologies.

Key Features:

- Proposed investment of **\$1.2 billion**, combining Pakistani federal funding and US private finance.
- Plans include **rail connectivity** to the mineral-rich [Reko Diq belt](#) and advanced **cargo handling infrastructure**.
- Officials emphasise the project is **non-military**, focusing solely on economic collaboration.

Strategic and Economic Implications:

- Gives the US a potential foothold near [China's Gwadar](#) and Iran's Chabahar, reshaping the Arabian Sea's security map.
- For India, it raises strategic concerns—the port's location near Chabahar could affect maritime surveillance, logistics routes, and intelligence dynamics in the western seaboard.



About The Red Sea:

• What It Is?

- The Red Sea is a narrow, elongated saltwater inlet of the Indian Ocean, located between northeastern Africa and the [Arabian Peninsula](#).
- It is one of the world's youngest seas, formed by the rifting of the African and Arabian tectonic plates around 30 million years ago.

• Located In:

- Extends south-eastward from Suez (Egypt) for about 1,200 miles (1,930 km) to the [Bab el-Mandeb Strait](#), connecting to the **Gulf of Aden** and the **Arabian Sea**.

• **Border Nations:** Egypt, Sudan, Eritrea, Saudi Arabia, and Yemen.

• Key Features:

- **Geological Origin:** Lies within a rift valley, part of the East African Rift System, marking the separation of Africa and Arabia.
- **Dimensions:** Covers an area of ~450,000 sq km, with a maximum depth of 3,040 m (9,974 ft).
- **Salinity and Temperature:** One of the hottest and saltiest seas, due to high evaporation and minimal [freshwater inflow](#).
- **Marine Biodiversity:** Home to extensive coral reefs, unique brine pools, and diverse marine ecosystems.
- **Volcanic Activity:** Hosts underwater volcanoes and geothermal features, evidence of ongoing tectonic movement.

• Significance:

- **Strategic Maritime Route:** Forms a vital link between Europe and Asia via the Suez Canal, carrying a large share of [global maritime trade](#).
- **Economic Importance:** Supports major

THE RED SEA

Context: New geological research by KAUST scientists in Saudi Arabia has discovered that the Red Sea completely dried up for nearly 100,000 years about 6.2 million years ago before being refilled by a [massive flood](#).

shipping, tourism, and fishing industries for bordering nations.

NAVI MUMBAI INTERNATIONAL AIRPORT

Context: Prime Minister of India inaugurated the Navi Mumbai International Airport (NMIA), [India's largest greenfield airport project](#), built at a cost of ₹19,650 crore.



About Navi Mumbai International Airport (NMIA):

What It Is?

- The **Navi Mumbai International Airport** is a **state-of-the-art greenfield airport** developed under a Public-Private Partnership (PPP) between Adani Airports Holdings Ltd (74%) and CIDCO (26%).
- It is envisioned as India's first fully digital, 5G-enabled, and eco-sustainable airport, designed to complement the [Chhatrapati Shivaji Maharaj International Airport](#) (CSMIA).

Located In: Ulwe, Navi Mumbai.

History:

- Proposed in the **1990s** to reduce congestion at Mumbai's primary [airport](#).
- Received final environmental clearance in **2017**.
- Construction began under **CIDCO** and was later taken over by **Adani Group**.

Key Features:

1. Infrastructure & Capacity:

- Two parallel Code F runways (3,700 m x 60 m each).
- **Phase 1 capacity:** 20 million passengers per annum (MPPA); **final phase:** 90 MPPA.
- **Cargo complex:** 0.5 million metric tonnes annually (expandable to 3.25 million).

2. Design & Technology:

- Architecture inspired by the **lotus flower**, featuring **12 petal-shaped columns**.
- **Fully digital operations:** AI-enabled baggage tracking, online immigration, contactless boarding via [Digi Yatra](#).

3. Green & Smart Initiatives:

- 47 MW solar power, rainwater harvesting, wastewater recycling, and EV-based ground transport.
- Designed as a carbon-neutral and IGBC Platinum-rated airport.

4. Connectivity:

- Integrated with expressways, metro, suburban rail, and water transport.
- Proximity to [JNPT port](#) enhances multimodal logistics efficiency.

ATACAMA DESERT

Context: Unusual winter rains in Chile's [Atacama Desert](#), [one of the driest places](#) on Earth, have triggered a rare mass bloom of fuchsia-coloured wildflowers, transforming the arid landscape into a spectacular floral carpet visible even from space.



About Atacama Desert:

What It Is?

- The Atacama Desert is the driest non-polar desert in the world, often used by scientists as an Earth analog for Martian landscapes due to its extreme aridity and mineral-rich terrain.

Location:

- Located in northern Chile, the desert stretches 600–700 miles (1,000–1,100 km) from north to south, between the Pacific Ocean and the [Andes Mountains](#).
- Bordered by Peru to the north, it extends into the Loa River basin.

Key Physical Features:

- **Average rainfall:** ~2 mm per year — some areas have recorded **no rain for decades**.

- **Elevation:** Varies from sea level to over **13,000 feet (4,000 m)** at the Atacama Plateau.
- Terrain includes salt flats (salares), volcanic cones, sand dunes, and alluvial plains.
- **Temperature:** Mild due to the cold **Humboldt Current**, with summer averages around **18–19°C**.
- Frequent **fog formations (camanchaca)** from Pacific upwelling provide limited moisture for some vegetation.

About the Fuchsia Flower Bloom:

- What It Is?
 - The bloom features the **Cistanthe longiscapa**, locally known as “pata de guanaco”, a small, resilient flowering plant that produces vivid fuchsia, pink, and purple blossoms after rare rainfall events.
- **Habitat:** Native to the Atacama Desert’s arid soils, it lies dormant for years as seeds beneath the surface, waiting for moisture to germinate.
- Key Features:
 - A drought-tolerant plant that can change how it breathes and makes food.
 - Blooms create the “**Desierto Florido**” (**Flowering Desert**) phenomenon, turning arid land into a sea of colour for weeks.
 - Plays a crucial role in **soil regeneration and biodiversity**, supporting insects and small fauna during the brief bloom.

INDIA RECOGNISES THREE KEY PORTS AS GREEN HYDROGEN HUBS

Context: The Ministry of New and Renewable Energy (MNRE) has recognised three major Indian ports — Deendayal (Gujarat), V.O. Chidambaranar (Tamil Nadu), and Paradip (Odisha) — as Green Hydrogen Hubs under the [National Green Hydrogen Mission \(NGHM\)](#) to accelerate India’s clean energy transition.



About India Recognises Three Key Ports As Green Hydrogen Hubs:

What it is?

- Green Hydrogen Hubs are integrated clusters that bring together production, storage, transportation, and utilisation of green hydrogen and its derivatives (like green ammonia and [methanol](#)) within a defined region.

Aim: The primary goal of Green Hydrogen Hubs is to create self-sustaining regional ecosystems for hydrogen production and use, reduce [carbon emissions](#) in hard-to-abate sectors such as steel, cement, and shipping, and establish India as a global leader in green hydrogen technology and exports.

Part of: These hubs are developed under the **National Green Hydrogen Mission (NGHM)**,

Key Features:

- **Cluster-Based Model:** Promotes region-specific [hydrogen](#) valleys that integrate renewable power, industry, and logistics to ensure efficiency and cost reduction.
- **Infrastructure Integration:** Combines production units, storage facilities, and transport networks (pipelines, ports) for seamless hydrogen supply chains.
- **Innovation & R&D Focus:** Encourages technological advancement, pilot projects, and public-private partnerships to enhance production efficiency.
- **Export Orientation:** Positions India’s coastal hubs as **export gateways** for green hydrogen and [ammonia](#) to global markets.
- **Policy & Financial Support:** Guided by the **Hydrogen Valley Innovation Clusters (HVIC)** scheme and supported through fiscal incentives, infrastructure grants, and R&D funding.

Ports Recognised as Green Hydrogen Hubs:

- **Deendayal Port Authority (Gujarat):** Western coast hub for export-linked hydrogen value chain.
- **V.O. Chidambaranar Port Authority (Tamil Nadu):** Southern hub integrating renewable energy and industrial clusters.
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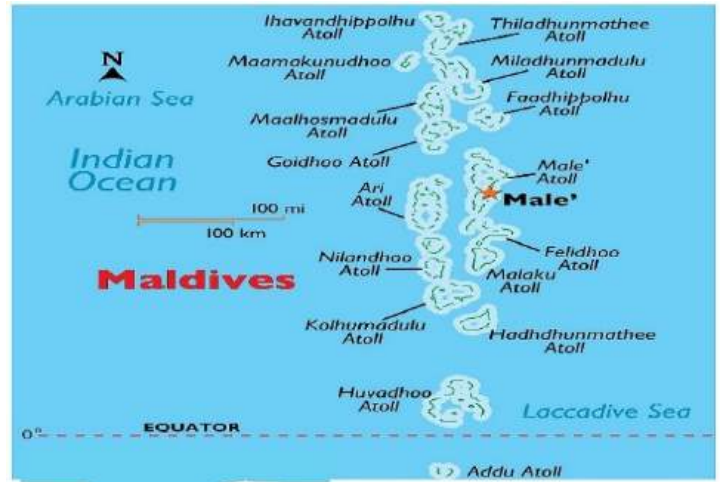
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MALDIVES ACHIEVES TRIPLE ELIMINATION OF MOTHER-TO-CHILD TRANSMISSION (MTCT)

Context: The World Health Organization ([WHO](#)) has validated the Maldives as the first country in the world to achieve “triple elimination” — stopping mother-to-child transmission of HIV, [syphilis](#), and hepatitis B, marking a historic global public health milestone



About Maldives Achieves Triple Elimination of Mother-to-Child Transmission (MTCT):

- What It Is?
 - Triple Elimination refers to a country successfully preventing mother-to-child transmission (EMTCT) of HIV, syphilis, and hepatitis B — three major infectious diseases affecting newborns globally.
 - WHO validates countries only when **zero new infant cases** are reported for at least **two consecutive years**, with strong monitoring systems and universal [maternal healthcare](#).
- Achievements of Maldives:
 - Global First:** Maldives is the **first nation** ever to achieve WHO “triple elimination” status (HIV, syphilis & [hepatitis B](#)).
 - Universal Maternal Health Coverage:** Over **95% of pregnant women** receive antenatal care and are tested for all three infections.
 - Immunization Success:** Over **95% of newborns** receive the **hepatitis B birth dose** within 24 hours, ensuring early protection.
 - Zero Transmission:** Since 2022, **no babies were born with HIV or syphilis**, and 2023 surveys showed **zero hepatitis B** among children.

About Maldives:

- Location:** Maldives is an independent island nation in the north-central Indian Ocean, about 600 km southwest of India and 645 km southwest of Sri Lanka.
- Capital:** Malé.
- Population:** Estimated **561,900 (2025)**; official language **Dhivehi**; state religion **Islam**.
- Geographic Features:
 - Island Composition:** Comprises about 1,200 small [coral islands](#) grouped into 26 atolls, of which around 200 are inhabited.
 - Elevation:** One of the world's lowest-lying nations, with no island rising above 1.8

meters (6 feet) above [sea level](#).

- **Climate:** Tropical climate with southwest monsoon (May–Aug) bringing rain and northeast monsoon (Dec–Mar) bringing dry weather.

MADAGASCAR

Context: Madagascar is witnessing a military takeover and mass [Gen Z-led protests](#) after President fled into hiding amid mounting unrest over corruption and governance failures.

- An elite military unit, [CAPSAT](#), has seized control as the president's attempt to dissolve parliament deepened the constitutional and political crisis.



About Madagascar:

- What it is?
 - Madagascar is a sovereign island republic located off the southeastern coast of Africa, known for its unique biodiversity and rich cultural heritage.
- **Capital:** The capital city is **Antananarivo**.
- **Border:** Although an island, Madagascar lies about **400 km east of Mozambique**, separated by the [Mozambique Channel](#), making it part of the southwestern Indian Ocean region.
- History:
 - **Colonial Past:** Madagascar was a [French colony](#) until **1960**, when it achieved independence, marking the start of its republican governance.
 - **Political Instability:** The post-independence era has been marked by frequent political upheavals, military coups, and power struggles.
 - **2009 Power Seizure:** In **2009**, **Andry Rajoelina**, then a former mayor of Antananarivo, seized power through a coup, triggering international criticism.
- Geological and Physical Features:
 - **Three Major Zones:** Madagascar consists of **three parallel regions**—the central high

plateau, eastern coastal plains, and western low plateaus.

- **Mountain Ranges:** Prominent volcanic massifs include **Ankaratra** (8,671 ft) and **Andringitra** (8,720 ft), forming vital watersheds.
- **River Systems:** Major rivers such as the **Mangoky**, **Onilahy**, and **Tsiribihina** drain fertile plains, supporting agriculture and settlement.
- **Unique Ecosystems:** The island's isolation has led to **distinct biodiversity**, hosting endemic species found nowhere else on Earth, earning it the title "[the eighth continent](#)."

MOUNT LEWOTOBİ LAKI-LAKI

Context: Indonesia's Mount [Lewotobi Laki-laki](#) volcano erupted, spewing volcanic ash up to 10 km into the sky, prompting authorities to raise the alert to its highest level.

Mount Lewotobi Laki Laki eruption

The volcano sent materials into the sky, dumping ash on villages and causing flight cancellations.



About Mount Lewotobi Laki-laki:

What It Is?

- Mount **Lewotobi Laki-laki** is an **active stratovolcano**, part of the twin-peaked **Lewotobi volcanic complex**—its counterpart being **Lewotobi Perempuan ("female")**. The name "Laki-laki" literally means "male" in Indonesian.

Location:

- It is situated on the **island of Flores**, in **East Nusa Tenggara province, Indonesia**, approximately 30 km southeast of Maumere city.
- The volcano lies within the **Pacific "Ring of Fire"**, a tectonically active belt known for frequent earthquakes and volcanic eruptions.

Geological Origin:

- The volcano was formed through **subduction processes** along the **Sunda–Banda Arc**, where the [Indo-Australian Plate](#) is being forced beneath the **Eurasian Plate**, generating intense volcanic activity in the region.

Key Features:

- **Type:** Stratovolcano ([composite cone](#))
- **Twin System:** Forms the **Lewotobi complex**, with summit craters less than **2 km apart**.
- **Eruption Style:** Produces **explosive eruptions**, [pyroclastic flows](#), and **ash plumes**.
- **Elevation:** Approximately **1,584 metres (5,197 ft)** above sea level.

Significance:

- **Hazard Impact:** The volcano's eruptions affect air traffic, local agriculture, and nearby settlements, prompting recurring evacuations.
- **Scientific Importance:** Serves as a natural laboratory for studying volcanic behavior, magma evolution, and Ring of Fire tectonics.
- **Cultural Aspect:** The "husband and wife" [volcanoes](#) are woven into local folklore, symbolising balance and duality in Flores Island traditions.

MERCOSUR (SOUTHERN COMMON MARKET)

Context: India and the Southern Common Market (MERCOSUR) agreed to deepen their [Preferential Trade Agreement \(PTA\)](#) to boost trade and investment, with both sides aiming to conclude negotiations within one year.



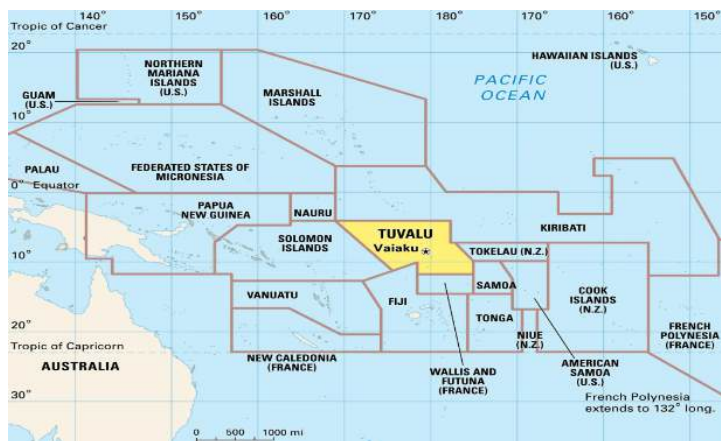
About MERCOSUR (Southern Common Market):

- **What It Is?**
 - MERCOSUR (Mercado Común del Sur) is a regional integration and economic bloc in South America that promotes free trade, customs union, and economic cooperation among member nations. It is one of the most influential trading blocs in the [Global South](#).
- **Established In:** Formally created on **26 March 1991** through the **Treaty of Asunción**, later strengthened by the **Protocol of Ouro Preto (1994)**, which gave MERCOSUR a legal personality and institutional framework.
- **Headquarters:** Montevideo, Uruguay.
- **Nations Involved:**

- **Founding Members:** Argentina, Brazil, Paraguay, Uruguay
- **Later Joined:** [Venezuela](#) (membership currently suspended) and **Bolivia** (acceded in 2023)
- **Associate Members:** Chile, Peru, Colombia, Ecuador, Guyana, and Suriname
- **Official Languages:** Spanish and Portuguese.
- **Aim:** To create a common market that facilitates free movement of goods, services, capital, and people, while reducing regional inequalities, enhancing economic competitiveness, and ensuring [democratic governance](#) across South America.
- **History & Evolution:**
 - The 1991 Treaty of Asunción laid the foundation for **economic integration**.
 - The **Protocol of Ouro Preto (1994)** institutionalised MERCOSUR's structure and gave it legal status in international law.
 - Since 2003, MERCOSUR has pursued **external trade agreements** with India, the EU, and [ASEAN](#), expanding its global economic presence.
 - [India-MERCOSUR Framework Agreement \(2003\)](#) and **PTA (2009)** provided tariff preferences on select goods, now set for expansion.
- **Functions and Mechanisms:**
 - **Trade Liberalisation:** Gradual removal of tariffs and non-tariff barriers within the bloc.
 - **Common External Tariff (CET):** Uniform [tariff policy](#) for non-member imports.
 - **Institutional Framework:** Includes the Common Market Council (CMC), Common Market Group (CMG), and Trade Commission.
 - **FOCEM (MERCOSUR Structural Convergence Fund):** Established in 2005 to fund projects promoting competitiveness, [social cohesion](#), and reducing economic asymmetries among members.
 - **Social and Cultural Integration:** Promotes cooperation in labour, migration, education, and culture, reflecting "**human-faced integration**" principles.

TUVALU

Context: Tuvalu has officially become the 90th State Member of the International Union for Conservation of Nature ([IUCN](#)), strengthening its global commitment to biodiversity conservation and climate resilience.



About Tuvalu:

- What it is?
 - Tuvalu is a **small Polynesian island nation** in the west-central Pacific Ocean, known for its unique marine ecosystems and extreme climate vulnerability.
- **Location:** It comprises **nine atolls and reef islands** spread over about **676 km**, with a total land area of only **26 sq. km**, but an **Exclusive Economic Zone** of nearly **900,000 sq. km**.
- **Capital:** Vaiaku on Funafuti Atoll.
- **History:**
 - Formerly part of the **British Gilbert and Ellice Islands Colony**, Tuvalu gained independence in 1978.
- **Features of Tuvalu:**
 - **Geography:** Tiny Polynesian nation of **nine islands** (five atolls, four reef islands) spread over **676 km**, with just **26 sq. km** land area.
 - **Elevation:** Extremely **low-lying (4–5 metres above sea level)** — highly vulnerable to sea-level rise and coastal erosion.
 - **Climate:** **Tropical maritime**; heavy rainfall (2,500–3,100 mm annually), southeast trade winds dominate; frequent westerly storms.
 - **Resources:** **No rivers**; depends on rainwater collection and wells. Soils are **porous**, limiting agriculture to coconuts, breadfruit, and taro.
- **Significance:**
 - Represents one of the world's **most climate-vulnerable nations**, advocating global action on climate change.
 - Rich in **marine biodiversity**, including coral reefs and migratory species.

NAURU

Context: Australia has defended its A\$2.5 billion, 30-year agreement with Nauru to resettle deported non-citizens, a move criticised by human rights groups who allege it shifts refugee responsibility to smaller, aid-dependent [Pacific nations](#).

About Nauru:

Country Profile:

- Nauru is a **micronation** in the southwestern **Pacific Ocean**, recognized as the **world's third-smallest country** by land area and population. It functions as a **unitary parliamentary republic** with a 19-member legislature.

Geographic Location:

- Located 25 miles south of the Equator, Nauru lies in southeastern Micronesia, about 800 km northeast of the [Solomon Islands](#) and 300 km west of Kiribati's Banaba Island.
- Its land area is only 21 sq. km, making it one of the most compact sovereign states globally.

Administrative Centre: The nation **lacks an official capital**, but the **district of Yaren** hosts the Parliament, Presidential offices, and administrative institutions, serving as the **de facto capital**.

Geological and Environmental Features:

- The island is a **raised coral atoll** with a ring of fertile coastal land encircling **Buada Lagoon**, its only inland water body.
- The interior plateau, elevated about **100 feet above sea level**, is rich in **phosphate rock** derived from ancient bird guano deposits.
- **Phosphate mining** has degraded over **80% of Nauru's land**, creating sharp limestone pinnacles and limiting agriculture.
- The island faces **severe freshwater scarcity**, with rainfall-dependent reservoirs and imported water supplies.

Significance:

- Nauru's economy relies heavily on [phosphate exports](#), Australian aid, and offshore asylum processing revenues.
- It remains a key geopolitical partner for Australia, hosting a detention and resettlement facility under [a long-term migration](#) and defence cooperation framework.

RAKCHHAM-CHITKUL WILDLIFE SANCTUARY

Context: An international bird-watching programme was held at the Rakchham–Chitkul Wildlife Sanctuary in Himachal Pradesh, where participants from 15 countries recorded over 35 [bird species](#).



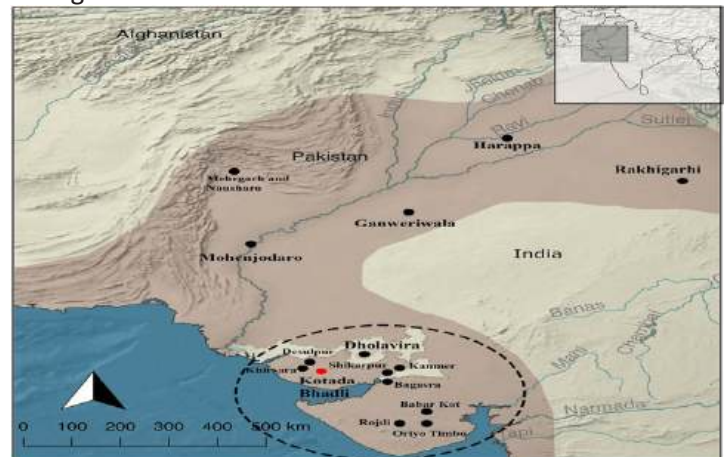
About Rakchham-Chitkul Wildlife Sanctuary:

- What it is?
 - Rakchham–Chitkul Wildlife Sanctuary is a high-altitude protected area known for its unique cold-desert ecosystem and rich [Himalayan biodiversity](#).
 - It serves as a critical habitat for several endangered alpine fauna and migratory bird species, making it a vital [ecological zone](#) in North India.
- Located in:
 - Situated in Kinnaur district, Himachal Pradesh, the sanctuary covers an area of 30.98 sq. km.
 - It lies at an altitude ranging from 3,200 to 5,486 metres above sea level within the Western Himalayan range.
- Key Features:
 - The sanctuary is surrounded by **snow-clad peaks, glacial streams, and rugged valleys**, offering spectacular trekking routes such as the **Lamkhanga Pass**, connecting Kinnaur to Gangotri in Uttarakhand.
 - It falls within a **dry trans-Himalayan zone**, unlike other sanctuaries of Himachal Pradesh that receive monsoon rainfall.

- The region supports **ecotourism, mountaineering, and birding**, making it a hotspot for conservation-linked adventure tourism.
- Flora:
 - Dominated by rhododendrons, pine, oak, and juniper forests, the sanctuary also harbours rare [medicinal herbs](#) adapted to alpine climates.
- Fauna:
 - Home to snow leopards, Himalayan black bears, musk deer, red foxes, and a variety of Himalayan pheasants.
 - The bird species observed include Plumbeous Water Redstart, Blue-fronted Redstart, Rock Bunting, and [Yellow-breasted Greenfinch](#), reflecting high avian diversity.
- Significance:
 - Acts as a biodiversity bridge between the Western and Trans-Himalayan ecosystems.
 - Strengthens India's commitment to wildlife conservation and ecotourism under the [National Biodiversity Action Plan](#).

KOTADA BHADLI – HARAPPAN SITE

Context: A new study by Deccan College, Symbiosis School for Liberal Arts, and the ASI has identified the [Harappan site](#) of Kotada Bhadli in Kutch, Gujarat, as the earliest known caravanserai, indicating a well-organised trade infrastructure dating back to 2300–1900 BCE.



About Kotada Bhadli – Harappan Site:

- What it is?
 - Kotada Bhadli is an ancient Harappan settlement from the Mature Harappan phase (2300–1900 BCE), now recognised as the earliest known caravanserai — a fortified stopover for traders and pack animals during long-distance trade.
- **Located in:** Situated in the **Kutch district of Gujarat**, the site lies strategically along inland trade routes connecting major Harappan cities such as

Dholavira, Lothal, and Shikarpur.

- **Nature of Site:** It functioned as a rural logistical hub, offering shelter, food, and security to [Bronze Age](#) traders and their caravans — designed for short halts rather than permanent habitation.
- **Structural Evidence:**
 - Excavations revealed a **multi-roomed central complex, fortified walls with bastions**, and [large open courtyards](#) likely used for storing goods and housing animals.
 - These features match **caravanserai-style layouts** known from later historical periods.
 - Ground-penetrating radar, isotopic analysis, and satellite mapping confirmed the site's structural design and functional zoning.
- **Trade Implication:**
 - Kotada Bhadli provides the **earliest evidence of a structured overland trade network** in [Harappan civilization](#).
 - It served as a **strategic stopover connecting inland and coastal centers** like Dholavira, [Lothal](#), and Shikarpur.
 - Indicates that Harappans maintained **logistical hubs and rest stations** facilitating long-distance commerce.
- **Significance:**
 - **Chronological Impact:** Pushes back South Asia's organised trade infrastructure by over 2,000 years before the [Silk Route](#).
 - **Economic Insight:** Reveals advanced logistical and administrative planning within the Harappan economy.

and carnivore populations, and [grassland-forest ecosystems](#) that support conservation and ecotourism activities.

Located in:

- Situated in **Balodabazar District, Chhattisgarh**, between longitude 80°22'30"E to 82°37'30"E and latitude 21°18'45"N to 21°30'00"N.
- The sanctuary covers an area of **244.66 sq km** and lies about **106 km from Raipur** on National Highway 53.

Key Features:

- **Topography:** Gently undulating plains with elevations up to 640 m above sea level, crisscrossed by rivers Balmedhi, Jonk, and [Mahanadi](#), which serve as the lifelines of the ecosystem.
- **Climate:** Receives an annual rainfall of around 1,200 mm, with pleasant winters from November to February.
- **Flora:** Dominated by [Teak](#) (*Tectona grandis*), Sal (*Shorea robusta*), and mixed deciduous forests.
- **Fauna:** Hosts diverse species like leopards, barking deer, bison, wild boar, chital, and now blackbuck, along with rich [avian and aquatic fauna](#) around the Balar reservoir.
- **Tourism Infrastructure:** Equipped with watchtowers, eco-camps, and patrol stations promoting eco-tourism and conservation awareness.

Significance:

- **Biodiversity Conservation:** Acts as a critical refuge for [central Indian fauna](#), maintaining prey-predator balance.
- **Successful Reintroduction Site:** Known for the revival of blackbucks, showcasing India's grassland restoration potential.
- **Ecotourism Promotion:** Serves as a model for sustainable tourism integrated with wildlife conservation.

BARNAWAPARA WILDLIFE SANCTUARY

Context: The [blackbuck](#), which was declared locally extinct in Chhattisgarh in 2017, has made a remarkable recovery under a five-year revival plan (2021–2026) in the Barnawapara Wildlife Sanctuary.



About Barnawapara Wildlife Sanctuary:

What it is?

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EAST TIMOR (TIMOR-LESTE) JOIN ASEAN AS THE 11TH MEMBER OF ASEAN

Context: East Timor (Timor-Leste) was formally admitted as the 11th member of ASEAN at the 47th ASEAN Summit in [Kuala Lumpur](#), marking the bloc's first expansion since the 1990s.

About East Timor:

- **What it is?**
 - East Timor, officially the Democratic Republic of Timor-Leste, is a sovereign island nation in Southeast Asia, and one of the world's youngest republics (independent since 2002).
- **Location:** It lies in the eastern half of Timor Island in the Malay Archipelago, bordered by Indonesia to the west, and the [Timor Sea](#) (north of Australia) to the south.

- **Capital:** Dili.
- **Geographical Features:** Mountainous terrain with [Mount Tatamailau \(2,963 m\)](#) as the highest peak; dry tropical climate, sandalwood vegetation, and rich biodiversity including civet cats and crocodiles.



About ASEAN:

- **What it is?**
 - The Association of Southeast Asian Nations (ASEAN) is a regional intergovernmental organization that promotes political, economic, and cultural cooperation in Southeast Asia.
- **Established in:** 1967, through the [Bangkok Declaration](#), signed by Indonesia, Malaysia, Philippines, Singapore, and Thailand.
- **Headquarters:** Jakarta, Indonesia.
- **Members:** Now **11 countries** – Indonesia, Malaysia, Philippines, Singapore, Thailand, Brunei, Vietnam, Laos, Myanmar, Cambodia, and **East Timor (2025)**.
- **Aims & Functions:**
 - Promote regional stability through dialogue and diplomacy.
 - Enhance economic integration via the ASEAN [Free Trade Area](#) (AFTA) and [RCEP](#).
 - Foster cultural exchange and people-to-people connectivity.
 - Address transnational issues like terrorism, disaster management, and climate change.
 - Engage major powers through platforms like [ASEAN+3](#) and the East Asia Summit (EAS).

LOKTAK LAKE

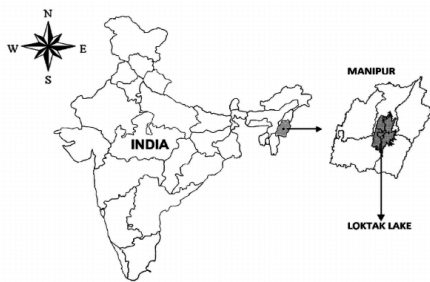
Context: A Nagaland University study has warned of severe ecological degradation in Manipur's Loktak Lake, citing [land-use changes](#), agricultural runoff, and shifting cultivation.

About Loktak Lake:

What it is?

- Loktak Lake is the **largest freshwater lake in South Asia** and a **Ramsar Site**, celebrated for its floating islands ([phumdis](#)) and as home to the world's **only floating national park** — [Keibul Lamjao National Park](#).

Located in: Situated in Moirang, Bishnupur District of Manipur, about 48 km from Imphal, the lake spans nearly 250 km², expanding to 500 km² during the monsoon.



Formation:

- It is a **natural floodplain lake** formed by the confluence of several rivers — Khuga, Nambul, Imphal, Thoubal, and others — whose sediments and organic matter created the floating vegetation masses known as phumdis.

Features:

- Unique Phumdis:** Floating mats of vegetation and soil that support human settlements (phumsangs) and wildlife.
- Biodiversity Hotspot:** Habitat for 428 animal and 132 plant species, including the endangered [Sangai deer](#) (brow-antlered deer) — Manipur's state animal.
- Cultural Heritage:** Every 15th October, Loktak Day celebrates the lake's ecological and cultural significance.
- Tourism & Livelihoods:** Supports fishing, hydropower, irrigation, and tourism through Sendra and Takmu Water Sports Complex.

Significance:

- Ecological Importance:** The lake sustains the Keibul Lamjao National Park, a critical wetland ecosystem under the [Ramsar Convention](#).
- Economic Role:** Provides food, energy, and income to thousands of local fishers and farmers.
- Environmental Concerns:** Listed in the [Montreux Record](#) for wetlands under threat due to pollution, sedimentation, and unregulated land use.

CYPRUS

Context: Cyprus Foreign Minister Constantinos Kombos is on a three-day visit to India, meeting External Affairs Minister to advance the [India-Cyprus](#) strategic partnership.



About Cyprus:

What it is?

- Cyprus is an island nation in the eastern

[Mediterranean Sea](#), known for its rich history, cultural heritage, and strategic geopolitical location linking Europe, Asia, and Africa. It is a member of the European Union since 2004 and the Eurozone since 2008.

Location: Situated at the northeastern end of the Mediterranean basin, Cyprus lies about 65 km south of [Turkey](#), 100 km west of Syria, and 770 km southeast of mainland Greece.

Capital: The capital city is Nicosia (Lefkosia).

- The world's **only divided capital**, shared between the **Republic of Cyprus** in the south and the **Turkish Republic of Northern Cyprus** (recognized only by Turkey) in the north.

Geographical Features:

- Area:** 9,251 sq. km — third-largest island in the Mediterranean after [Sicily and Sardinia](#).
- Terrain:** Dominated by the **Troodos Mountains** in the south and **Kyrenia Range** in the north, separated by the fertile **Mesaoria Plain**.
- Highest Peak:** [Mount Olympus](#) (Troodos) at 1,951 metres.
- Climate:** Typical Mediterranean climate — hot, dry summers and mild, wet winters.

Historical Context:

- Gained **independence from Britain in 1960**.
- Since **1974**, the island has been **divided** after a [Turkish military](#) invasion following a coup; **36% of the north** remains under **Turkish occupation**.

SARANDA WILDLIFE SANCTUARY

Context: The Supreme Court of India has reserved its verdict on the Jharkhand government's plea to reduce the proposed [Saranda Wildlife Sanctuary](#) area from 310 sq km to 250 sq km, citing the need to protect tribal habitation and community rights.



About Saranda Wildlife Sanctuary:

What It Is?

- The Saranda Sanctuary is a proposed wildlife sanctuary in West Singhbhum district of Jharkhand, located within the Saranda Forest Division, known as one of Asia's largest Sal (*Shorea robusta*) forests and a key [biodiversity hotspot](#) at the Jharkhand–

Odisha border.

Location:

- Situated in **southern Jharkhand**, the Saranda region—meaning “**land of seven hundred hills**”—covers about 856 sq km, of which 816 sq km is reserved forest.
- It lies within the [Singbhum Elephant Reserve](#), forming a vital ecological corridor between Jharkhand, Odisha, and Chhattisgarh.

History:

- Declared a **game reserve in 1968** under the Bihar Forest Act.
- The **National Green Tribunal (2022)** directed Jharkhand to notify it as a sanctuary under the [Wildlife Protection Act, 1972](#).

Key Features:

- **Flora:** Dense cover of **Sal, Kusum, Mahua**, and rare orchids.
- **Fauna:** Habitat for Asian elephants, four-horned antelope, sloth bears, flying lizards, and migratory birds.
- **Communities:** Home to **Ho, Munda, Oraon**, and **PVTGs**, reliant on forest produce like mahua and resin.
- **Mineral Wealth:** Contains nearly 26% of India's iron ore reserves, making it a major mining zone for SAIL and private operators.

Significance:

- **Ecological Hotspot:** Forms a vital [carbon sink](#) and biodiversity reserve in eastern India.
- **Elephant Corridors:** Maintains wildlife connectivity between Saranda, Similipal, and Sundargarh forests.

Tribal Livelihood & Rights: Balances conservation with protection of tribal forest rights under [FRA, 2006](#).

NAURADEHI SANCTUARY TO BECOME 3RD HOME FOR CHEETAHS

Context: Madhya Pradesh Chief Minister announced that Nauradehi Wildlife Sanctuary will become the third home for cheetahs in the state after [Kuno National Park](#) and Gandhi Sagar Sanctuary.

About Nauradehi Sanctuary to Become 3rd Home for Cheetahs:

- **What it is?**
 - Nauradehi Wildlife Sanctuary is one of India's largest sanctuaries, spread over 1,197 sq. km, and serves as a crucial wildlife corridor in the upper Vindhyan range of Madhya Pradesh.
- **Located in:**
 - The sanctuary lies across Sagar, Damoh, and Narsinghpur districts of Madhya Pradesh, situated between the **Yamuna** and **Narmada**

River basins.

- Major rivers like **Bamner, Kopra, and Bearma** flow through it.

• **History and Ecology:**

- Declared a sanctuary to conserve central Indian fauna, Nauradehi has **mixed deciduous forests**, [Vindhyan sandstone formations](#), and **diverse soil types** (red, black, and alluvial).
- It supports over 250 animal species, including tiger, leopard, sloth bear, wild dog, chinkara, sambhar, and blackbuck, along with 170+ bird species such as storks, vultures, and pheasants.

• **Features:**

- **Altitude:** 400–600 metres above sea level.
- **Rainfall:** Around 1,200 mm annually.
- Rich in **grasses, herbs, shrubs, and bamboo**, making it ideal for herbivores and potential cheetah prey base.

• **Cheetah Conservation in India:**

- The **Asiatic cheetah** became extinct in India in **1952** due to hunting and habitat loss.
- The Government of India launched [Project Cheetah](#), reintroducing **African cheetahs from Namibia at Kuno National Park (2022)** and later at **Gandhi Sagar Sanctuary (2024)**.
- **Nauradehi** will now serve as the third site, ensuring species expansion, genetic diversification, and ecosystem restoration in central India.



RAKCHHAM-CHITKUL WILDLIFE SANCTUARY

Context: An international bird-watching programme was held at the Rakchham–Chitkul Wildlife Sanctuary in Himachal Pradesh, where participants from 15 countries recorded over 35 [bird species](#).



- o Dominated by rhododendrons, pine, oak, and juniper forests, the sanctuary also harbours rare [medicinal herbs](#) adapted to alpine climates.
- **Fauna:**
 - o Home to snow leopards, Himalayan black bears, musk deer, red foxes, and a variety of Himalayan pheasants.
 - o The bird species observed include Plumbeous Water Redstart, Blue-fronted Redstart, Rock Bunting, and [Yellow-breasted Greenfinch](#), reflecting high avian diversity.
- **Significance:**
 - o Acts as a biodiversity bridge between the Western and Trans-Himalayan ecosystems.
 - o Strengthens India's commitment to wildlife conservation and ecotourism under the [National Biodiversity Action Plan](#).

About Rakchham-Chitkul Wildlife Sanctuary:

- **What it is?**
 - o Rakchham–Chitkul Wildlife Sanctuary is a high-altitude protected area known for its unique cold-desert ecosystem and rich [Himalayan biodiversity](#).
 - o It serves as a critical habitat for several endangered alpine fauna and migratory bird species, making it a vital [ecological zone](#) in North India.
- **Located in:**
 - o Situated in Kinnaur district, Himachal Pradesh, the sanctuary covers an area of 30.98 sq. km.
 - o It lies at an altitude ranging from 3,200 to 5,486 metres above sea level within the Western Himalayan range.
- **Key Features:**
 - o The sanctuary is surrounded by **snow-clad peaks, glacial streams, and rugged valleys**, offering spectacular trekking routes such as the **Lamkhanga Pass**, connecting Kinnaur to Gangotri in Uttarakhand.
 - o It falls within a **dry trans-Himalayan zone**, unlike other sanctuaries of Himachal Pradesh that receive monsoon rainfall.
 - o The region supports **ecotourism, mountaineering, and birding**, making it a hotspot for conservation-linked adventure tourism.
- **Flora:**