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MONTHLY CURRENT AFFAIRS

FOR UPSC CIVIL SERVICE EXAMINATION

JUNE 2025

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Daojali Hading: Neolithic Site in Assam

Context: A 2025 archaeological survey confirmed Neolithic settlement at Daojali Hading, Dima Hasao district, Assam.

Key Findings:

✅ Furnace and iron slag (~2700 years old) → early metallurgy
✅ Cord-marked pottery, polished celts, grinding stones, arrowheads, jadeite tools
✅ Charcoal and limestone deposits
✅ On-site lithic tool production
✅ Indicates settled Neolithic life, not just tool-making

Neolithic Period (Last Stone Age Stage)

- Period (India): 7000 BCE – 1000 BCE
- Features: Polished tools, pottery, settled farming life
- Agriculture: Wheat, barley, rice cultivation began
- Pottery: Handmade, low-fired, cord-marked
- Housing: Circular/rectangular huts
- Economy: Subsistence farming and herding
- Key Sites: Burzahom, Paiyampalli, Chirand, Mahagara, Daojali Hading

Early Harappan Settlement Discovered in Gujarat

Context: Kerala University archaeologists unearthed a 5,300-year-old Early Harappan settlement near Lakhapar, Kachchh (Gujarat).

Key Findings:

✅ Planned Settlement:
- Remains of walls made with local sandstone and shale.
- Indicates early urban planning.

✅ Pottery:
- Pottery from Early (c. 3300 BCE) and Classical Harappan phases.
- Discovery of rare Pre-Prabhas Ware, previously found at only three sites in Gujarat, indicating a unique cultural group within Harappan civilization.

✅ Burial Site:
- Human skeleton buried with Pre-Prabhas Ware pottery (first such burial found).

✅ Beads & Tools:
- Carnelian, agate, copper objects, Rohri chert blades → evidence of trade with Sindh.

✅ Animal Remains:
- Cattle, sheep, goats, fish, shells → mixed economy (husbandry + aquatic resources).

✅ Link with Juna Khatiya Necropolis:
- Lakhapar is 1.5 km from Juna Khatiya (197 graves), helping bridge habitation and burial patterns of Early Harappan Phase.

World's Oldest Nothopegia Fossils Found in Assam

Context: Fossilized leaves of the Nothopegia genus were found in Assam's Makum Coalfield.

Key Points:

✅ Age:
- Dates to the late Oligocene epoch (24–23 million years ago).
- Oldest known record of Nothopegia globally.

✅ Climate Insights:
- Indicates warm, humid climate in NE India during the Oligocene, like today's Western Ghats.

- Later tectonic movements changed climate patterns (temperature, rainfall, winds), making the region inhospitable for tropical species like Nothopegia.

✅ About Nothopegia:

- Genus in the Anacardiaceae (cashew) family.
- Found in India, Bangladesh, Sri Lanka.
- Except Nothopegia heyneana, most species now restricted to Western Ghats and SW India.
- Small deciduous trees with simple leaves, racemose inflorescence, unisexual flowers, and drupaceous fruits.

Statues of Sushruta & Charaka Unveiled in Goa

Context: The Vice President inaugurated statues of Acharya Charaka and Sage Sushruta at Goa Raj Bhavan.

- 🩺 About Acharya Charaka
- ✅ Known as the Father of Medicine (4th century BCE)
- ✅ Royal physician in Kanishka's Kushan court
- ✅ Author of Charaka Samhita (part of Brhat-Trayi in Ayurveda)
- Covers anatomy, physiology, herbal medicine, surgery, use of minerals and metals.
- 🌠 About Sage Sushruta
- ✅ Known as the Father of Surgery (c. 600 BCE, Kashi)
- ✅ Disciple of Dhanvantari
- ✅ Author of Sushruta Samhita, a key text of Ayurveda
- Covers surgery, general medicine, diet, anatomy, toxicology, pediatrics.

- ✅ Contributions:
- Linked malaria to mosquitoes, plague to rats, early diabetes diagnosis.
- Pioneered rhinoplasty, lithotomy (stone removal), and removal of dead fetuses.

Halley's Comet Mentioned in 15th-Century Temple Inscription

Context - A 15th-century copper plate inscription was found at Mallikarjunaswamy Temple, Srisailam, Andhra Pradesh.

About the Inscription

- ✅ Refers to Halley's Comet appearance in 1456 CE — first known Indian epigraphical reference to this event.
- ✅ Dated June 28, 1456 CE (Śaka 1378), during Vijayanagar ruler Mallikarjuna's reign.
- ✅ Written in Sanskrit using Nagari script.

🌠 About Halley's Comet

- Periodic comet, visible every ~76 years.
- Named after Edmond Halley, who predicted its return using Newton's laws.
- The 1456 appearance was widely seen across Europe, Asia, and the Middle East.

🛕 About Mallikarjunaswamy Temple

- ✅ Located in Srisailam, Andhra Pradesh, on Krishna River banks.
- ✅ One of 12 Jyotirlingas (Lord Shiva) and 18 Maha Shakti Peethas (Goddess Parvati).
- ✅ Patronized by Chalukyas, Kakatiyas, Vijayanagara Empire.
- ✅ Houses many epigraphs and copper plates, now being digitized.
- ✅ Dravidian architecture with vimanas, mandapas, and intricate carvings.

Performance Grading Index (PGI) 2.0 Released

Context - The Ministry of Education released the PGI 2.0 report assessing school education across States/UTs.

What is PGI?

✅ An assessment tool by the Ministry of Education to measure States/UTs' school education performance.

✅ Launched in 2017-18; PGI 2.0 (from 2021-22) aligns with NEP 2020 and SDG 4.

Structure of PGI 2.0

✅ Total Points: 1000, across 73 indicators under two categories:

- Outcomes: Learning Outcomes, Access, Infrastructure & Facilities, Equity.
- Governance Management: Governance Processes, Teacher Education & Training.

✅ Data Source: Primarily UDISE+.

✅ Grading Scale:

- Daksh (Top Grade): 941–1000
- Akanshi-3 (Lowest): 401–460

Key Highlights (2022-23 & 2023-24)

✅ Top Performer: Chandigarh (Score: 703, Prachesta-1 grade).

✅ Notable Improvements: Bihar, Telangana (enrollment & retention).

✅ Lowest Performer: Meghalaya (Score: 417, Akanshi-3).

Domain-wise Insights

🔹 Learning Outcomes: No state achieved Daksh grade; Chandigarh, Punjab, Puducherry ranked higher but foundational literacy gaps remain.

🔹 Access: Odisha topped with Daksh; Bihar and Jharkhand improved enrollment significantly.

🔹 Infrastructure: Chandigarh ranked highest, followed by Delhi and J&K.

🔹 Equity: States showed progress in reducing access gaps for SC/ST and marginalized groups.

🔹 Governance: Chandigarh led in transparency and accountability.

🔹 Teacher Training: Chandigarh secured Daksh in this domain.

State of World Population 2025: UNFPA Report

Context: The UNFPA released its 2025 State of World Population (SOWP) report titled 'The Real Fertility Crisis'.

India's Highlights

✅ Population:

- 146.39 crore (highest globally).
- Expected peak: 170 crore (~2060s), then decline.

✅ Total Fertility Rate (TFR): 1.9 (below replacement level of 2.1).
✅ Demographics:
- 68% working-age (15–64 yrs).
- Youth: 24% (0–14 yrs), 17% (10–19 yrs), 26% (10–24 yrs).
- Elderly (65+): 7% (rising trend).

✅ Life Expectancy: Men – 71 yrs, Women – 74 yrs.
✅ Reproductive Health:
- 36% face unintended pregnancies.
- 30% unable to achieve desired family size due to financial constraints, job insecurity, lack of childcare, and health barriers.
- Adolescent fertility rate: 14.1 per 1,000 girls (15–19 yrs) (higher than China, Sri Lanka).

Global Highlights
✅ Global Population (2025): ~8.2 billion.
✅ TFR Decline: From 5 (1950) → 2.25 (2024) → projected 2.1 by 2050.
✅ 60% countries now below replacement fertility (TFR < 2.1).
✅ Fastest Growth: Sub-Saharan Africa, parts of Asia.
✅ Shrinking Populations: China, Japan, South Korea, Eastern Europe.
✅ Top 5 Populous Countries (2025):
India – 1.46 billion
China – 1.42 billion
USA – 345 million
Indonesia – 285 million
Pakistan – 245 million

✅ TFR Extremes:
- Highest: Niger (6.7), Somalia (6.1), DR Congo (5.9).
- Lowest: South Korea (0.7), Hong Kong (0.8), Singapore (0.9).

✅ Global Life Expectancy (2025): 73 yrs
- Highest: Japan (84.5), Switzerland (83.9).
- Lowest: CAR (54), Chad (53).

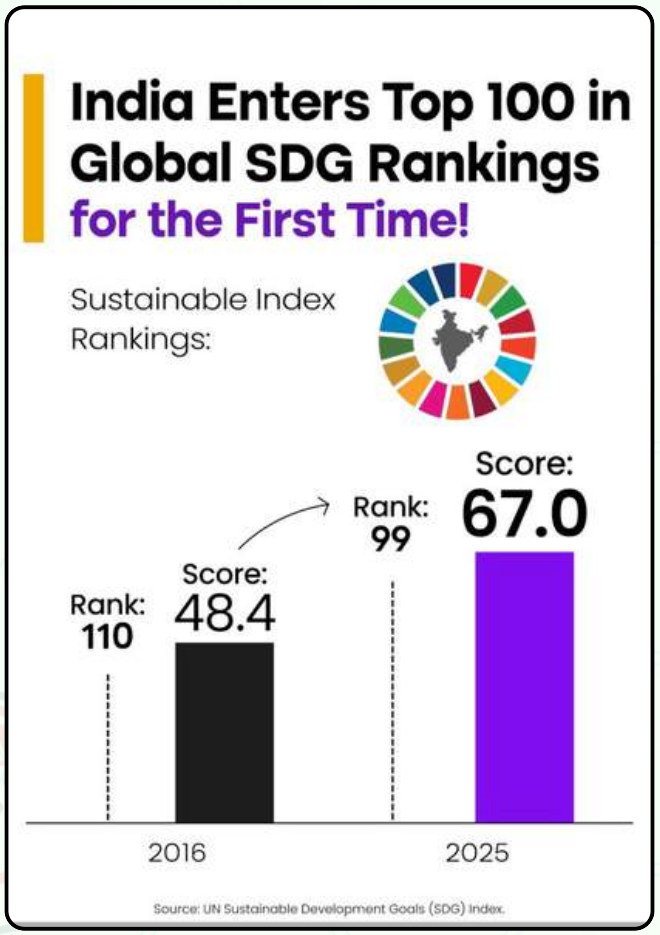
✅ Aging Populations:
- Japan: 30% elderly, Europe: 20%, India: 7% (increasing).

📌 About UNFPA
- Established: 1967 (began 1969), under UNGA, HQ in New York.
- Works on SDG 3 (Health), SDG 4 (Education), SDG 5 (Gender Equality).
- Publishes the State of World Population report annually (since 1978).

🩺 What is TFR?
- Total Fertility Rate: Average number of children a woman would have in her reproductive years (15–49 yrs).
- TFR > 2.1 = population growth,
- TFR ~ 2.1 = replacement level,
- TFR < 2.1 = decline, aging population, workforce challenges.

India Enters Top 100 in SDG Index

Context: India has entered the top 100 (rank 99) in the 2025 Sustainable Development Goals (SDG) Index by the Sustainable Development Solutions Network (SDSN).



🌍 About SDGs

✅ A set of 17 global goals adopted by UN member states in 2015 to end poverty, protect the environment, and ensure peace and prosperity by 2030.

📊 Global Highlights (SDG Report)

- Only 17% of SDG targets are on track globally.
- 83% show limited or reversed progress.
- US ranks last (193rd) due to withdrawal from key global agreements.
- Top Performers:
  - #1 Finland, followed by Sweden, Denmark.
  - Brazil leads in G20; Chile in OECD.

India's Performance

✅ Rank: 99th (first time in top 100)
✅ Score: 67.0
✅ Key Improvements:

- Better access to electricity (SDG 7),
- Improved internet and broadband (SDG 9),
- Reduced under-five and neonatal mortality (SDG 3).

✅ Challenges remain in: biodiversity conservation, sustainable agriculture, and climate action.

🏛️ About SDSN

✅ Established: 2012 by Ban Ki-Moon & Jeffrey Sachs under the UN Secretary-General.
✅ Works to promote SDGs and the Paris Agreement through education, research, and policy analysis.
✅ Publishes the Sustainable Development Report annually since 2016 to track SDG progress across 193 UN member states.

World Bank Revises Global Poverty Line to $3/Day

Context: The World Bank revised the global poverty line from $2.15/day (PPP 2017) to $3/day (PPP 2021) using updated price data and methods

What is the Global Poverty Line?

✅ It defines minimum daily spending required to meet basic needs (food, clothing, shelter).
✅ Adjusted using Purchasing Power Parity (PPP) for global comparison.
✅ Set by the World Bank; countries use national poverty lines for internal measures.

Implications for India

✅ Sharp Decline in Extreme Poverty:
- Fell from 27.1% (2011-12) to 5.3% (2022-23) under the $3/day benchmark.
- In numbers: from 344 million → 75 million.

✅ Lower-Middle-Income (LMIC) Poverty:
- LMIC poverty line revised to $4.20/day (from $3.65).
- Share fell from 57.7% (2011-12) to 23.9% (2022-23).
- In numbers: from 732 million → 342 million.

✅ Rural vs Urban:
- Poverty remains higher in rural areas, but improvements are seen in both sectors.

✅ Multidimensional Poverty:
- Non-monetary poverty in India has declined, as per the World Bank's MPI.

About the Poverty Line
- It is a threshold to identify and measure poverty.
- Updated periodically to reflect inflation and cost of living.
- Helps track progress towards poverty reduction globally.

Global Gender Gap Index 2025 Released

Context: India ranked 131 out of 148 countries in the WEF's Global Gender Gap Report 2025, slipping two places from last year.

About the Index

✅ Published annually by the World Economic Forum (WEF).
✅ Measures gender-based disparities across four dimensions:
- Economic Participation & Opportunity
- Educational Attainment
- Health & Survival
- Political Empowerment

✅ Scoring: 0 (inequality) to 1 (full parity).

India's Performance
✅ Overall Score: 64.1% (among the lowest in South Asia).
✅ Economic Participation: Improved to 40.7% (+0.9 pp).
✅ Educational Attainment: 97.1% (near parity).
✅ Health & Survival: Improved due to better sex ratio and healthy life expectancy.
✅ Political Empowerment: Declined for the second consecutive year.

🌏 Regional Comparison (South Asia)
✅ Best Performer: Bangladesh (Rank 24, jumped 75 places).
✅ Others: Bhutan (119), Nepal (125), Sri Lanka (130), Maldives (138), Pakistan (148).

🌐 Global Trends
✅ Top 5 Performers:
Iceland (top for 16 years, >90% gender gap closed)
Finland
Norway
United Kingdom
New Zealand

India's Maternal Mortality Ratio (MMR) Falls Further

Context: The PM addressed the International Conference on Disaster Resilient Infrastructure (ICDRI) 2025 via videoconferencing.

🛡️ What is Disaster Resilient Infrastructure (DRI)?
✅ Infrastructure designed to withstand, adapt, and recover from natural and man-made disasters (cyclones, earthquakes, floods, etc.).
✅ Supports climate adaptation and disaster risk reduction.

🌐 Key Global Initiatives
- Coalition for Disaster Resilient Infrastructure (CDRI): Launched by India (2019).
- UN "Early Warnings for All" (by 2027).
- OECD's Resilient Infrastructure Policy (G20 guidance).
- Sendai Framework for Disaster Risk Reduction (2015–2030).

🚨 Importance of DRI
✅ Saves Lives: Earthquake-resistant buildings, cyclone shelters reduce fatalities.
✅ Economic Protection: Disasters cause $2.3 trillion in annual indirect losses.
✅ Climate Adaptation:
- Floods: permeable pavements
- Wildfires: fire-resistant materials
- Hurricanes: elevated structures

✅ Supports SIDS (Small Island Developing States) facing climate threats.
✅ Promotes equity and SDGs: Ensures continuity of health, education during disasters.

⚠️ Challenges
- High costs: Flood-resistant construction can cost 30–50% more.
- Funding gaps: Only 5% of disaster funds go to pre-disaster resilience.
- Weak enforcement: Poor building code compliance.
- Policy fragmentation: Disjointed sectoral policies.
- Technological/material limitations: High costs of resilient materials.
- Social resistance: Short-term interests over long-term resilience.
- Climate uncertainty: Compound disasters complicate planning.

🛣️ Way Forward
✅ Strengthen policies: Integrate DRI in building codes (e.g., India's Disaster Management Amendment Act 2025).
✅ Local disaster management: Empower DDMAs and set up Urban Disaster Authorities.
✅ Leverage technology:
- AI-based flood prediction (Hyderabad).
- Expand tsunami alert systems to other hazards.

✅ Enhance financing: Blend public-private funding; CDRI's $50M fund for SIDS.
✅ Nature-based solutions: Mangroves, coral reefs for coastal protection.
✅ Capacity building: DRI courses in universities, train volunteers (Aapda Mitra).
✅ Global partnerships: Expand CDRI's membership (currently 54+ nations).

📌 About the Sendai Framework (2015–2030)
✅ UN global agreement to reduce disaster risks and enhance resilience.
✅ Aligned with SDG 13 (Climate Action) and SDG 11 (Sustainable Cities).
✅ Tracked globally by the UN Office for Disaster Risk Reduction (UNDRR).

🪐 Conclusion - Disaster Resilient Infrastructure is key to protecting lives, economies, and ensuring climate resilience. India's leadership through CDRI and global collaborations is shaping a safer, resilient future, especially for coastal and island nations.

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Bharat Forecasting System (BFS) Unveiled

Context: The Ministry of Earth Sciences launched the Bharat Forecasting System (BFS), India's first indigenously developed high-resolution weather forecasting model.

🌦️ What is BFS?

✅ Developed by Indian Institute of Tropical Meteorology (IITM), Pune.
✅ A high-resolution weather forecasting model for accurate, timely forecasts.

⚙️ Key Features

✅ High Resolution:

- 6 km x 6 km grid (highest among global weather models).

✅ Fast Processing:

- Runs on the Arka supercomputer at IITM (11.77 petaflops, 33 PB storage).
- Reduces forecast run-time from 10 hours (Pratyush) → 4 hours (Arka).

✅ Doppler Radar Integration:

- Uses data from 40 Doppler Weather Radars (to expand to 100 for nationwide coverage).

✅ Geographical Coverage:

- Forecasts for the tropical belt (30°S to 30°N), covering the entire Indian mainland.

📈 Significance

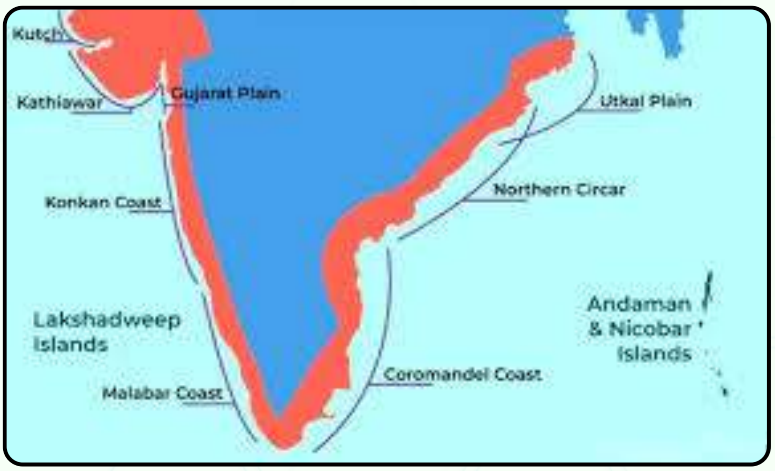
✅ Self-Reliance: Reduces dependence on foreign forecasting models.
✅ Strategic Applications: Supports aviation, defense, power, and logistics sectors.
✅ Enhances climate resilience and disaster preparedness through precise forecasting.

India's Coastline Length Revised

Context: The Ministry of Home Affairs reported a significant revision in India's coastline length in December 2024.

📊 Key Facts
✅ Previous Length (1970s): 7,516 km
✅ Revised Length (2025): 11,098 km
✅ Increase: ~3,582 km (48% increase)

Cause: Not due to physical expansion but advanced GIS mapping, LIDAR-GPS, satellite data, and drone surveys providing more accurate measurement of inlets, estuaries, and sandbars.



🌊 State-wise Changes

✅ Gujarat:
- From 1,214 km → 2,340 km (largest absolute increase)
- Retains longest coastline status.

✅ West Bengal:
- From 157 km → 721 km (357% increase, highest in percentage terms).

✅ Tamil Nadu:
- From 906 km → 1,068 km
- Now overtakes Andhra Pradesh in coastline length.

🛠 Methodology Changes

Aspect	Old Method (1970s)	New Method (2023–24)
Basis	Straight-line approx.	Detailed coastal features
Features	Basic shoreline	Inlets, estuaries, sandbars
Scale	1:4,500,000	1:250,000
Technology	Manual tools	GIS, LIDAR, satellite, drones
Accuracy	Less accurate	Precise, dynamic mapping

50 Years of the 1975 Emergency (1975-2025)

Context: Marks 50 years since the Emergency imposed on June 25, 1975.

🚩 Why Was Emergency Imposed?

- Court Verdict: Allahabad HC disqualified PM Indira Gandhi for electoral malpractices.
- Opposition Protests: JP Movement demanded "Total Revolution" amid inflation, unemployment, corruption.
- Economic Crisis: High inflation (23-30%), unemployment.
- Judicial Conflicts: SC rulings (Kesavananda Bharati) restricted Parliament's power.
- Geopolitical Factors: Post-1971 Bangladesh war strain, oil crisis.

🛠️ What Happened During Emergency?

- Emergency Provisions:
  - Article 352: Declared on "internal disturbance".
  - Article 358: Suspended Article 19 (speech, assembly).
  - Article 359: Suspended Articles 14, 21, 22.
- Constitutional Changes:
  - 38th, 39th, 42nd Amendments expanded government powers, reduced judicial review.
- Key Case: ADM Jabalpur vs Shivkant Shukla – SC upheld detention without trial.
- Implications:
  - Suspension of fundamental rights.
  - Centralisation of power, reduced state autonomy.
  - Judiciary's powers limited.
  - Lok Sabha term extended beyond 5 years.

⚖️ Post-Emergency Reforms: 44th Amendment (1978)

- Replaced "internal disturbance" with "armed rebellion" for emergency declaration.
- Lok Sabha & Assembly terms restored to 5 years.
- Restored judicial review powers.
- Introduced Cabinet approval for emergency declaration.
- Article 361A protected media reporting on legislature.

🔍 Shah Commission Findings
- Mass violations of fundamental rights and illegal detentions.
- Press censorship suppressed freedom of speech.
- Power centralised in PM's office.

🪐 Key Lessons
✅ Protect constitutional rights even during crises.
✅ Judicial independence is essential for democracy.
✅ Press freedom must be upheld.
✅ Power should remain decentralised with checks & balances.
✅ Public participation and resistance are vital to preserve democracy.

Language Dilemma in India's Education System

Context: CBSE has mandated mother tongue/regional languages as the medium of instruction in primary classes, in line with NEP 2020, raising debates on practicality vs aspirations.

🛣️ Historical Context:
- Colonial Era: Macaulay's Minute (1835) made English the elite education medium.
- Post-Independence: Debates on promoting regional languages vs using English as a link language.
- Three-Language Formula (1968, NEP 2020): Balance regional, national, and global needs.

✅ Advantages of Mother-Tongue Education
- Better comprehension, retention & lower dropouts (UNESCO, 2016).
- Preserves cultural identity and heritage.
- Builds early linguistic confidence, aiding multilingual learning.
- Helps rural students participate effectively.

⚠️ Challenges
- Linguistic Diversity: Multiple dialects in cities, hard to define one mother tongue.
- Lack of Resources: Many languages lack standardized scripts/textbooks.
- Teacher Shortages: Lack of multilingual trained teachers by July 2025 is unrealistic.
- Parental Preference: Rising demand for English-medium (ASER 2022).
- Employability Concerns: English essential for higher education & jobs.
- Migrant Inclusivity: Rigid language rules affect migrant children.
- Infrastructure Gaps: Lack of ground-level readiness for implementation.

🔎 Broader Implications
- May deepen elite vs regional school divides.
- Poor translations & teacher gaps may reduce learning quality.
- Abrupt shifts may increase dropouts.

Current Initiatives

- NCERT/SCERT: Regional language textbooks.
- E-Vidya & DIKSHA: Digital content in Indian languages.
- National Translation Mission: Translates higher education material.
- AICTE/UGC: Technical courses in Indian languages; NEET/JEE in regional languages.

🛠️ Way Forward

✅ Flexible Multilingual Strategy: Early mother-tongue + gradual English integration.
✅ Retain English for technical/professional education while regional languages for humanities.
✅ Teacher Training: Overhaul for multilingual teaching.
✅ Use AI-driven translation & digital tools to address material gaps.
✅ Region-wise assessments before rollout.
✅ Centre-State collaboration for context-specific implementation.

🪐 Conclusion

The mother-tongue mandate is well-intentioned but risks deepening educational divides without inclusive planning and robust support systems. A balanced, multilingual, equity-driven approach is key for meaningful educational reform.

Civil Aviation Safety in India

Context: 250+ people died in an Air India crash (Ahmedabad to London) after takeoff, despite a Mayday call.

🚨 What is a Mayday Call?

- International distress signal in aviation/maritime for life-threatening emergencies.
- From French “m’aider” (help me).

⚠️ Major Safety Concerns:

- Runway Safety: 50%+ accidents during takeoff/landing (IATA 2023).
- Bird Strikes: Engine ingestion, windshield damage.
- Pilot Fatigue: Long duty hours, minimal rest affect judgment.
- Controlled Flight Into Terrain (CFIT): Flying into terrain due to pilot error.
- Adverse Weather: Wind shear, thunderstorms, icing (20% incidents).
- Ground Handling Errors: Faulty cargo loading, collisions.

🏛️ Organizations for Aviation Safety:

IATA (International Air Transport Association):

- Est: 1945, HQ: Montreal, Canada.
- Represents 330 airlines (~80% global traffic).
- Works to simplify operations, enhance safety, reduce costs.

DGCA (Directorate General of Civil Aviation):

- India's civil aviation safety regulator, HQ: New Delhi.
- Regulates air transport, safety standards, airworthiness.

ICAO (International Civil Aviation Organization):

- UN agency (1944), HQ: Montreal, Canada, 193 members.
- Sets global aviation safety & operational standards.
- Chicago Convention (1944): Framework for international civil aviation.

Aviation Safety Initiatives in India:

- National Aviation Safety Plan (NASP) 2024–2028: Aligns with ICAO's GASP.
- Flight Duty Time Limitations (FDTL): Regulates pilot duty/rest hours.
- GAGAN (2015): GPS-aided navigation for precise landings.
- AAIB (2011): Independent crash investigation body.
- Collaboration with IATA, ICAO for audits, best practices, training.

🛬 India's Aviation Sector Snapshot:

- 3rd largest globally; projected 2nd by 2030.
- 700+ aircraft, 159 airports.
- Employs 4 million people.
- 100% FDI allowed (49% automatic route).

🛠️ Safety Mechanisms:

- Black Boxes (FDR & CVR): Record flight & cockpit data; bright orange for easy retrieval.
- Safety Management System (SMS): Organization-wide risk mitigation framework.
- ADS-B (since 2014): Real-time aircraft tracking.
- GAGAN: Enhances landing precision.

🛣️ Way Forward:

✅ Infrastructure & Tech Upgrades: AI-based monitoring, runway safety.
✅ Stronger Oversight: Regular audits, align with ICAO standards.
✅ Pilot & Crew Training: UPRT, simulators, enforce FDTL.
✅ Global Collaboration: Adopt ICAO/IATA best practices.
✅ Proactive Approach: Like Singapore's safety management.

🪐 Conclusion:

Robust safety systems, advanced tech, and regulatory oversight are vital for India's aviation growth. By aligning with global best practices, India can ensure safer skies while expanding as a leading aviation market.

AI in India's Criminal Justice System

Context: AI is revolutionizing investigation, adjudication, surveillance, and evidence analysis in India's criminal justice system (CJS) under Industry 4.0.

🚔 AI Applications in India's CJS:

✅ Law Enforcement:
- Predictive Policing: Telangana's CMAPS identifies crime hotspots.
- Facial Recognition: AFRS for tracking suspects, missing persons.

✅ Investigation & Forensics:
- Digital Evidence Analysis: Processing CCTV, chats, emails.
- Forensics: AI in voice matching, DNA, fingerprints.

✅ Judiciary:
- SUPACE (2021): Assists judges in case law analysis.
- E-Courts: Smart filing, tagging, and scanning.

✅ Prisons:
- e-Prisons: Tracks inmate records, parole.
- Risk Assessment: AI assesses recidivism potential.

⚠️ Ethical Concerns:
- Algorithmic Bias: Reinforces caste, religion, gender biases.
- Digital Exclusion: Rural and marginalized groups left out.
- Opacity: Black-box algorithms lack explainability.
- Privacy Intrusion: Mass surveillance violates privacy (Puttaswamy, 2017).
- Erosion of Human Judgment: AI lacks context, empathy.
- No Ethical Oversight: Absence of audit, redress, consent safeguards.

🚧 Challenges:
- Non-uniform, low-quality data.
- Data security risks, hacking.
- No statutory/legal framework.
- Low AI literacy among police, judiciary.
- Poor digital infrastructure in lower courts.
- Lack of inter-agency coordination (ICJS struggles).
- Judges hesitant to adopt AI.

🌐 Global Examples:
- USA: COMPAS for recidivism; court chatbots.
- China: Smart Courts for legal research, sentencing.
- UK: Digital Case System for real-time updates, remote hearings.

Key Government Initiatives:
- CCTNS (2009): Crime & criminal tracking.
- ICJS: Phase 1 (2014), Phase 2 (2022, ₹3,700 Cr).
- AFRS: Automated facial recognition (NCRB).

🛣️ Way Forward:
✅ Legal Framework: Regulate AI with transparency, audit, and rights safeguards.
✅ AI Ethics Authority: Independent body for algorithm audits.
✅ Inclusive Datasets: Bias impact assessments, diversity in training data.
✅ Explainable AI: Legally traceable algorithmic decisions.
✅ Capacity Building: Train police and judiciary in AI ethics & use.
✅ Data Privacy Law: Expedite Digital Personal Data Protection Act.
✅ Pilot Testing: Sunset clauses and independent reviews before scaling.

🪐 Conclusion:
AI can improve efficiency in India's criminal justice system but risks bias, exclusion, and privacy violations if unregulated. Ethical, inclusive, and legally governed AI is essential for equitable justice.

Ladakh: New Rules on Quota, Domicile, and Hill Councils

Context: The Union Government notified new policies on reservation, domicile, languages, and LAHDC composition for Ladakh, a UT since 2019.

Policy progress

Key events in the ongoing negotiations regarding Ladakh from 2023 to 2025

- **Jan. 3, 2023:** Committee forms to address Ladakh concerns
- **Nov. 30:** Committee is reconstituted with new members
- **March 4, 2024:** Talks between govt. and Ladakh leaders collapse
- **Oct. 6:** Activist Sonam Wangchuk begins fast
- **Oct. 21:** Govt. agrees to resume talks, fast ends
- **Dec. 3:** Committee meets with Leh and Kargil leaders
- **Jan. 15, 2025:** Follow-up meeting takes place in Delhi
- **May 27:** Domicile and reservation policy is hammered out

Major demand: Protests demanding Statehood for Ladakh have been continuing for the past few years. ANI

⛰️ Ladakh Autonomous Hill Development Council (LAHDC):
- Established under LAHDC Act, 1995 for Leh & Kargil districts.
- Provides administrative & developmental autonomy (not legislative like Sixth Schedule).
- Manages local development, budgeting, and resources.

🪪 New Rules:

✅ Domicile:
- 15 years residence in Ladakh from Oct 31, 2019.
- Students with 7 years of study + Class 10/12 in Ladakh eligible.
- Children of Central Govt employees with 10 years of service in Ladakh eligible.

✅ Reservation:
- Govt job reservation capped at 85%, excluding 10% EWS = 95% total reservation.
- ~80% jobs likely reserved for Scheduled Tribes.

✅ Reservation for Women:
- 1/3rd seats reserved for women (rotational basis) in Ladakh Autonomous Hill Development Council (LAHDC).

✅ Official Languages:
- English, Hindi, Urdu, Bhoti, Purgi as official languages.
- Promotion of Shina, Brokskat, Balti, Ladakhi mandated.

🪐 Significance:

✅ Preserves local identity post-UT status.

✅ Promotes women's participation in governance.

✅ Balances tribal rights and administrative governance in Ladakh.

Panchayat Advancement Index (PAI) 2.0

Context: The Panchayat Advancement Index (PAI) 2.0 Portal was recently launched.

What is PAI?

✅ A multi-domain, multi-sectoral index to assess holistic development and progress of Panchayats.

✅ Developed by Ministry of Panchayati Raj (MoPR) in collaboration with:
- NITI Aayog
- MoSPI
- UNICEF, UNFPA
- NGOs

✅ Aligned with Localization of Sustainable Development Goals (LSDGs).

✅ First-of-its-kind data-driven framework to track development of 2.5 lakh Gram Panchayats across India.

Performance Categories:

Panchayats are classified into **five categories** based on PAI scores:

Category	Score Range
Achiever	90 and above
Front Runner	75 to < 90
Performer	60 to < 75
Aspirant	40 to < 60
Beginner	Below 40

Significance:

✅ Promotes competitive federalism at the grassroots.

✅ Enables targeted policy interventions in underperforming GPs.

✅ Supports evidence-based planning for LSDGs.

✅ Empowers communities to monitor their Panchayat's progress.

Estimates Committee

Context: Lok Sabha Speaker inaugurated the National Conference of Estimates Committees in Mumbai to commemorate 75 years of the Parliamentary Estimates Committee.

About the Estimates Committee:
✅ Constitution: Formed in 1950.
✅ Composition:
- 30 members elected annually by the Lok Sabha from among its members.
- Chairperson: Appointed by the Speaker of Lok Sabha.
- Ministers cannot be members; if a member becomes a minister, they cease to be a member.

✅ Term: 1 year.

Functions:
🔹 Examine and Suggest Economies: Recommends economies, organizational improvements, and administrative reforms to enhance efficiency while adhering to the policies in the estimates.
🔹 Policy Suggestions: Suggests alternative policies for improving efficiency and economy in administration.
🔹 Evaluation of Expenditure: Checks if funds are utilized efficiently as per the policy framework.
🔹 Presentation Suggestions: Recommends improvements in format and presentation of estimates in Parliament.
🔹 Exclusions: Does not examine Public Sector Undertakings (PSUs), which are under the Committee on Public Undertakings.

Significance:
✅ Ensures parliamentary financial control over expenditure.
✅ Promotes accountability and efficiency in public spending.
✅ Strengthens fiscal discipline and administrative reforms within policy limits.

51st G7 Summit (2025)

Context: PM Narendra Modi attended the G7 Outreach Summit in Kananaskis, Canada. This was his first visit to Canada since 2015, at the invitation of Canadian PM Mark Carney.

India & G7:

✅ India has attended 12 G7 outreach sessions, including every year since 2019.
✅ India represents the Global South, key for climate action, technology, and security dialogue.

About G7:
✅ Informal intergovernmental group of advanced industrialized democracies.
✅ Origin: Formed in 1975 (as G6), became G7 in 1976 with Canada.
✅ Current Members: US, UK, Canada, Germany, France, Italy, Japan.
✅ Nature: Operates by consensus, no binding authority, but significant influence.

Major Outcomes:
- 🌲 Kananaskis Wildfire Charter: Cooperation on wildfire impact management; India endorsed.
- ⛏️ G7 Critical Minerals Action Plan: Forming an alliance to stockpile and develop critical minerals for defense and technology.
- 🤖 AI Governance: Support for human-centric AI to address global challenges, while managing job displacement and ethics.
- 🚢 Counter Migrant Smuggling: Commitment to preventing migrant smuggling under the 2024 G7 Action Plan.
- 🛡️ Condemnation of Transnational Repression: Legal and diplomatic steps to protect diaspora and democratic freedoms.

Key Geopolitical Discussions:
✅ Russia-Ukraine War:
- Zelenskyy attended, urging stronger support.
- No joint statement due to internal divisions.

✅ Israel-Iran Conflict:
- Tensions overshadowed discussions; G7 response criticized for inaction.

✅ Global Trade:
- No comprehensive communiqué; trade tensions persist.

✅ Indo-Pacific Security & China:
- Reaffirmed commitment to a free and open Indo-Pacific.
- No new initiatives, but existing commitments retained.

PM Modi's Address Highlights:
✅ Terrorism:
- Called for strict global actions against terrorism, no double standards.

✅ Energy Security:
- Emphasized availability, affordability, and acceptability.
- Highlighted India's climate commitments met ahead of schedule.

✅ Global South:
- Advocated prioritizing Global South concerns in global decisions.

✅ Technology & AI:
- Stressed the need for sustainable clean energy for AI development.

Criticisms of G7:

- Exclusion of Emerging Economies: Lacks representation of China, India, and other emerging economies.
- Ineffective on Global Conflicts: Internal divisions limit collective action (Ukraine, Israel-Iran).
- Weak Consensus on Trade: Trade tensions persist among members.
- Declining Economic Share: G7's share of global GDP has dropped from 70% (1980s) to ~30% now.
- Insufficient Climate Action: Slow, reluctant climate measures.
- Internal Leadership Gaps: Divisions weaken G7 coherence.

Why India Matters to G7:

✅ 4th largest economy, fast-growing consumer market.
✅ Voice for Global South in climate, food security, and development issues.
✅ Key player in Indo-Pacific security (QUAD).
✅ Climate leadership (ISA, Paris targets achieved early).

Way Forward for India:

✅ Strengthen Multilateral Engagement: Engage G7 while balancing with BRICS, G20, QUAD.
✅ Champion Global South Issues: Advocate for climate, equity, food, and energy security.
✅ Deepen Economic Cooperation: In critical minerals, digital trade, renewable energy.
✅ Focus on Sustainable Development & Climate Action.
✅ Enhance Security Cooperation: On terrorism, cybersecurity, Indo-Pacific stability.
✅ Ensure Technological Sovereignty: In AI, quantum tech, and cybersecurity.

Conclusion: The G7 Summit is a strategic platform for India to strengthen diplomatic ties, advocate for Global South interests, and shape global technology, economic, and security policies while maintaining strategic autonomy in a complex geopolitical landscape.

Israel-Iran Conflict

Context - Israel launched 'Operation Rising Lion' targeting Iran's nuclear facilities to prevent Tehran from building nuclear weapons.

Recent Developments:

✅ June 12, 2025:
- IAEA declared Iran in breach of nuclear safeguards (first censure in 20 years).
- Iran accused of hiding activities at Lavisan-Shian, Varamin, Turquzabad.

✅ Key Casualties:
- Hossein Salami (Iran's IRGC Chief).
- Two top Iranian nuclear scientists.

✅ Iran responded with 'Operation True Promise 3'.

Background:

- 1948: Iran did not recognize Israel.
- 1950s: Quiet cooperation under Israel's "Periphery Doctrine."
- 1979 Islamic Revolution: Iran severed ties with Israel, supported Hezbollah and Hamas.

About IAEA: Founded: 1957 for peaceful nuclear energy use while preventing weapons proliferation. Related treaties: NPT (1968, effective 1970), CTBT.

Why Did Israel Attack?

✅ Prevent Iran from acquiring nuclear weapons. - Iran enriched uranium up to 60% (near weapons-grade 90%).

✅ Exploit Iran's weakened regional position post Gaza War (2023–25) and Syria's regime collapse (2024).

Geopolitical Implications:

✅ Escalation in West Asia: Risks multi-front conflicts with Hezbollah, Houthis.

✅ Collapse of Iran Nuclear Talks: Iran threatened NPT withdrawal.

✅ Threat to Strait of Hormuz: Potential blockade, impacting 20% of global oil supply.

✅ Weakening Non-Proliferation Norms: Challenges UN, IAEA frameworks.

✅ US Tacit Support: Despite initial opposition, the US signaled support post-strike.

✅ Proxy Conflicts: Risk of cyberattacks, drone warfare, and regional instability.

About INSTC:

International North-South Transport Corridor (INSTC):

- Initiated: 2000 (Russia, India, Iran).
- Connects Indian Ocean, Persian Gulf to Caspian Sea and onward to Europe.
- Members: 13 countries including India, Iran, Russia, etc.

Implications for India

✅ Strategic Balancing Challenges:

- Strong defence ties with Israel (~$6.5B trade) vs energy/connectivity interests with Iran (Chabahar, INSTC).

✅ Chabahar and INSTC at Risk:

- India's 10-year Chabahar Port agreement (May 2024) faces operational risks.
- INSTC critical for Central Asia access may face disruptions.

✅ Oil Supply Disruptions:

- Strait of Hormuz instability could spike India's import bill, inflation, CAD.

✅ Diaspora Safety:

- ~9 million Indians in West Asia at risk during escalations.

✅ Trade Disruptions:

- Rupee–Rial trade, infrastructure projects may stall.

✅ Diplomatic Dilemma:

- India's neutral stance tested amidst OIC scrutiny, Israel-US ties, and Global South positioning.

✅ Defence Supply Chain Risks:

- Potential disruptions to Indo-Israel co-development projects (e.g., Heron drones, LRSAM).

Way Forward for India

✅ Adopt a Neutral Diplomatic Stance:
- Call for de-escalation without taking sides.

✅ Leverage Multilateral Platforms:
- Use SCO, BRICS, I2U2 for dialogue and conflict moderation.

✅ Fast-Track Chabahar and INSTC:
- Maintain operational control to assert India's economic footprint.

✅ Diversify Energy Sources:
- Secure US sanction waivers while diversifying suppliers.

✅ Strengthen Indigenous Defence Manufacturing:
- Continue Indo-Israel collaborations while enhancing Atmanirbhar Bharat in defence.

✅ Prepare Diaspora Evacuation Plans:
- Contingency planning for emergency evacuations and shipping route diversions.

Conclusion: The Israel-Iran conflict threatens India's energy security, diaspora safety, and connectivity projects like Chabahar and INSTC. India must maintain principled neutrality, diversify energy imports, strengthen indigenous defence production, and prepare contingency plans to navigate this volatile geopolitical landscape effectively.

World Press Freedom Index 2025

Context: Recently, the Indian Prime Minister visited Cyprus, marking the first PM-level visit in over 20 years.

✅ Conferred Grand Cross of the Order of Makarios III (Cyprus' highest civilian honour).

Key Outcomes of the Visit:

✅ Indian Naval Liaison Office in Limassol:
- Enhances India's maritime presence in the Mediterranean.

✅ EU-India Bridge:
- Cyprus (2026 EU Council President) to advocate for India-EU FTA and IMEC (India–Middle East–Europe Economic Corridor).
- Cyprus confirmed as a critical Mediterranean gateway for IMEC, countering China's BRI.

✅ UPI Integration:
- MoU signed between NPCI (India) and Eurobank Cyprus for cross-border digital payments.
- Boosts fintech collaboration. (PYQ prone for Prelims)

✅ Investment:
- India pledged $2 billion for Cyprus's renewable energy and IT sectors.

✅ India–Cyprus–Greece Trilateral Council:
- Launched to boost shipping, logistics, and digital services collaboration.

About Cyprus:

✅ Location:
- Island country in eastern Mediterranean Sea, south of Turkey, west of Syria & Lebanon.
- Geographically in Asia, politically aligned with Europe.

✅ EU Member: Joined EU in 2004.

✅ Historical Background:
- Independence from British rule in 1960.
- Tension between Greek Cypriot majority (80%) and Turkish Cypriot minority (18%).

✅ Division of the Island:
- 1974: Turkey invaded the north after a Greek Cypriot coup.
- Now divided into:
  - 🇨🇾 Republic of Cyprus (internationally recognized, EU member).
  - 🇹🇷 Turkish Republic of Northern Cyprus (recognized only by Turkey).

Geopolitical Significance:

✅ Strategic Location: Acts as a bridge between Europe, Asia, and the Middle East.

✅ EU & NATO Dynamics: Cyprus is in EU but not in NATO, creating a unique regional security situation.

Significance for India:

✅ Strengthening Mediterranean Presence: Naval liaison in Limassol aids security and connectivity.

✅ Support for IMEC: Positions Cyprus as a vital hub in India's connectivity strategy countering BRI.

✅ Digital Diplomacy: UPI integration showcases India's fintech outreach.

✅ Renewable Energy Push: Supports India's energy security diversification through overseas investments.

✅ Trilateral Cooperation: Leverages Cyprus's EU membership for strategic influence and market access in Europe.

Conclusion:
The visit reinvigorates India–Cyprus ties, enhances India's strategic presence in the Mediterranean, supports digital and energy cooperation, and aligns with India's IMEC and EU engagement strategy, boosting its Act West policy.

India Elected to UN's ECOSOC

Context: India has been elected to the UN Economic and Social Council (ECOSOC) for 2026–28, effective 1 January 2026.

About ECOSOC:

✅ Established:
- One of the six main organs of the UN under the UN Charter (1945).

✅ Mandate:
- Principal body for:
  - Sustainable Development (economic, social, environmental).
  - Coordination of economic and social issues within the UN system.

✅ Membership:
- 54 Member States with three-year overlapping terms.
- Equitable geographical distribution:
  - Africa: 14 seats
  - Asia-Pacific: 11 seats
  - Eastern Europe: 6 seats
  - Latin America & Caribbean: 10 seats
  - Western Europe & others: 13 seats

✅ Election Process:
- Elected annually by UN General Assembly (193 members) via secret ballot.
- Requires two-thirds majority of valid votes cast.

Significance for India:

✅ Provides a platform for advancing India's developmental priorities at the global level.
✅ Strengthens India's role in shaping global economic and social policies.
✅ Aligns with India's SDG localization and G20 priorities.
✅ Supports India's positioning as a voice for the Global South in sustainable development.

Conclusion: India's election to ECOSOC reinforces its commitment to multilateralism and global sustainable development efforts, enhancing its diplomatic influence within the UN system.

Interpol Silver Notices

Context: The CBI issued India's first Interpol Silver Notice against the Personnel Visas & Local Law Officer at the French Embassy, Delhi, in a visa fraud case.

What is a Silver Notice?

✅ A new colour-coded Interpol notice aimed at:

- Identifying
- Locating
- Obtaining
- Monitoring

the assets of criminals worldwide.

✅ Purpose:

- Assist member countries in tracing and recovering criminally obtained assets, including:
  - Properties 🏠
  - Vehicles 🚗
  - Financial accounts 💰
  - Businesses 🏢

✅ Focus Areas:

- Financial crimes, including:
  - Fraud
  - Corruption
  - Drug Trafficking
  - Environmental Crimes

✅ Part of efforts to enhance global cooperation in combating financial crimes.

About Interpol Notices (Revision):

✅ What are they?

Colour-coded international alerts used by police forces globally to share information about crimes, criminals, and threats.

✅ Examples:

- Red Notice: To locate and provisionally arrest a wanted person.
- Blue Notice: To locate, identify, or obtain information on a person of interest.
- Yellow Notice: To help locate missing persons.
- Purple Notice: For modus operandi and concealment methods.
- Black Notice: For unidentified bodies.
- Orange Notice: For potential threats or hidden objects.
- Green Notice: For warnings about criminal activities.
- Silver Notice (NEW): For locating and recovering assets.

Significance for India:

✅ Supports India's anti-corruption and anti-fraud drive globally.

✅ Enhances asset recovery efforts in cross-border financial crimes.

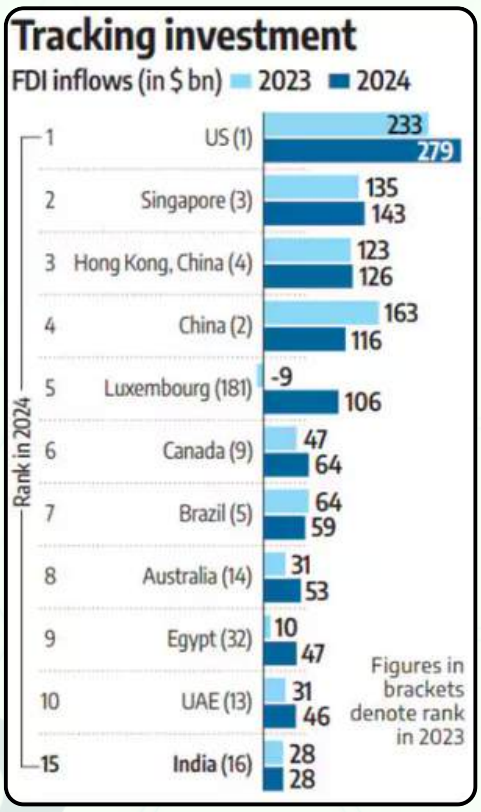
✅ Strengthens India's cooperation with Interpol and global law enforcement networks.

Conclusion:

The Interpol Silver Notice is a strategic tool for India to combat financial crimes internationally by facilitating asset tracing and recovery, aligning with India's push for clean governance and global cooperation.

UNCTAD's World Investment Report 2025

Context: UNCTAD released its World Investment Report 2025, highlighting global FDI trends for 2023–2024.



Key Highlights-

Global FDI Trends:

✅ Global FDI fell by 11% in 2024, marking the second consecutive year of decline.

✅ Outlook for 2025 remains negative due to:

- Geopolitical tensions 🌍
- Investor uncertainty 📉

✅ Top FDI destination: United States with $279 billion inflows (2024).

India-Specific Data:

✅ India received $28 billion FDI in 2024, same as 2023.

✅ Moved up to 15th place globally (from 16th in 2023).

✅ Despite global decline, India's FDI remained steady.

✅ DPIIT data (FY25):

- FDI Equity Inflows: $50 billion (13% increase)

✅ RBI data (FY25):

- Net FDI (excluding repatriation): $29 billion

About UNCTAD:

✅ Full Form: United Nations Conference on Trade and Development.

✅ Established: 1964 by the UN General Assembly.

✅ Headquarters: Geneva, Switzerland

✅ Reports to:

- UN General Assembly
- ECOSOC

✅ Functions:

- Integrates developing countries into the global economy.
- Works on trade, investment, finance, and technology to support development.

Significance for India:

✅ Steady FDI despite global decline reflects investor confidence in India's macroeconomic stability and market potential.

✅ Supports India's goals under Make in India, PLI schemes, and digital & green investment frameworks.

Conclusion: The World Investment Report 2025 indicates India's resilience in attracting FDI despite global headwinds, underlining the need to further improve ease of doing business, policy predictability, and investment climate to leverage opportunities in a shifting global environment.

113th Session of the International Labour Conference

Context: The 113th Plenary Session of the International Labour Conference (ILC) was held in Geneva, Switzerland.

About International Labour Conference (ILC):
✅ It is the highest decision-making body (General Assembly) of the International Labour Organization (ILO).
✅ Often called the "Parliament of Labour", held annually in Geneva.
✅ First session: Washington, 1919.
✅ India: Founder member of ILO (established 1919).
✅ The Maritime Labour Convention (MLC), 2006:
- Sets minimum working and living standards for seafarers globally.
- India ratified MLC in 2015.

Key Highlights of the 113th Session:
✅ Adoption of Convention No. 192 on Biological Hazards:
- First international standard specifically addressing biological hazards in the working environment.

✅ Amendments to the Maritime Labour Convention (MLC), 2006:
- Ensures seafarers' rights to shore leave and repatriation.
- Reinforces recognition of seafarers as key workers.

✅ Decent Work in the Platform Economy:
- First-time discussion on labour issues in the platform economy (gig and app-based workers).
- Aims to adopt new Convention and Recommendation by 2026 ensuring:
  - Fair pay
  - Health and safety
  - Data protection
  - Social security
  - Freedom of association for platform workers.

✅ Labour Rights and Human Rights:
- Palestine granted observer status at ILO.
- Article 33 of ILO Constitution invoked against Myanmar to urge compliance with international recommendations on forced labour.

Significance for India:
✅ India's participation reaffirms commitment to labour standards, gig workers' rights, and maritime labour improvements.
✅ Discussions align with India's growing gig economy and reforms in labour codes.

Conclusion: The 113th ILC marks a significant step towards inclusive labour rights, platform economy regulation, and global cooperation on labour standards, relevant for India's evolving labour landscape.

India's Green Economy

Context: India's green economy is expanding rapidly, positioning India as a global leader in the green transition.

What is Green Economy?

✅ An economic framework integrating environmental sustainability into growth and job creation.

✅ UN Definition: "Low-carbon, resource-efficient, and socially inclusive."

Key Features:

- Low Carbon: Renewable energy, energy efficiency, sustainable transport.
- Resource Efficiency: Efficient use of water, energy, raw materials; EPR for product lifecycle management.
- Social Inclusion: Aims to eliminate poverty & inequality (ILO: 24 million green jobs globally by 2030).
- Sustainable Development: E.g., Zero Budget Natural Farming reduces chemical use while increasing income.
- Nature-Based Solutions: Afforestation, wetland conservation to address climate & development challenges.

What is Green GDP?

✅ Green GDP = GDP - Environmental Costs - Social Costs

- Adjusts GDP for:
  - Natural resource depletion
  - Environmental degradation
  - Restoration costs
  - Social costs from pollution & degradation

✅ Reflects true economic growth while factoring environmental impact.

Green National Accounts:

✅ Expands traditional accounts to include environmental assets.

✅ Examples:

- China: Adopted in 2004 (later abandoned).
- EU: Uses SEEA under "Beyond GDP."

Challenges:

✅ High Initial Costs: Solar, wind, EV infra require heavy investment.

✅Technological Gaps: Lack of advanced green tech & infra in developing countries.

✅Resistance by Traditional Industries: Coal phase-out impacts jobs (~70% of India's electricity from coal).

✅ Skill Gaps: Need for green skills (solar technicians, battery engineers).

✅ Social Inequities: Unequal rooftop solar adoption in urban vs rural areas.

✅Geopolitical Barriers: Dependence on critical minerals controlled by few countries.

Way Forward:

✅ Green Financing:
- Sovereign green bonds (India issued ₹8,000 crore in 2023).
- Green banks and blended finance.

✅ Robust Green Infrastructure:
- EV charging stations, renewable grids, waste-to-energy plants.
- National Electric Mobility Mission: 30% EV penetration by 2030.

✅ Just Transition:
- Retraining fossil fuel workers (align with Skill India Mission).

✅ Domestic Supply Chains:
- Manufacture solar cells, batteries under PLI.
- Secure critical minerals (e.g., India-Australia MoU).

✅ International Cooperation:
- Leverage ISA, G20 Green Initiatives for finance & technology.

Government Initiatives:
- National Green Hydrogen Mission: 5 MMT/year by 2030.
- Green Credit Programme: Incentivises eco-friendly actions under Environment Act.
- PM-PRANAM & GOBARdhan: Promotes alternative fertilizers & waste-to-wealth plants.
- FAME India & PM E-DRIVE: Subsidies & incentives for EV adoption.
- National Cooling Action Plan (NCAP): Sustainable cooling aligned with net-zero.

Conclusion: The green economy is a strategic imperative for India's Viksit Bharat 2047 goals, offering pathways for sustainable growth, climate targets, poverty alleviation, and global competitiveness while ensuring intergenerational equity.

10 Years of Jan Suraksha Schemes: Social Security for All

Context: The Ministry of Statistics and Programme Implementation (MoSPI) is revising the GDP base year from 2011-12 to 2022-23, with the new series to be released on 27 Feb 2026.

What is GDP?

✅ Gross Domestic Product (GDP) measures the total value of goods and services produced in a country during a specific period.

What is GDP Base Year Revision?

✅ Base Year: A reference year used to calculate GDP to adjust for inflation and measure real growth over time.

✅ Revision of Base Year: Done periodically to reflect:

- Structural changes in the economy
- New products and services
- Technological advancements
- Changes in consumption patterns

✅ Current Base Year: 2011-12 (revised in 2015).

✅ Proposed New Base Year: 2022-23.

Role of Base Year in GDP Calculation:

- Price Index Creation: Base year prices are used to prepare indices like the GDP Deflator.
- GDP Deflator:
  - Measures the overall price level of goods and services.
  - Formula:

$$\text{GDP Deflator} = \frac{\text{Nominal GDP}}{\text{Real GDP}} \times 100$$

- Real GDP:
  - Adjusts Nominal GDP (current prices) for inflation to measure real growth.
  - Formula:

$$\text{Real GDP} = \frac{\text{Nominal GDP}}{\text{GDP Deflator}}$$

✅ A revised base year ensures a more accurate and relevant economic assessment.

Why is Base Year Revision Important?

✅ Reflects Current Economic Structure: Captures new sectors, products, and technological changes.

✅ Better Policy Decisions: Accurate data aids planning, forecasting, and fiscal management.

✅ Aligns with Global Best Practices: Periodic revisions align with UN System of National Accounts (SNA) guidelines.

✅ Improves Credibility: Enhances transparency and trust in India's economic data.

Prelims Pointers:

- Current GDP base year: 2011-12 ✅
- Next GDP base year: 2022-23 (to be adopted in 2026) ✅
- GDP Deflator: Measures price level changes, unlike CPI/WPI, which are based on selected baskets. ✅
- Real GDP vs Nominal GDP: Real GDP is adjusted for inflation, Nominal GDP is not. ✅

Conclusion: The GDP base year revision from 2011-12 to 2022-23 will align India's GDP measurement with current economic realities, improving accuracy for policy formulation and public understanding of real growth.

UN Ocean Conference 2025 (UNOC3)

Context: The 3rd UN Ocean Conference held in Nice, France (2025) concluded with strong commitments to protect marine ecosystems, tackle pollution, and secure financing for vulnerable coastal nations.

About UN Ocean Conference (UNOC):

- A global platform to advance SDG 14: "Life Below Water".
- Purpose: Conserve and sustainably use oceans and marine resources.
- Organisers: Co-hosted by France and Costa Rica.
- Theme: "Accelerating action and mobilizing all actors to conserve and sustainably use the ocean."
- Timeline:
  - 2017 (New York): First UNOC.
  - 2022 (Lisbon): Second UNOC.
  - 2025 (Nice): Third UNOC.
  - 2028 (Chile & South Korea): UNOC-4.

Key Outcomes:

Nice Ocean Action Plan:

- A two-part framework:
  - Political Declaration: "Our Ocean, Our Future: United for Urgent Action"
    - Reaffirms protecting 30% of ocean and land by 2030 (30x30 target).
    - Aligns with Kunming-Montreal Biodiversity Agreement & supports High Seas Treaty (BBNJ).
  - 800+ Voluntary Commitments: By governments, NGOs, scientists, private sector.

Nice Wake-up Call:

- 96 countries back an ambitious, legally binding treaty on plastic pollution.
- India did not endorse, despite supporting a binding agreement.

Other Key Announcements:

- High Ambition Coalition for a Quiet Ocean: Tackling underwater noise pollution (37 countries, led by Panama & Canada).
- Coral Bond: Launched by Indonesia & World Bank for reef conservation financing.
- High Seas Treaty (BBNJ):
  - 19 new ratifications, total now 50/60 needed for enforcement.
  - India signed (Sep 2024), but ratification pending due to amendments to the Biological Diversity Act, 2002.

Related Frameworks:

Kunming-Montreal Global Biodiversity Framework (GBF):

- Adopted in December 2022 at CBD COP15.
- Aims to halt and reverse biodiversity loss by 2030.
- Includes 23 targets (2030) & 4 goals (2050).

High Seas Treaty (BBNJ):

- Legally binding treaty under UNCLOS for marine biodiversity beyond national jurisdiction (~⅔ of ocean surface).
- Takes effect 120 days after the 60th ratification.

Challenges Facing Oceans:

✅ Rising Sea Temperatures: Causing coral bleaching, disrupting ecosystems.
✅ Ocean Acidification: From CO_2 absorption, harming marine life.
✅ Marine Pollution: 8 million metric tons of plastic/year; could triple by 2040.
✅ Overfishing: 60%+ fish stocks overexploited; IUU fishing prevalent.
✅ Biodiversity Loss: Coral reefs, mangroves, and seagrass beds declining.
✅ Funding Gaps: SDG 14 receives <0.01% of sustainability funding.

Way Forward:

✅ Fast-track BBNJ Treaty Ratifications (India to prioritise amendments).
✅ Expand Marine Protected Areas (MPAs) to 30% by 2030.
✅ Ban single-use plastics and promote circular economy models.
✅ Sustainable Ocean Economies:

- Blue Food Revolution (seaweed, oyster farming).
- Invest in blue carbon habitats (mangroves, seagrasses).
- ✅ Use AI, drones, 3D printing for reef restoration, monitoring illegal fishing.
- ✅ Engage local communities and indigenous groups for conservation.
- ✅ Secure sustainable financing and enforce policies.

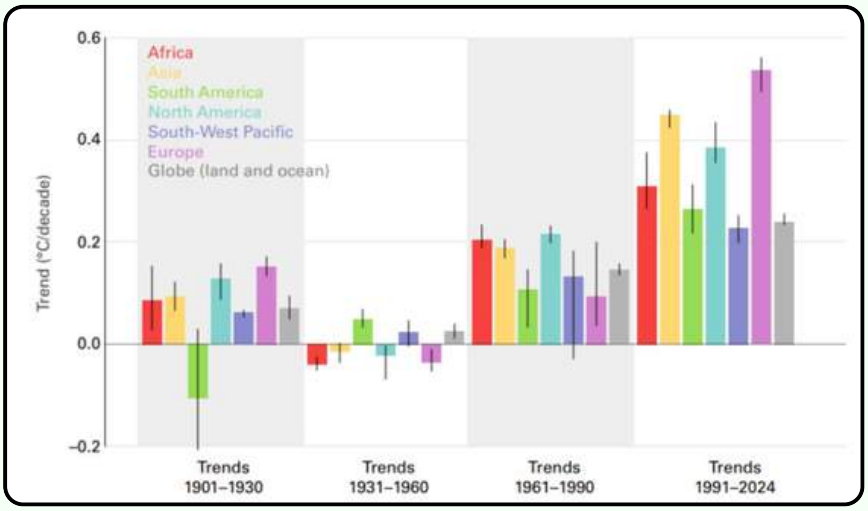
Conclusion: The UN Ocean Conference 2025 reaffirms the global urgency to protect ocean health through collective action, funding, and treaties like BBNJ. Coordinated steps at UNOC and upcoming platforms like COP30 are critical to reversing marine ecosystem damage and achieving SDG 14.

State of the Climate in Asia 2024 Report

Context: The WMO's State of the Climate in Asia 2024 report highlighted 2024 as Asia's warmest year on record, with widespread and prolonged heatwaves.

About the Report:

- Published by the World Meteorological Organization (WMO).
- Monitors key climate indicators:
  - Surface temperature
  - Glacier mass
  - Sea level rise
- Aims to assess impacts on societies, economies, and ecosystems in Asia.



Key Highlights:

Temperature Trends:

✅ Asia is warming nearly twice as fast as the global average.
✅ 2024 was 1.04°C above the 1991–2020 average (warmest or second-warmest year on record).
✅ The 1991–2024 warming rate is nearly double the 1961–1990 rate.

Glacier Loss:

✅ 23 out of 24 glaciers in the Central Himalayas and Tian Shan lost mass in 2024.
✅ Implications:

- Increased Glacial Lake Outburst Floods (GLOFs)
- Higher landslide risks
- Threats to water security in South Asia.

Cyclonic Activity:

✅ Four tropical cyclones formed over the North Indian Ocean in 2024.

India-Specific Highlights:

✅ Heatwaves:

- Temperatures soared close to 50°C in Uttar Pradesh and surrounding regions.

✅ Monsoon:

- The 2024 monsoon was normal (108% of the 1971–2020 average).
- Rainfall was above normal with higher intensity in South Asia.
- Kerala (Wayanad): Heavy rainfall-triggered landslides caused 350+ deaths.

Why It Matters for India:

✅ Frequent Heatwaves: Health risks, reduced productivity, agricultural losses.
✅ Glacier Melt: Impacts river flows in the Ganga-Brahmaputra basin, increasing flood risks and water scarcity in lean seasons.
✅ Extreme Rainfall: Urban flooding, landslides, and infrastructure damage.

Conclusion:

The report underscores the urgency for India and Asia to adopt climate-resilient strategies, including:

✅ Early warning systems
✅ Glacier and water resource management
✅ Heatwave action plans
✅ Infrastructure adaptation to withstand extreme weather events.

Two New Ramsar Sites in Rajasthan

Context: Khichan (Phalodi) and Menar (Udaipur) in Rajasthan have been added as new Ramsar Sites, recognizing their international importance as wetlands.

Why This Matters:

✅ Recognizing Khichan and Menar will:

- Boost conservation efforts in Rajasthan.
- Enhance wetland protection amid desertification threats.
- Promote eco-tourism and community conservation models.

Details of the New Ramsar Sites:

Khichan, Phalodi:

- Location: Thar Desert, Rajasthan.
- Components: Includes Ratri Nadi and Vijaysagar Talab.
- Importance: Supports desert wetland ecosystems and migratory birds.

Menar, Udaipur:

- Type: Freshwater wetland.
- Formation: By Braham Talab, Dhand Talab, and Kheroda Talab.
- Nickname: "Bird Village" due to community-led bird conservation.
- Biodiversity: Habitat for critically endangered white-rumped vulture and long-billed vulture, and several migratory bird species.

What are Ramsar Sites?

✅ Wetlands recognized under the Ramsar Convention (1971, Ramsar, Iran) as wetlands of international importance.

✅ Purpose:

- Conserve and sustainably use wetlands.
- Protect habitats for waterbirds and support biodiversity.

✅ Administered by: UNESCO.

✅ First Ramsar Sites in India (1981):

- Chilika Lake, Odisha.
- Keoladeo National Park, Rajasthan.

✅ Largest Ramsar Site in India: Sundarbans, West Bengal.

✅ Total Ramsar Sites in India: Now 91 after this addition.

Prelims Pointers:

✅ Ramsar Convention: 1971, Ramsar (Iran), under UNESCO.

✅ India's first Ramsar sites: Chilika Lake (Odisha) and Keoladeo NP (Rajasthan).

✅ Largest Ramsar Site: Sundarbans (West Bengal).

✅ India's Ramsar Sites count: 91.

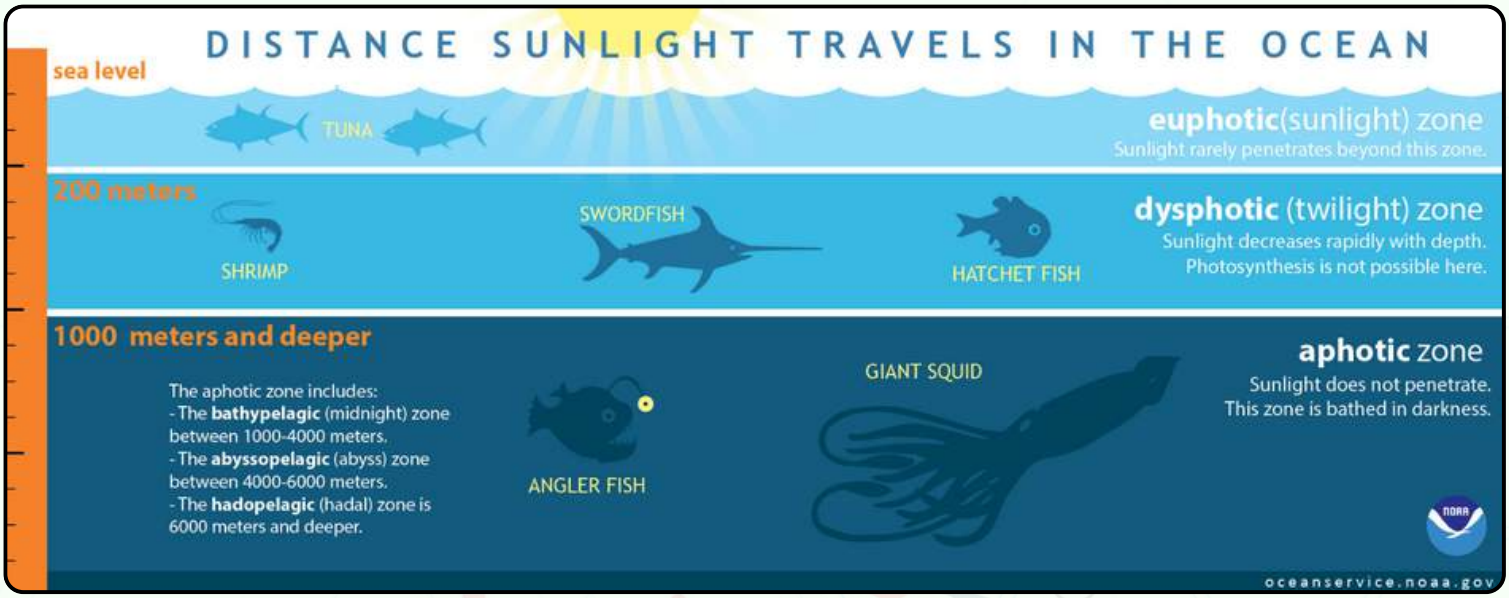
✅ Menar is known as the "Bird Village" due to community conservation efforts.

Link to GS3 (Conservation):

- Shows India's progress in wetland conservation.
- Supports SDG Goal 15 (Life on Land).
- Strengthens India's biodiversity commitments under the Convention on Biological Diversity (CBD).

Darkening of the Global Ocean

Context: A study titled "Darkening of the Global Ocean" found that over 21% of the world's oceans darkened between 2003 and 2022, raising ecological and climate concerns.



What is Ocean Darkening?

🌊 Definition:

Reduction in light penetration through ocean water, leading to a shallower or darker photic zone.

✅ Implications:

- Reduces biological productivity in oceans.
- Threatens organisms dependent on light for survival and reproduction.
- Disrupts marine ecosystems, biodiversity, and climate-regulating functions.

Photic Zone (Prelims Pointer):

✅ Upper ocean layer (~200 meters) where sunlight penetrates.
✅ Supports photosynthesis, driving marine food chains.
✅ Covers areas inhabited by 90% of marine life.
✅ Key for:

- Oxygen production.
- Carbon cycling and sequestration.
- Supporting global fisheries.

Causes of Ocean Darkening:

In Coastal Regions:

- Runoff of sediments, organic matter, and nutrients.
- Trigger algal blooms, reducing sunlight penetration.

In Open Oceans:

- Changes in plankton dynamics.
- Rising sea surface temperatures.
- Shifting ocean currents.

Why is Ocean Darkening a Concern?
✅ Limits photosynthesis, reducing oxygen production in oceans.
✅ Disrupts marine food webs, affecting fish populations and biodiversity.
✅ Weakens oceans' carbon sink capability, impacting climate regulation.

Link with Climate Change:
- Ocean warming and changing circulation patterns accelerate darkening.
- Loss of light impacts phytoplankton, which absorb CO_2 and release oxygen.

Way Forward:
✅ Reduce coastal pollution (nutrient runoff and sediments).
✅ Monitor phytoplankton and ocean colour data via satellites.
✅ Address climate change to stabilize ocean temperatures and currents.
✅ Strengthen global marine conservation frameworks.

Prelims Quick Facts:
✅ Ocean Darkening → Reduced light penetration in ocean waters.
✅ Photic Zone → Upper 200 m, 90% of marine life, photosynthesis, climate regulation.
✅ Study: Over 21% of global oceans darkened (2003-2022).

GS3 Link (Environment & Ecology):
- Biodiversity & Conservation.
- Climate Change Impacts.
- Marine Ecosystem Protection.

Green India Mission (GIM)

Context: The Ministry of Environment, Forest and Climate Change (MoEFCC) released the revised Green India Mission on World Day to Combat Desertification and Drought.

About Green India Mission:
✅ Also known as the National Mission for a Green India (GIM).
✅ It is one of the eight missions under India's National Action Plan on Climate Change (NAPCC).

Objectives:
🌳 Protect, restore, and enhance India's forest cover while tackling climate change.

✅ Targets:
- Expand forest/tree cover by 5 million hectares (mha).
- Improve quality of another 5 mha of forest and non-forest land.
- Enhance ecosystem services (carbon storage, water management, biodiversity).
- Improve livelihoods of 3 million households via forest-based activities.

Funding:
💰 Financial outlay: ₹12,190 crore for afforestation activities over 1 mha during 2021–30.

Revised Green India Mission:
✅ Adopts a "micro-ecosystem" approach:
- Designing small-scale, self-sustaining systems that mimic natural ecosystems.
- Promotes resource efficiency, resilience, and reduced environmental impact.

✅ Focus on vulnerable landscapes:
- Aravallis
- Western Ghats
- Arid regions of North-West India
- Mangroves
- Indian Himalayan Region

✅ Projected Outcomes:
- Achieve carbon sink of 3.39 billion tonnes (based on FSI estimates).
- Increase forest and tree cover over 24.7 mha.
- At the current plantation trend (~2 mha/year), another 12 mha will be covered during 2025–30.

About Desertification and Land Degradation (Prelims Pointers):
✅ Land Degradation: Reduction/loss of biological or economic productivity and complexity of land resources (soil, vegetation, water) due to human activities or natural processes.
✅ Desertification (UNCCD Definition): Land degradation in arid, semi-arid, and dry sub-humid areas due to climatic variations and human activities.
✅ India's Challenge: Approximately 30% of India's geographical area (~97.85 mha) faces desertification.

Prelims Quick Facts:
✅ Green India Mission → Part of NAPCC.
✅ Launched in 2014.
✅ Target: Expand & improve 10 mha forest/tree cover.
✅ Funding: ₹12,190 crore (2021–30).
✅ Revised GIM → Micro-ecosystem approach.
✅ India faces ~30% land desertification.

GS3 (Environment) Linkages:
✅ Land Degradation Neutrality (LDN) goals under UNCCD.
✅ Climate Change Adaptation & Mitigation.
✅ Sustainable Development Goals (SDG 13, SDG 15).
✅ Restoration of degraded land for carbon sequestration, water security, and biodiversity.

Conclusion: The Green India Mission is central to India's climate commitments, aiming for carbon sink enhancement, climate resilience, biodiversity conservation, and livelihood generation, thereby supporting India's Viksit Bharat 2047 goals.

Elephant Census (2025)

Context: A three-day elephant census recently concluded, aiming to track elephant population trends in South Karnataka.

About the Elephant Census:

✅ Mandate:

Prescribed by the Interstate Coordination Committee (ICC) charter.

✅ Objective:

- Generate and share database of elephant populations, especially in forests bordering Karnataka, Kerala, and Tamil Nadu.
- Track population dynamics for conservation planning.

✅ Synchronised Exercise:

- Conducted across South India on a landscape basis.
- Previous Data: As per the Synchronised Elephant Population Estimation India 2017 Report, South India has the highest elephant population (11,960 out of 27,312) in a contiguous landscape.

Methodology:

🪵 Block Sampling / Direct Count: To directly count elephants in specific forest blocks.

📏 Line Transect Exercise: To estimate density and distribution through systematic sampling.

💧 Waterhole Count: Conducted at water sources to assess sex distribution and age structure during peak activity periods.

Status of Asian Elephants:

✅ IUCN Red List: Endangered

✅ Protected under Schedule I of the Wildlife Protection Act, 1972 in India.

✅ Listed in Appendix I of CITES, prohibiting international commercial trade.

Prelims Quick Facts:

✅ India has 60% of the global Asian elephant population (~27,000–29,000).

✅ Karnataka has the highest elephant population in India (~6,000).

✅ Elephants are keystone species and flagship species for forest conservation.

✅ Threats include habitat fragmentation, human-elephant conflict, and poaching.

Mains Linkages (GS3 Environment):

✅ Conservation of endangered species under Project Elephant (1992).

✅ Use of technology (camera traps, GPS collars, drone monitoring) in wildlife census.

✅ Issues in human-wildlife conflict management.

✅ Importance of transboundary and landscape-level conservation efforts.

Conclusion: The Elephant Census is critical for effective conservation planning, understanding population trends, and ensuring coordinated efforts among South Indian states for the protection of India's endangered Asian elephant population.

Kumram Bheem Conservation Reserve

Context: Recently, the Telangana government declared the Kumram Bheem Conservation Reserve under the Wildlife Protection Act, 1972, to safeguard a critical tiger corridor.

About Conservation Reserves:

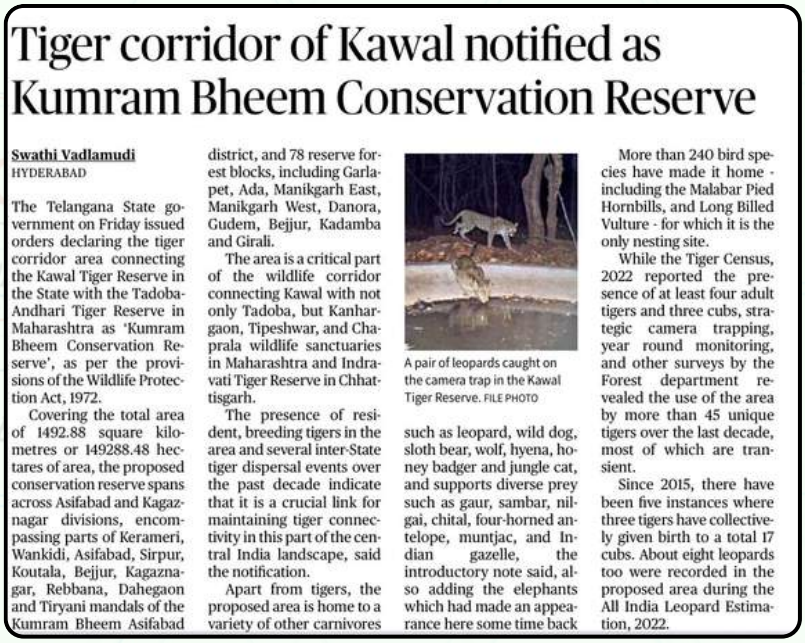
✅ Government-owned areas designated for biodiversity protection under Section 36A of WPA, 1972.

✅ Serve as buffer zones/wildlife corridors while allowing community participation in management.

About Kumram Bheem Conservation Reserve:

✅ Purpose:

Safeguard the tiger corridor connecting Kawal Tiger Reserve (Telangana) with key reserves in Maharashtra and Chhattisgarh, facilitating genetic exchange and tiger movement.



Tiger corridor of Kawal notified as Kumram Bheem Conservation Reserve

Swathi Vadlamudi
HYDERABAD

The Telangana State government on Friday issued orders declaring the tiger corridor area connecting the Kawal Tiger Reserve in the State with the Tadoba-Andhari Tiger Reserve in Maharashtra as 'Kumram Bheem Conservation Reserve', as per the provisions of the Wildlife Protection Act, 1972.

Covering the total area of 1492.88 square kilometres or 149288.48 hectares of area, the proposed conservation reserve spans across Asifabad and Kagaznagar divisions, encompassing parts of Kerameri, Wankidi, Asifabad, Sirpur, Koutala, Bejjur, Kagaznagar, Rebbana, Dahegaon and Tiryani mandals of the Kumram Bheem Asifabad district, and 78 reserve forest blocks, including Garlapet, Ada, Manikgarh East, Manikgarh West, Danora, Gudem, Bejjur, Kadamba and Giral.

The area is a critical part of the wildlife corridor connecting Kawal with not only Tadoba, but Kanhargaon, Tipeshwar, and Chaprala wildlife sanctuaries in Maharashtra and Indravati Tiger Reserve in Chhattisgarh.

The presence of resident, breeding tigers in the area and several inter-State tiger dispersal events over the past decade indicate that it is a crucial link for maintaining tiger connectivity in this part of the central India landscape, said the notification.

Apart from tigers, the proposed area is home to a variety of other carnivores such as leopard, wild dog, sloth bear, wolf, hyena, honey badger and jungle cat, and supports diverse prey such as gaur, sambar, nilgai, chital, four-horned antelope, muntjac, and Indian gazelle, the introductory note said, also adding the elephants which had made an appearance here some time back

A pair of leopards caught on the camera trap in the Kawal Tiger Reserve. FILE PHOTO

More than 240 bird species have made it home - including the Malabar Pied Hornbills, and Long Billed Vulture - for which it is the only nesting site.

While the Tiger Census, 2022 reported the presence of at least four adult tigers and three cubs, strategic camera trapping, year round monitoring, and other surveys by the Forest department revealed the use of the area by more than 45 unique tigers over the last decade, most of which are transient.

Since 2015, there have been five instances where three tigers have collectively given birth to a total 17 cubs. About eight leopards too were recorded in the proposed area during the All India Leopard Estimation, 2022.

✅ Location:

- Spans 1,492.88 sq. km across Asifabad and Kagaznagar divisions, Kumram Bheem Asifabad district, Telangana.

✅ Vegetation & Habitat:

- Tropical dry deciduous forests with open woodlands, grasslands, and riverine patches.
- Rich in biodiversity, supporting both flora and fauna.

Faunal Diversity:
🩺 Carnivores:
- Resident and transient tigers, leopards, wild dogs (dholes), sloth bears, wolves, hyenas, honey badgers, jungle cats.

🌿 Herbivores:
- Gaur, sambar, nilgai, chital, muntjac, four-horned antelope, Indian gazelle.

🐦 Avian Diversity:
- Home to 240+ bird species, including Malabar Pied Hornbill and Long Billed Vulture (crucial nesting habitat).

Prelims Quick Facts:
✅ Tiger Corridors are essential for genetic connectivity, reducing inbreeding in isolated tiger populations.
✅ Kawal Tiger Reserve (Telangana): Part of the Deccan landscape under Project Tiger.
✅ Telangana's first conservation reserve to secure a tiger corridor explicitly.
✅ Conservation reserves do not displace people but encourage community-led conservation.
Mains Linkages (GS3 Environment):
✅ Wildlife Corridors: Critical in India's fragmented landscapes for large carnivore conservation.
✅ Example of community participation in wildlife conservation under WPA, 1972.
✅ Supports biodiversity conservation while maintaining ecological balance.
✅ Aligned with India's commitments under CBD and National Wildlife Action Plan (2017-2031).

Conclusion: The Kumram Bheem Conservation Reserve is a crucial step toward securing tiger movement in central India, ensuring habitat connectivity, genetic diversity, and community-inclusive conservation efforts.

Self-Sufficiency in Rare Earth Elements (REEs)

Context: Amid global trade tensions, China suspended REE exports, affecting supply chains for smartphones, semiconductors, and defence systems, highlighting India's need for self-sufficiency in REEs.

What are Rare Earth Elements (REEs)?
✅ A group of 17 metallic elements known for magnetic, conductive, and luminescent properties.
✅ Not scarce, but rarely found in economically viable concentrations.

Geographical Hotspots of REEs:
🌍 China: Largest reserve (44 million MT) & top producer (~270,000 MT annually).
🌎 Brazil: 2nd largest reserves (21 million MT).
🌎 USA: 1.9 million MT reserves.
🌎 India: 5th largest reserves globally, primarily in monazite sands (coastal regions).

- Uses of REEs:
- ✅ High-tech: Smartphones, semiconductors, EVs, wind turbines.
- ✅ Green Energy: Permanent magnets in wind turbines (neodymium) & EV motors (dysprosium).
- ✅ Defence: Missile guidance, radar, jet engines.
- ✅ Medical: MRI, PET scans (magnetic properties).
- ✅ Batteries: NiMH batteries in hybrid vehicles.

Challenges in Achieving REE Self-Sufficiency:
- ❌ IREL Monopoly: Limits private sector participation despite 2025 policy opening.
- ❌ Weak Processing Infrastructure: India exports raw REEs (e.g., neodymium) instead of value-added products.
- ❌ No Magnet Production: China controls 90% of rare earth magnets; India has zero production for EVs/defence.
- ❌ Regulatory Hurdles: Thorium in monazite sands requires strict handling under atomic energy laws.
- ❌ Low R&D: India's R&D spending is 0.6-0.7% of GDP vs. China's 2.6%.
- ❌ Slow Partnerships: International collaborations are slow to scale compared to China's decades-long strategy.

Government Initiatives:
- ✅ MMDR Act Amendment (2023): Classified REEs as "Critical Minerals."
- ✅ National Critical Minerals Mission (2025): Securing sustainable access, processing, recycling, international partnerships.
- ✅ Strengthening IREL: Expanding processing & refining capacity.
- ✅ Strategic International Collaborations: MoUs with Australia, USA, Japan.
- ✅ REE Theme Park (Bhopal): Showcasing REE processing and utilization technologies.

Way Forward for India:
- ✅ Encourage Private Sector Participation: JV models like IREL–Toyota Tsusho in Andhra Pradesh.
- ✅ Technological Capacity Building: Advanced refining, extraction, heavy REE separation, REE R&D clusters (BARC, CSIR, DRDO).
- ✅ Expand Strategic Partnerships: Through KABIL for overseas assets in Argentina, Chile, Africa
- ✅ Develop Industrial Ecosystems: Integrate REEs in electronics, EVs, renewables, and defence manufacturing.
- ✅ Urban Mining: Extract REEs from e-waste (magnets, fluorescent lamps).
- ✅ Sustainable Mining: Eco-friendly, zero-waste technologies with community participation.

Conclusion:
- REEs are critical for India's clean-tech future, EV goals, and strategic autonomy. Focused policy support, technology infusion, and sustainability can transform India from a raw REE exporter to a value-added REE powerhouse.

Bharat Gen: India's First Indigenous AI Model

Context: The government has launched 'Bharat Gen', India's first indigenous, multilingual, multimodal AI model under the BharatGen Summit.

What is it?

- A government-funded Large Language Model (LLM) developed under the National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS).
- Developed by IIT Bombay's TIH Foundation for IoT and IoE with DST support.

Features:

- Supports 22 Indian languages.
- Works across text, speech, and image for seamless AI solutions.
- Focuses on India's linguistic and cultural needs.

◆ Aim:

To strengthen India's AI capabilities and make AI accessible across sectors.

Execution:

Implemented through 25 Technology Innovation Hubs (TIHs) under NM-ICPS.

Pillars:

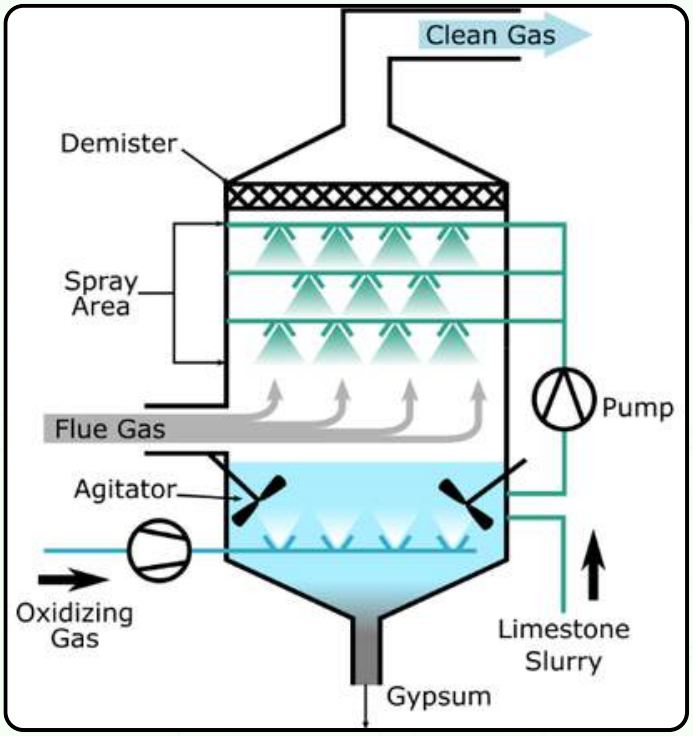
Technology Development
Entrepreneurship
Human Resource Development
International Collaboration

Flue Gas Desulphurisation: Policy Rollback

Context: A high-level expert panel led by PSA Ajay Sood has recommended ending the mandatory installation of Flue Gas Desulphurisation (FGD) units in all coal-fired thermal power plants (TPPs).

Background:

- In 2015, the Environment Ministry mandated all 537 coal-fired TPPs to install FGDs to reduce SO_2 emissions.
- So far, only 39 TPPs have installed them.



Why rollback FGDs?

✓ Low Sulphur Coal: 92% of Indian coal has low sulphur (0.3%–0.5%), making mandatory FGDs unnecessary.

✓ Environmental Trade-offs: FGDs increase power and water usage, adding 69 million tonnes CO_2 (2025–30) while cutting only 17 million tonnes SO_2, worsening the climate impact.

✓ Cheaper Alternatives: Electrostatic precipitators are less costly and reduce particulate matter by 99%.

What is FGD?

- A scrubbing method using lime/limestone to remove SO_2 from flue gas of coal-fired power plants.
- Can remove up to 95% of SO_2 emissions.
- The process involves spraying flue gas with water and limestone, which reacts with SO_2 and prevents its release.

Thermophilic Actinobacteria Found in Rajgir Hot Springs

Context: Researchers from VIT, Tamil Nadu, have discovered heat-loving Actinobacteria in the Rajgir hot spring lake, Nalanda, Bihar.

What are Thermophilic Actinobacteria?

- Heat-loving bacteria that thrive at 45–70°C.
- Found in hot springs, hydrothermal vents, and geothermal sites.
- Known for producing antibiotics like streptomycin and tetracycline to outcompete other microbes.
- Survive using heat-stable enzymes and thick cell walls.

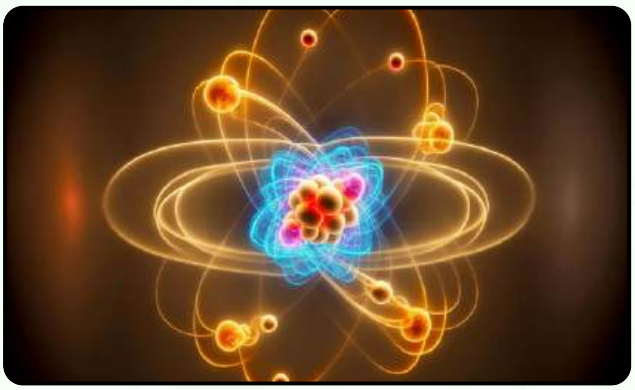
Key Findings:

✓ High Presence: Actinobacteria made up 40–43% of microbial diversity at Rajgir, much higher than the typical 20% seen in other hot springs.

✓ Their abundance could help in the fight against antimicrobial resistance due to their antibiotic-producing properties.

Proton Emission Observed in Astatine-188

Context: Scientists in Finland have measured the half-life of Astatine-188 (188At), which decayed by emitting a proton.



What is Proton Emission?

- A rare type of radioactive decay where an unstable nucleus ejects a proton to achieve stability.
- Unlike common alpha, beta, or gamma decay, it directly ejects a proton.
- Seen in isotopes like Astatine-188, Tellurium-111, and Bismuth-185.

Why It Matters?

- Helps understand nuclear stability and atomic structure limits.
- Useful in studying exotic nuclear phenomena.

About Astatine (At):

- Extremely rare and highly radioactive, atomic number 85.
- Part of the halogen group but has no stable isotopes.

Neutrino Mass: KATRIN Sets New Limit

Context: The KATRIN experiment in Germany has set a new upper limit of 0.45 electron volts (eV) on the neutrino mass, less than a millionth the mass of an electron.

About KATRIN:

- Measures the absolute mass of neutrinos using the decay of tritium (a radioactive hydrogen isotope).
- Tracks the energy of electrons released during decay to infer neutrino mass.

What Are Neutrinos?

- Most abundant subatomic particles with mass in the universe; belong to the lepton family.
- Electrically neutral and have an extremely tiny mass.
- Produced in nuclear fusion in stars, radioactive decay, and reactors.
- Rarely interact with matter, making them hard to detect.
- Have spin 1/2 (fermions) and left-handed helicity (antineutrinos are right-handed).

Why Is Neutrino Mass Important?

- Explains matter-antimatter imbalance in the universe.
- Points to new physics beyond the Standard Model, which predicted neutrinos to be massless.
- Crucial for understanding early universe evolution.

Nuclear Fusion: Breakthrough at Wendelstein 7-X

Context: Scientists in Germany sustained plasma for 43 seconds in the Wendelstein 7-X, marking a significant nuclear fusion milestone.

About Wendelstein 7-X:

- World's largest operational stellarator (type of fusion reactor).
- Located in Greifswald, Germany.
- Uses external magnets to control superheated plasma for fusion.

Why Is This Achievement Important?

✅ Long-term stability: Stellarators offer better stability than tokamaks, critical for continuous fusion power generation.

✅ Nearer to power plants: Achieving a high triple product during long plasma pulses brings fusion power closer to reality.

Stellarator vs Tokamak:

Feature	Stellarator
Magnetic Control	Uses external magnets for plasma stabilization
Plasma Stability	More stable for continuous operation
Design	Complex but suitable for long-term use
Power Potential	Promising for future commercial fusion power

Summary: The Wendelstein 7-X breakthrough is a step towards clean, limitless energy through nuclear fusion, vital for climate goals and energy security.

India's First Gene-Edited Sheep

Context: Scientists at Sher-e-Kashmir University of Agricultural Sciences (SKUAST), Srinagar, have produced India's first gene-edited sheep.

- Same team cloned India's first Pashmina goat (Noori) in 2012.
- Project sponsored by ICAR.

What Technology Was Used?
✅ Used CRISPR-Cas9 gene editing while following global biosafety standards.

What Is Gene Editing?
- A method to alter an organism's DNA precisely.
- Enables adding, removing, or modifying genes at specific sites in the genome.

Key Gene Editing Methods:
- CRISPR-Cas9: Uses Cas9 protein + guide RNA to cut DNA at specific spots for targeted edits.
- Zinc Finger Nucleases (ZFNs): Enzymes that bind and cut DNA at desired sites.
- TALENs: Similar to ZFNs but use TALE domains for DNA targeting.

📌 Note: CRISPR won the 2020 Nobel Prize in Chemistry for its precision and efficiency in genome editing.

Why It Matters?
✅ This paves the way for improving livestock productivity, disease resistance, and quality, supporting India's food and livelihood security.

e-Rakt Kosh

Context: The Health Ministry plans to link India's Rare Donor Registry (RDRI) with e-Rakt Kosh to improve rare blood availability.

What is e-Rakt Kosh?
- A centralized digital platform under NHM for managing blood banks across India.
- Accessible via web and mobile app.
- Key features:
  - Real-time blood availability
  - Blood bank directory
  - Blood donation camp updates
  - Donor services

What is Rare Donor Registry (RDRI)?
- Developed by ICMR-NIIH to maintain a national database of rare blood donors.
- Includes 4,000+ screened donors tested for 300+ rare blood markers.
- Covers ultra-rare blood groups like:
  - Bombay blood group
  - P-Null
  - Rh-null

Why It Matters?
✅ Will help patients with rare blood types (e.g., thalassemia, sickle cell disease) by ensuring timely access to rare blood units across India.

Inter-Services Organisations (Command, Control & Discipline) Act, 2023

Context: The government has notified rules making the ISO Act, 2023 fully operational, boosting jointness among Army, Navy, and Air Force.

What does the Act do?

- Gives Commanders of Inter-Service Organisations (ISOs):
  - Full administrative and disciplinary control over personnel from Army, Navy, and Air Force under them.
  - Enables quicker disposal of disciplinary cases and prevents duplication.

What are Inter-Service Organisations (ISOs)?

- Units with personnel from at least two services (e.g., Andaman & Nicobar Command).
- Created to ensure joint operations, synergy, and integrated logistics/training.
- Legally backed by the ISO Act, 2023, now fully enforced.

Why is it important?

✅ Supports India's vision of integrated theatre commands for future warfare readiness.

✅ Promotes:

- 'One Nation, One Military Approach'
- Interoperability and cost-efficiency
- Faster operational readiness

Related Reforms:

- Creation of CDS (2019) to improve jointness in operations.
- Planned Theatre Commands:
  - Western & Eastern Land Commands
  - Maritime Theatre Command

GBU-57 Massive Ordnance Penetrator (MOP) & B-2 Spirit Stealth Bomber

Context: The US used the GBU-57 "bunker buster" bomb for the first time in combat during Operation Midnight Hammer on Iranian nuclear sites.

Why it matters?

The use of the MOP with B-2 showcases advanced US capabilities to target hardened underground nuclear sites, relevant for global security and strategic studies.

What is the GBU-57 MOP?

- A heavy, non-nuclear "bunker buster" bomb designed to destroy deep underground facilities like WMD bunkers.
- Developed by the US Air Force Research Laboratory & Boeing under DTRA (2003).
- Tested first in 2007; weighs ~13,000 kg and is 20.5 feet long.
- Penetration Capability: Can penetrate up to 60 meters of earth before detonating.

What is the B-2 Spirit Stealth Bomber?

- The only aircraft capable of carrying the MOP (2 at a time).
- Features:
  - Stealth: Low radar, infrared, and visual signature.
  - Long-range: Can fly intercontinental missions, strike, and return without refueling.

Assisted Dying: UK Legalises for Terminally Ill

Context: The UK House of Commons has passed a bill legalising assisted dying for terminally ill adults, a major shift in end-of-life laws.

What is Assisted Dying?

✅ Deliberately ending life to relieve suffering, including:

- Assisted Suicide: Helping someone end their life.
- Euthanasia: A doctor actively ends life.
  - Active: Direct methods (e.g., lethal injection).
  - Passive: Withdrawing life support to allow natural death.
- Voluntary: With patient's consent.
- Non-voluntary: Without consent (e.g., coma patients).

Key Provisions of UK Bill

- Must be 18+, mentally competent, UK resident (12 months).
- Must have a terminal illness with life expectancy < 6 months.
- Excludes only mental illness or disabilities.

Status in India

- Passive euthanasia legal since Common Cause v. Union of India (2018) under Article 21 (Right to Die with Dignity).
- Active euthanasia and assisted suicide remain illegal.

Global Status

✅ Legal (under strict conditions) in Canada, Netherlands, Belgium, Switzerland, New Zealand, parts of Australia & USA.
✅ Switzerland permits foreign nationals, leading to assisted dying tourism.

Why it matters?

This topic links ethics, law, and Article 21, making it important for GS2, GS4, and essay preparation.

Places in News – June 2025

World

- Chagos Islands: UK transfers sovereignty to Mauritius, including the Diego Garcia military base.

🗺️ Location: Indian Ocean, 500 km south of Maldives.

- Zangezur Corridor: Proposed transport route linking Azerbaijan to Nakhchivan via Armenia, under peace talks.
- Strait of Hormuz: Iran may close this key oil transit choke point amid tensions with Israel.

🗺️ Connects Persian Gulf with Gulf of Oman & Arabian Sea.

- Mount Lewotobi (Indonesia): Stratovolcano on Flores Island erupted, lies on the Pacific Ring of Fire.
- Mount Etna (Italy): Europe's largest active volcano on Sicily erupted recently.
- Chile: 1st round of India-Chile CEPA negotiations concluded.
- Qatar: Iran launched missile attacks on US bases in Qatar & Iraq in retaliation.
- Maldives: India & Maldives review economic & maritime security partnership.
- Armenia: India evacuated citizens from Tehran via Armenia under Operation Sindu during Israel-Iran tensions.
- Lake Natron (Tanzania): Climate threats & development projects endanger this hyper-alkaline lake that can calcify animals.
- Taiwan: A 5.9 magnitude earthquake struck, shaking Taipei and coastal areas.

India

- Diu: Becomes India's first solar-powered district, meeting 100% power needs with 11.88 MW solar capacity.
- Raipur, Chhattisgarh: India's first AI Special Economic Zone (SEZ) announced in Nava Raipur with ₹1,000 crore investment.

- Deeg, Rajasthan: ASI finds 3500-year-old archaeological site and palaeochannel 23m underground in Bahaj village.
- Valley of Flowers, Uttarakhand: UNESCO site reopened to tourists; part of Nanda Devi Biosphere Reserve.
- Shipki La Pass, Himachal Pradesh: Now open for domestic tourism without permits, reviving hopes for cross-border trade.
- Gangotri National Park, Uttarakhand: Locals raise concerns over waste incinerator emissions in the fragile Himalayan zone.

Awards in News – June 2025

1.Gödel Prize 2025

- Winners: Indian-origin Prof. Eshan Chattopadhyay & David Zuckerman.
- Work: Their 2016 paper on 'Explicit Two-Source Extractors and Resilient Functions' made a breakthrough in randomness extraction (turning weak random sources into strong random numbers for cryptography and secure computing).
- About the Gödel Prize:
  - Named after Kurt Gödel, known for contributions to mathematical logic.
  - Recognizes outstanding papers in theoretical computer science.

2. National Florence Nightingale Awards 2025

- Conferred By: President of India to 15 nursing professionals for excellence in public health and patient care.
- About the Award:
  - Instituted in 1973 by the Ministry of Health and Family Welfare.
  - Eligibility: Registered Nurses, Midwives, ANMs, LHVs.
  - Includes: Certificate of Merit, ₹1 lakh cash prize, and a Medal.

Chenab Bridge Inaugurated

- What: World's highest arch railway bridge, now operational.
- Where: Between Bakkal and Kauri villages, Reasi district, J&K.
- Project: Part of the Udhampur-Srinagar-Baramulla Rail Link (USBRL).

Specifications:

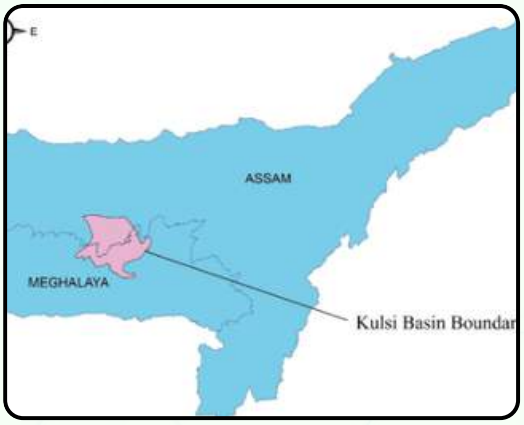
- Length: 1,315 m; Arch span: 467 m.
- Height: 359 m above river bed.

Features:

- Arch-shaped (parabolic design) for strong load-bearing capacity.
- Can withstand 266 kmph wind speeds and support 300-tonne coaches.
- Made with interlocking beams and cement grouting for stability.

Kulsi River Hydropower Project

- What: Assam & Meghalaya to set up a hydropower project on the Kulsi River.



About Kulsi River:

- A south-bank tributary of the Brahmaputra.
- Formed by Khri, Krishniya, and Umsiri rivers from the West Khasi Hills (Meghalaya), flowing to Kamrup (Assam).
- Passes through Chandubi Lake & Kulsi Reserved Forest before joining the Brahmaputra.

Ecological Importance:

- A biodiversity hotspot, known for the Ganges River Dolphin habitat.

DIGIPIN: India's New Digital Address System

- What: A digital address system to accurately identify locations, especially in areas with unstructured addresses.
- Developed by: Department of Posts, IIT Hyderabad, and ISRO's National Remote Sensing Centre.

Key Features:

- Provides a unique 10-character alphanumeric code for every 4x4 sq. meter area.
- Open-source, interoperable, geo-coded, and privacy-focused (no personal data stored).

Aim: To enable pinpoint accuracy in location identification across India.

Bihar to Adopt e-Voting for Urban Polls

- What: Bihar will be India's first state to implement mobile-based e-voting for urban local body elections on 28 June.
- Global Context: Estonia is currently the only country with nationwide mobile-based e-voting.
- Implemented by: Bihar State Election Commission.
- Execution: Via two mobile apps:
  - "e-Voting SECBHR" (by C-DAC)
  - App by Bihar State Election Commission.
- Features:
  - Blockchain-based digital security, face match, liveness detection.
  - Audit trail similar to VVPAT for transparency.

Tripura Achieves Full Functional Literacy

- What: Tripura declared fully literate under ULLAS – Nav Bharat Saaksharta Karyakram.

Context:
- Follows Ladakh (June 2024), Goa, and Mizoram in achieving full functional literacy.
- Literacy Rate: 95.6% (up from 20.24% in 1961).

About Functional Literacy:
- Having basic reading, writing, and math skills to handle daily tasks (reading signs, filling forms, managing money, healthcare understanding).

About ULLAS (NILP):
- Centrally sponsored, aligned with NEP 2020.
- Volunteer-driven under "Jan Jan Saakshar" and "Kartavya Bodh".
- Focus: Educating adults aged 15+ who missed formal education.

NAVYA: Vocational Training for Adolescent Girls

- What? The Centre launched NAVYA (Nurturing Aspirations through Vocational Training for Young Adolescent Girls) to provide skill training.
- Who? Targets girls aged 16–18 years (min. Class 10 pass).
- Focus: Skill training in non-traditional job roles to encourage women-led development.
- Coverage: Pilot in 27 districts across 19 states, including aspirational and NE districts.
- Launched by: Joint initiative of MWCD and MSDE.

India Wins IIAS Presidency (2025–2028)

- India secured the presidency of the International Institute of Administrative Sciences (IIAS) for the first time for 2025–2028.
- About IIAS:
  - International non-profit for public administration research.
  - HQ: Brussels, Belgium.
  - Members: 31 countries, 20 national sections, 15 research centres.
  - India is a member since 1998.
  - Works closely with UN bodies (CEPA, UNPAN) on administrative reforms, though not officially UN-affiliated.

SCO Defence Ministers' Meet: India Declines Draft

Context: At the SCO Defence Ministers' Meet in Qingdao, India refused to sign the draft statement as it excluded mention of the Pahalgam terror attack (April 22) but referenced the Jaffar Express hijacking in Pakistan.

About SCO:

- Origin: From "Shanghai Five" (1996).
- Established: 2001 in Shanghai.
- Members: India, Belarus, China, Russia, Kazakhstan, Kyrgyzstan, Tajikistan, Pakistan, Uzbekistan, Iran.
- Observers: Afghanistan, Mongolia.
- Secretariat: Beijing, China.

Ker Sangri Gets GI Tag

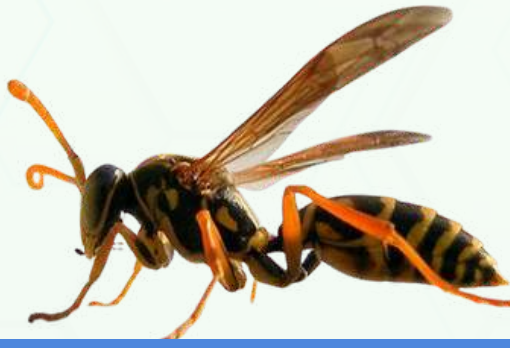
- Rajasthan's traditional dish Ker Sangri has received a GI tag.
- It is made from Ker (a desert berry) and Sangri (beans from the sacred Khejri tree), naturally found in the Thar Desert.
- Historically used during droughts, it is high in fibre, low in fat, and nutrient-rich.

New Wasp Species Found in India

- A new parasitic wasp species, Losgna occidentalis, has been discovered in Chandigarh, marking the first record of this genus in India since 1965.

About Parasitic Wasps:

- They are solitary and lay eggs inside other insects or spiders, using them as hosts for their larvae.
- Larvae manipulate the host's body and eventually consume it.
- Adults feed on nectar and pollen, unlike colony-forming honeybees.



Greater Flamingo Sanctuary Launched in Tamil Nadu

Context: Tamil Nadu has set up the Greater Flamingo Sanctuary at Dhanushkodi, Ramanathapuram, on World Environment Day.

About Greater Flamingo (Phoenicopterus roseus):

- Found in Africa, South Europe, South & Southeast Asia, including India.
- Conservation Status: Least Concern (IUCN).
- One of two flamingo species in India (Greater & Lesser); it is Gujarat's state bird.
- Lives in saltwater lagoons, mudflats, saline lakes.
- Migrates from Gujarat to Mumbai (Thane Creek) annually, arriving in November.

Dugong Conservation in Focus

Context: On World Dugong Day (May 28), concerns rose over India's declining dugong population (~200 left).

- About Dugong (Dugong dugon):
  - Also called "Sea Cows"; large, herbivorous marine mammals.
  - Found in warm coastal waters of the Indo-Pacific.
  - In India: Seen around Andaman & Nicobar, Gulf of Mannar, Palk Bay, Gulf of Kutch.
  - Feed mainly on seagrasses (Cymodocea, Halophila, etc.).
- Conservation Efforts:
  - 2022: India set up its first Dugong Conservation Reserve in Palk Bay, Tamil Nadu.
  - Status: IUCN: Vulnerable, WPA 1972: Schedule I, CITES: Appendix I.
  - Regionally, dugongs are considered Endangered in India.

Kumbakonam Vetrilai Gets GI Tag

Context: Kumbakonam Vetrilai (betel leaf) from Tamil Nadu has received a Geographical Indication (GI) tag.

- Grown in Thanjavur's Cauvery river basin, giving it a distinct taste and aroma.
- Features:
  - Heart-shaped, dark/light green, pungent taste.
  - First leaves appear 20–25 days after planting.
  - Cultivation areas: Thiruvaiyaru, Papanasam, Thiruvidaimarudur, Kumbakonam, Rajagiri.
  - Health benefits: Aids digestion, rich in antioxidants, contains chavicol (anti-inflammatory), and may help manage diabetes.

India's First Potash Mining Begins

India has auctioned potash and halite blocks for the first time under Tranche V of critical mineral auctions.

- Potash: Water-soluble potassium salts, mainly potassium chloride (KCl), essential for fertilizers to improve crop yield and drought resistance.
- Uses: Fertilizers, glass, soap, chemical industries.
- Ore: Sylvinite.
- Reserves: Mainly in Rajasthan (89% of India's resources), Punjab, MP, UP. India imports 100% of its potash needs (~40 LMT annually).
- Global producers: Canada, Belarus, Russia, China, USA.
- Halite: Natural rock salt (NaCl) used in table salt, water softening, de-icing, and food preservation.

Kruti: India's First Agentic AI

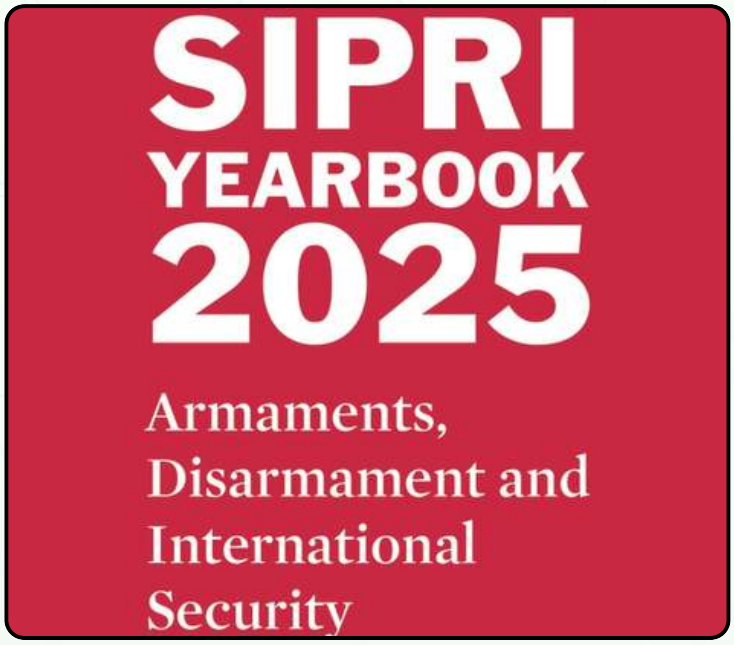
- Kruti by Krutrim AI (Ola), launched in June 2025, is India's first agentic AI assistant.
- Features: Can book cabs, pay bills, order food, generate images.
- Powered by: India's indigenous large language model (LLM), trained in Indian languages and cultural context.
- Agentic AI: AI that can autonomously make decisions and act on tasks with minimal supervision.

Biostimulants: New Approvals

- The Agriculture Ministry approved 34 new biostimulants, raising the total to 45+.
- What are Biostimulants?
  - Natural/biological products that boost plant growth by improving nutrient uptake and stress resistance.
  - Examples: Seaweed extracts, humic/fulvic acids, amino acids, beneficial fungi (mycorrhizae), and bacteria (Rhizobacteria).
  - Note: They are not pesticides or plant growth regulators.

SIPRI Yearbook 2025

- The 56th SIPRI Yearbook was released, tracking global nuclear weapons.
- Nuclear warheads globally: ~12,241 (Jan 2025) across 9 nuclear nations.
- Top holders:
  - Russia: 5,459 warheads
  - USA: 5,177 warheads (including retired)
  - China: 600 warheads
  - India: 180 warheads (slightly increased)
  - Pakistan: 170 warheads
  - Other nuclear nations: UK, France, Israel, North Korea.

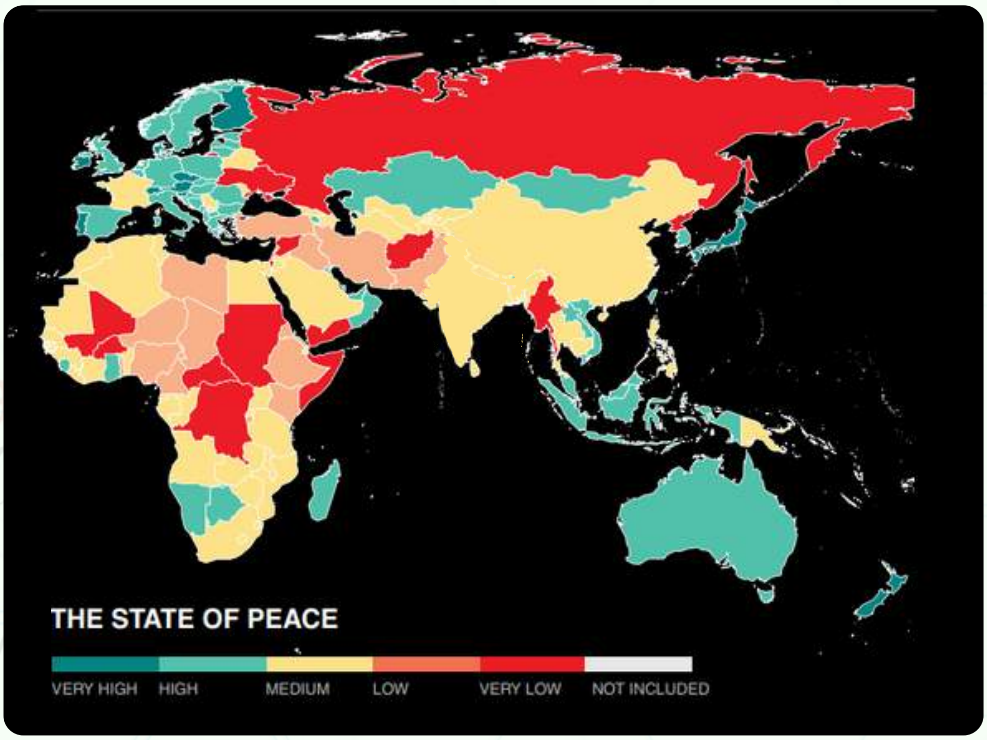


Village Defence Guards (VDGs)

- After Operation Sindoor, BSF has begun arms training for VDGs along the Jammu-Pakistan border.
- Started: 1995 to protect Hindu civilians from militancy; armed with .303 rifles.
- Revived: 2022 in Jammu amid renewed terror threats.
- Supervision: Function under district SP/SSP oversight.

Global Peace Index (GPI) 2025

- Released by Institute for Economics and Peace (IEP), Australia, measuring peace in 163 countries across safety, conflict, and militarisation indicators.
- India ranks 115th, ahead of Pakistan (146), Bangladesh (124); Afghanistan (163) is least peaceful.
- Iceland remains the most peaceful; MENA is the least peaceful region for the 10th year.



World Bank's Global Economic Prospects Report

- Released by World Bank, reviewing global growth trends.
- India: Projected to remain the fastest-growing large economy, with 6.3% growth in FY2025-26 (revised down by 0.4%).
- Global Outlook: Growth forecast cut for 70% of economies amid trade tensions and uncertainty.
- Global growth projected at 2.3% in 2025, the slowest since 2008 (excluding recessions).

Global Drought Outlook 2025

- Released by OECD.
- Global: 40% of land faces rising drought frequency; affected area has doubled (1900–2020).
- Severe droughts noted in Mexico, Europe, and the U.S. in recent years.
- India: Increasingly vulnerable to flash droughts during monsoon, with agricultural exposure projected to rise by 20–30% by 2100.
- Over 60% of Indian soils show drying trends; severe moisture deficits expected by 2050.