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MONTHLY CURRENT AFFAIRS

FOR UPSC CIVIL SERVICE EXAMINATION

OCTOBER 2025

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AI-Protection for Tirumala Temple

Context:

- Tirumala Temple in Andhra Pradesh has launched India's first AI-powered Integrated Command Control Centre (ICCC) to ensure pilgrim safety, manage crowds, and strengthen cybersecurity.

Key Features of AI-Powered ICCC:

- Developed by Tirumala Tirupati Devasthanam (TTD), which manages the Lord Venkateswara Temple.
- Provides real-time crowd management, quicker queue handling, and enhanced security.
- Created under a pro bono public–private partnership, funded by NRIs.
- Uses AI/ML technologies and NVIDIA-backed infrastructure for data-driven monitoring.

About Tirumala Venkateswara Temple:

- Located on Venkata Hill in Andhra Pradesh — one of the seven Tirumala Hills (Saptagiri).
- Dedicated to Lord Sri Venkateswara, an incarnation of Lord Vishnu.
- Famous for the Tirupati Laddu, which holds a GI tag.
- The temple's legacy includes contributions from Pallava, Chola, and Vijayanagara dynasties and was revived in the 12th century by Saint Ramanuja.

Thirumalapuram: Iron Age Site

Context:

- Excavations at Thirumalapuram in Tamil Nadu's Tenkasi district have uncovered an Iron Age burial site, possibly dating back to around 3345 BCE.

Key Findings:

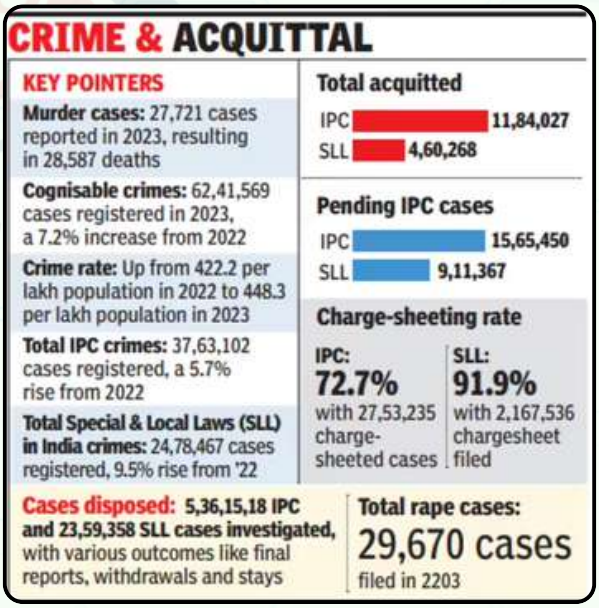
- Excavated by the Tamil Nadu State Department of Archaeology (TNSDA), this is the first evidence of Iron Age culture near the Western Ghats in Tamil Nadu.
- The site features a rectangular stone-slab burial chamber with urn burials, built using 35 slabs and filled with cobblestones up to 1.5 m deep.
- Pottery types: white-painted black-and-red ware, red ware, red-slipped ware, black-polished ware, and coarse red ware.
- Urn symbols depict humans, mountains, deer, and tortoises, reflecting early artistic expression.
- Artefacts discovered (78 items) include bone, gold, bronze, an

NCRB Reports 2023

Context:

- The National Crime Records Bureau (NCRB) released three major annual reports — Crime in India, Prison Statistics India (PSI), and Accidental Deaths & Suicides in India (ADSI) — offering insights into India's crime, prison, and safety trends.

A. Crime in India 2023 Report



- Overall Crime: 6.24 million cases in 2023 — a 7.2% rise from 2022.
  - Crime rate: 448.3 per lakh population.
  - One crime reported every 5 seconds.
- Trends:
  - Decline: Murder ↓2.8%, Rape ↓5.9%, Dowry deaths ↓4.6%.
  - Rise: Cybercrimes ↑31.2%, Rash driving ↑7.5%, Obstruction on public way ↑62%.
- Cybercrimes:
  - Majorly fraud-related cases.
  - Top states: Karnataka (21,889), Telangana (18,236), UP (10,794).
- Metropolitan Cities:
  - Crimes ↑10.6% (9.44 lakh cases).
  - Top categories: Theft (44.8%), rash driving (9.2%), obstruction (8.1%).
  - Delhi reported the highest number of cases.
- Crimes Against Vulnerable Groups:
  - Women: ↑0.7%; domestic cruelty forms 29.8% of cases.
  - SCs: Slight rise; STs: ↑28.8% — largely due to Manipur's ethnic violence (3,399 cases).
  - Children: ↑9.2%; most under POCSO Act.

B. Prison Statistics India 2023

- Prison Population: Down 4.4% from 2022; 1,332 prisons across India.
- Occupancy Rate: Slightly improved to 120.8% (still 21% over capacity).
  - Delhi: Worst (200%); Telangana: Lowest (72.8%).
- Undertrials: 73.5% of inmates — shows judicial delays.
  - Uttar Pradesh had the highest undertrial numbers.
- Demographics:
  - Age: 44% (18–30 yrs), 43% (30–50 yrs).
  - Education: 25% uneducated, 40% up to Class X.
- Women Prisoners: 4.1% of total — face poor hygiene and inadequate healthcare.
- Foreign Nationals: ↑10.7%; mostly from Bangladesh, Nepal, Myanmar, Pakistan, Nigeria.
- Deaths in Prisons: 1,972 total — 150 unnatural, including 96 suicides.
  - Punjab, Haryana, UP reported most unnatural deaths.

C. Accidental Deaths & Suicides in India 2023

- Suicides: 1,71,418 cases.
- Road Accidents: 1,73,826 deaths out of 4,64,029 accidents (↑1.6%).
  - Causes: Overspeeding (58.6%), dangerous driving (23.6%).
  - Peak hours: 6–9 PM.
  - Two-wheelers: 45.8% of fatalities.
  - Top states: UP, TN, Maharashtra, Karnataka, MP.
- Farmer Suicides: 10,786 deaths (6.3% of total suicides).
  - Agricultural labourers > farmers.
  - Top states: Maharashtra (38.5%), Karnataka (22.5%), AP, MP, TN.
- Drug Overdose Deaths: 654 total — Punjab led for the 2nd year (89 deaths).
- Illicit Liquor Deaths: Highest in Jharkhand (194), followed by Karnataka (79) and Bihar (57).

Conclusion: The NCRB data reveals India's growing vulnerabilities — cybercrimes, road fatalities, prison overcrowding, and farmer suicides. Addressing these requires data-driven reforms, faster justice delivery, and stronger welfare mechanisms.

The State of Social Justice – ILO Report 2025

Context: The International Labour Organization (ILO) released its flagship report "The State of Social Justice: A Work in Progress (2025)", assessing global progress and challenges in achieving equality, inclusion, and decent work.

Key Global Insights

- Child Labour: Declined from 20.6% (1995) to 7.8% (2024).
- Education: Secondary school completion up 22 percentage points since 2000.
- Poverty Reduction: Extreme poverty fell from 40% (1995) to 10% (2023); working poverty down to 6.9% (2024).
- Productivity: Global labour productivity rose 78%, with a 215% jump in upper-middle-income nations.
- Collective Policy Gains: Coordinated policies improved equality and social well-being.

Persistent Challenges:

- Poverty & Inequality: 800 million people still live below $3/day; the top 1% hold 20% of income and 38% of global wealth.
- Gender Gaps: Women earn only 78% of men's wages; 58% of workers are in informal employment.
- Erosion of Rights: Decline in collective bargaining and freedom of association.
- Social Protection Gaps: Only 50% of people globally covered.
- Technological & Climate Threats: 71% of workers face climate-related disruptions; automation may replace 25% of jobs.
- Trust Deficit: Growing public mistrust in governments, businesses, and unions.

Understanding Social Justice

Definition: Fair and equitable distribution of resources, rights, and opportunities, ensuring dignity and inclusion for all.

Core Dimensions:

- Distributive Justice: Equal access to wealth and opportunities.
- Procedural Justice: Fair institutions and governance.
- Restorative Justice: Correcting historical and structural disadvantages.

India's Efforts for Social Justice

1. Constitutional & Legal Measures:
   - Reservations for SCs, STs, and OBCs.
   - Key laws: SC/ST (Prevention of Atrocities) Act (1989), Rights of Persons with Disabilities Act (2016), Protection of Civil Rights Act (1955).
2. Welfare & Security Schemes:
   - Ayushman Bharat (PM-JAY): Health insurance for poor families.
   - PM-KISAN: Income support for small farmers.
3. Gender Empowerment:
   - Beti Bachao Beti Padhao for girls' education.
   - Nari Shakti Vandan Adhiniyam (2023): 33% reservation for women in Parliament and State Assemblies.
4. Education:
   - NEP 2020 promotes inclusive and skill-based learning.
   - RTE Act (2009): Ensures free and compulsory education (ages 6–14)

Significance of Social Justice

- Ethical Core of Democracy: Promotes equality and participation.
- Inclusive Growth: Drives productivity and innovation.
- Social Cohesion: Builds trust and peace.
- Demographic Dividend: Ensures youth empowerment through skills and equity.
- Supports SDGs: Aligns with SDGs 1, 5, 8, and 10.
- Institutional Legitimacy: Strengthens trust in governance.

Challenges for India

- Persistent Inequality: Despite improvement (Gini 0.255 in 2022–23), wealth concentration remains high.
- Informal Labour: Nearly 92% of workers lack job security and benefits.
- Gender & Caste Discrimination: Patriarchy and social bias limit participation and justice access.
- Poverty & Vulnerability: High dependence on informal, low-paying jobs.
- Implementation Gaps: Weak enforcement and accountability in welfare delivery.
- Infrastructure Deficit: Rural areas face shortages in teachers, health facilities, and digital access.

Way Forward

- Equitable Redistribution: Progressive taxation, universal healthcare, and fair wages.
- Inclusive Employment: Reskilling, green jobs, and policies for climate and tech transitions.
- Gender & Caste Equality: Strengthen equal pay laws, workplace safety, and land reforms.
- Universal Public Services: Invest in education, health, housing, and digital inclusion.
- Stronger Institutions: Enforce anti-discrimination laws, enhance legal aid, and ensure transparency.
- Cultural Change: Promote empathy, diversity, and inclusive leadership.

Conclusion: The ILO 2025 Report reflects progress amid paradox — growth with inequality and trust erosion. For India, social justice remains the soul of democracy and the path to a just, equitable, and inclusive society, where welfare becomes empowerment and growth ensures dignity for all.

2025 Global Multidimensional Poverty Index (MPI)

Context: The 2025 Global MPI, jointly released by the UNDP and the Oxford Poverty and Human Development Initiative (OPHI), evaluates multidimensional poverty across more than 100 developing nations.

About the Global MPI

- Introduced: 2010 by UNDP and OPHI, University of Oxford.
- Purpose: Measures poverty beyond income, assessing deprivations in health, education, and living standards.
- Method: A person is "multidimensionally poor" if deprived in one-third or more of the weighted indicators.
- Scale: Ranges from 0 to 1 — higher values mean greater poverty.
- New in 2025: For the first time, the index maps poor populations' exposure to four climate risks — high heat, droughts, floods, and air pollution.

Global Findings

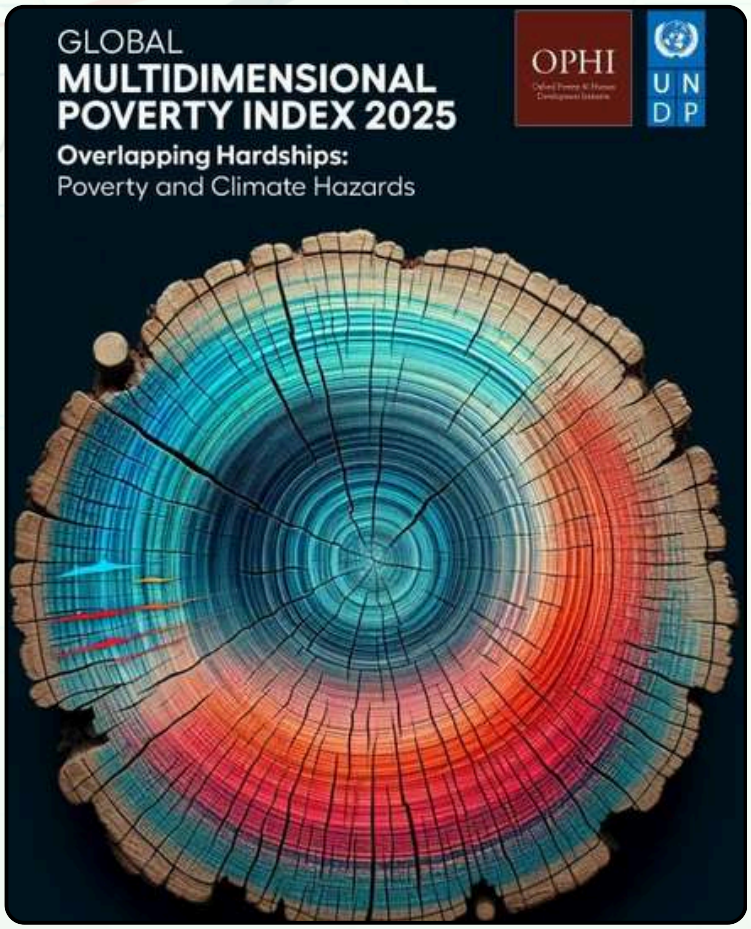
- Overall Poverty: Out of 6.3 billion people, 1.1 billion (18.3%) live in acute multidimensional poverty.
- Children: 27.8% (586 million) are poor — over twice the adult poverty rate (13.5%).
- Rural–Urban Divide: 83.5% of poor people live in rural areas, which make up just 54.9% of the population.
- Income Group Distribution:
  - 64.5% of the poor live in middle-income countries (mostly lower-middle).
  - 9% live in upper-middle-income nations.
- HDI Link: 90.5% of poor people live in low or medium HDI countries.
- Regional Concentration:
  - Sub-Saharan Africa: 565 million (51%).
  - South Asia: 390 million (35%).
  - Together, they account for 83% of global poverty.

India's Performance

- Poverty Reduction: Multidimensional poverty declined from 55.1% (2005–06) to 16.4% (2019–21) — about 414 million people lifted out of poverty.
- Vulnerability: Around 18.7% (≈269 million) remain vulnerable to multidimensional poverty.

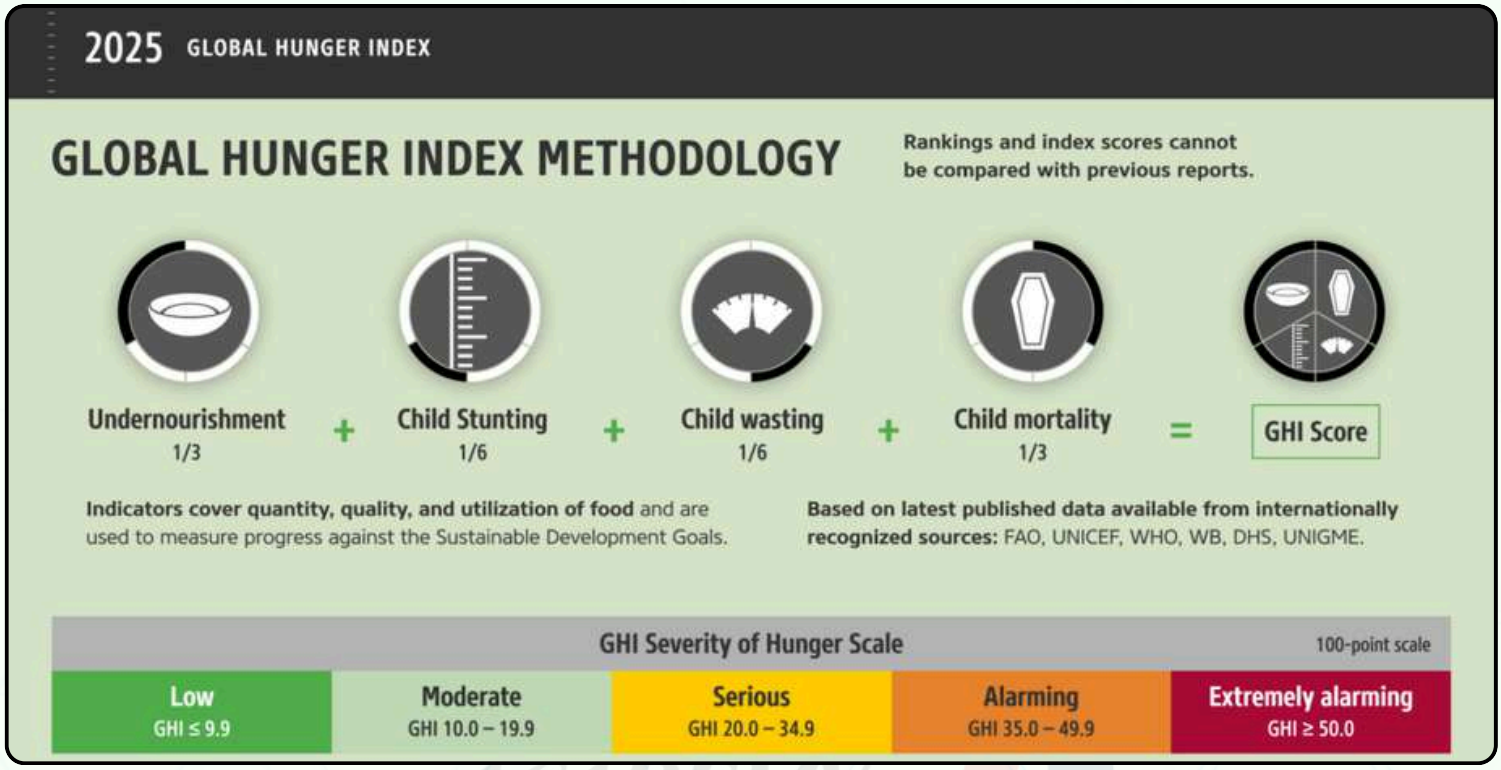
Common Global Deprivations

- Clean Cooking Fuel: 970 million lack access.
- Adequate Housing: 878 million deprived.
- Sanitation: 830 million lack proper sanitation.
- Undernutrition: 635 million live in undernourished households.
- Education: 581 million live where no one has completed six years of schooling.



Global Hunger Index (GHI) 2025

Context: The 2025 Global Hunger Index (GHI) report titled "20 Years of Tracking Progress: Time to Recommit to Zero Hunger" highlights slow progress toward achieving SDG 2 – Zero Hunger by 2030.



Key Global Findings

- Global GHI Score (2025): 18.3, only a slight improvement from 19.0 (2016) — hunger remains in the "moderate" category.
- Warning: At the current pace, 56 countries will fail to reach the low hunger threshold by 2030.
- Countries with Worsening Hunger: Fiji, Jordan, Libya, Solomon Islands, and Syria have higher hunger levels than in 2000.

India's Status

- Rank: 102 out of 123 countries.
- GHI Score: 25.8, showing gradual improvement but still in the "serious" category.
- Undernourishment: 172 million people undernourished — 13.5 million more than in 2016.
- Child Stunting: Around 1 in 3 children are stunted — declining but still alarming.
- Child Wasting: Slightly improved but continues to be extremely alarming.

About the Global Hunger Index

- Published by: Concern Worldwide and Welthungerhilfe (annual, peer-reviewed).
- Purpose: Tracks and compares hunger levels globally, regionally, and nationally.
- Goal: To encourage policy action, ensure accountability, and advance efforts toward Zero Hunger (SDG 2).

South Atlantic Anomaly (SAA)

Context:Data from the European Space Agency's Swarm Mission reveals that the South Atlantic Anomaly (SAA) — the weakest region of Earth's magnetic field — has expanded by about 0.9% since 2014.

What Are Magnetic Weak Spots?

- Regions where Earth's magnetic field strength is lower than average.
- Caused by uneven motion of molten iron in the outer core, which distorts the magnetic field.
- Influenced by core-mantle variations (temperature and density differences) and magnetic pole shifts.

About the South Atlantic Anomaly (SAA)

- Location: Extends from South America to southern Africa.
- Cause: Misalignment between Earth's magnetic and rotational axes, and irregularities in the core-mantle structure beneath the South Atlantic.
- Effect: Allows charged solar particles to penetrate deeper into the atmosphere, leading to satellite and spacecraft disruptions (e.g., Hubble Telescope).

The Geodynamo Process

- Source: Generated in the outer core, made of molten iron and nickel.
- Mechanism: Convection currents and Earth's rotation create electric currents, forming the magnetic field.
- Purpose: Extends outward as the magnetosphere, shielding Earth from solar and cosmic radiation.

ESA's Swarm Mission

- Launched by: European Space Agency (ESA) in 2013.
- Satellites: Three — Swarm A, B, and C.
- Objective: To provide precise data on the strength and direction of Earth's magnetic field and understand the geodynamo process.

Effects of Magnetic Weak Spots

- Higher Radiation Exposure – Allows solar particles to reach deeper atmospheric layers.
- Satellite Damage – Disrupts electronics, weakens solar panels, and corrupts data.
- Navigation Errors – Minor disturbances in compass and geomagnetic systems.
- Radio Disruptions – Increased ionization affects radio communication.

Natural Gas Discovered in Andaman Basin

Context: India has discovered natural gas reserves in the Andaman Basin, as announced by the Union Petroleum Minister. This confirms earlier geological assessments suggesting the region's hydrocarbon potential.

About Natural Gas

- **Type: Cleanest-burning fossil fuel used for power generation, industry, transport, and domestic purposes.**
- **Formation: Produced from decayed organic matter under heat and pressure over millions of years within sedimentary rocks.**
- **Composition: Mainly methane (CH_4) with traces of ethane, propane, butane, and CO_2.**

Natural Gas Sources in India

1. **Onshore Fields – Located on land in Assam, Rajasthan, Gujarat, and Tripura.**
2. **Offshore Fields – Found beneath the seabed, major sites include Mumbai High, Krishna-Godavari (KG) Basin, and now the Andaman Basin.**
3. **Coal Bed Methane (CBM) – Methane trapped in coal seams; key reserves in West Bengal, Madhya Pradesh, and Jharkhand.**

Production Highlights (2021–22)

- **Total Output: 34,024 MMSCM**
- **Offshore Production: 22,869 MMSCM**
- **Onshore Production: 11,155 MMSCM**
- **Top Producing States:**
  a. **Assam – 3,371 MMSCM**
  b. **Rajasthan – 2,619 MMSCM**
  c. **Tripura – 1,531 MMSCM**
  d. **Tamil Nadu – 1,067 MMSCM**

Drug Safety Concerns in India

Context: Recent deaths of children after consuming contaminated Coldrif cough syrup have highlighted serious lapses in India's drug safety and regulatory oversight.

Incident Overview

- **At least 20 children (mostly under 5 years) died after consuming the syrup.**
- **Tests found 48% diethylene glycol (DEG) — 480 times above the permissible limit (0.1%).**
- **Diethylene Glycol (DEG): A colorless, odorless industrial solvent, not approved for pharmaceutical use, and toxic even in small doses.**

Key Issues in Drug Safety

1. Regulatory Challenges
- India follows a dual control system:
  - CDSCO – formulates national policy.
  - State Drug Controllers – handle local enforcement.
- This causes fragmented implementation, inconsistent inspections, and weak coordination between agencies.

2. Weak GMP Compliance
- Many pharma units operate without registration under the revised Good Manufacturing Practices (GMP) – Schedule M norms.
- Repeated government extensions delay compliance.

3. Poor Infrastructure
- A 2023 review found nearly half of state drug labs lacked proper equipment or trained analysts.
- Outdated labs cannot reliably detect toxic solvents like DEG and ethylene glycol (EG).
- Lack of financial support hinders modernization of facilities.

4. Manufacturing & Supply Chain Gaps
- Raw materials often untested, allowing contaminated inputs.
- Poor equipment cleaning causes cross-batch contamination.
- Cost-cutting practices lead to the use of cheaper, non-pharma grade chemicals.

5. Weak Pharmacovigilance
- Inadequate post-marketing surveillance and reporting of adverse drug effects.
- No robust, real-time system for tracking unsafe drugs nationwide.

Broader Implications

1. Legal and Constitutional
- Article 21 (Right to Life) includes access to safe medicines.
- Failure to ensure drug safety = violation of fundamental rights.

2. Global Reputation
- India's image as the "Pharmacy of the World" faces risk.
- Earlier incidents (Gambia, Uzbekistan) already prompted WHO warnings.
- Could hurt exports to Africa and Latin America.

3. Economic Impact
- Pharma sector (≈2% of GDP) could suffer financial losses and stricter scrutiny.
- Small firms may struggle to bear compliance costs.

4. Public Confidence
- Erodes trust in healthcare and vaccine uptake.
- Parents may avoid timely medical care for children, worsening health outcomes.

Way Forward
- Unified National Regulator: Establish a centralized drug authority with harmonized standards, a real-time inspection database, and uniform enforcement.
- Enforce Revised GMP (Schedule M): Mandatory compliance with updated norms ensuring data integrity and quality risk management.

- Risk-Based Surprise Inspections: Conduct unannounced audits to deter malpractice.
- Swift Prosecution & Penalties: Fast-track legal action against violators; include criminal liability and license cancellation.
- Real-Time Pharmacovigilance: Create a national adverse drug event reporting system linking hospitals, pharmacies, and regulators.
- Adopt Global Standards: Align with WHO, PIC/S, and international testing protocols.
- Upgrade Testing Infrastructure: Equip labs with modern instruments and trained analysts to detect contaminants.
- Public Awareness: Educate parents and doctors on safe pediatric medication; discourage irrational cough syrup use in children under five.

Conclusion: To restore trust and prevent further tragedies, India must shift from reactive regulation to preventive, technology-driven oversight. Protecting citizens from unsafe medicines is not only a public health imperative but also essential to preserve India's global pharmaceutical credibility.

20 Years of the Right to Information (RTI) Act

Context: On October 12, 2025, India marked 20 years of the Right to Information (RTI) Act. A study by Satark Nagrik Sangathan (SNS) reviewed the performance of Information Commissions across India.

About RTI Act, 2005

- Enactment: Passed in June 2005; implemented on October 12, 2005.
- Purpose: Empowers citizens to seek information from public authorities to promote transparency and accountability.
- Nodal Agency: Ministry of Personnel, Public Grievances, and Pensions.
- Scope: Covers all public authorities at Union, State, and local levels.
- Timelines: Information must be provided within 30 days (or 48 hours for life and liberty matters).
- Exemptions (Section 8): Information related to national security, foreign relations, personal privacy, or trade secrets is exempt.
- Section 22: RTI overrides any conflicting laws.

Key Amendments

- RTI (Amendment) Act, 2019:
  - Gave the Central Government power to decide tenure, salary, and service conditions of the Chief and State Information Commissioners, raising concerns over their independence.
- Digital Personal Data Protection (DPDP) Act, 2023:
  - Amended Section 8(1) to exempt personal information from disclosure unless public interest demands it.

Significance

- Promotes transparency and accountability in governance.
- Enables citizen participation and strengthens democracy.
- Acts as a tool to combat corruption and monitor implementation of schemes.
- Supports freedom of speech under Article 19(1)(a).

Challenges

- Vacancies & Backlogs:
  - Several State Commissions (e.g., Jharkhand, Telangana, Goa) are defunct.
  - Over 2.4 lakh cases pending (as of mid-2025).
- Weak Oversight:
  - 20 out of 29 commissions didn't publish annual reports for 2023–24.
  - Penalties rarely imposed on erring officials.
- Operational Issues:
  - Delay in responses due to heavy workload and poor record management.
- Safety Concerns:
  - RTI activists face harassment and violence; whistleblower protection remains weak.
- Bureaucratic Resistance:
  - Officials often avoid disclosure; political parties still non-compliant.
- Gender Gap:
  - Only 9% of commissioners since 2005 have been women.

Way Forward

- Fill vacancies in CICs/SICs to reduce pendency.
- Enforce proactive disclosures under Section 4.
- Ensure timely annual reports and impose penalties for non-compliance.
- Strengthen whistleblower protection and ensure activists' safety.
- Digitize records and train Public Information Officers (PIOs).
- Ensure independence of Information Commissions through transparent appointments and reduced executive control.

Conclusion -The RTI Act remains a powerful tool for transparency and accountability in India's democracy. However, its effectiveness depends on political will, institutional independence, and protection of citizens' right to know.

Habeas Corpus Petition

Context: A habeas corpus petition has been filed in the Supreme Court seeking the release of Sonam Wangchuk, who has been placed under preventive detention under the National Security Act (NSA), 1980.

About the National Security Act (NSA), 1980

- Empowering Provision: Section 3 allows the Centre or States to detain individuals whose actions are considered a threat to public order, national security, foreign relations, or essential supplies.
- Duration: Preventive detention can last up to 12 months without formal charges, with periodic review.
- Judicial View: The Supreme Court has termed preventive detention a "drastic measure" that restricts the right to personal liberty (Article 21).
- Judicial Review: Courts examine whether the detention is based on relevant facts, free from arbitrariness or malice.
- Key Principle: Preventive detention should not be used as a punitive tool but only to prevent future threats.

Habeas Corpus – The Constitutional Remedy

- Meaning: Literally means "to have the body of." It directs authorities to produce a detained person before the court to examine the legality of detention.
- Constitutional Basis:
  - Article 32: Supreme Court
  - Article 226: High Courts
- Purpose: Protects individuals from illegal or arbitrary detention, ensuring that no person is deprived of liberty without due process.
- Applicability: Can be issued against both public and private authorities detaining someone unlawfully.

Essence: The writ of Habeas Corpus stands as one of the strongest constitutional safeguards for personal liberty, ensuring that state power remains accountable to the rule of law.

Armed Forces (Special Powers) Act (AFSPA), 1958

Context: The Ministry of Home Affairs has extended AFSPA in parts of Manipur, Nagaland, and Arunachal Pradesh for another six months.

About AFSPA

- Purpose: Empowers the armed forces to maintain public order in areas declared as "disturbed."
- Origin: Enacted in 1958 to address insurgency in the Naga Hills and later extended to other northeastern states.

When is AFSPA Imposed?

- "Disturbed Area" Declaration:
  - Under Section 3, areas can be declared disturbed by the State or Central Government.
  - Such a declaration is made when local authorities require the armed forces' assistance to control law and order.
  - The status must remain for at least three months under the Disturbed Areas (Special Courts) Act, 1976.

Special Powers Granted to Armed Forces

- Can prohibit public gatherings of five or more persons.
- May use force or open fire after due warning in case of law violations.
- Can arrest without a warrant on reasonable suspicion.
- May search premises without a warrant and seize weapons.
- Must hand over arrested persons to the nearest police station with a written report.

Legal Protection

- Immunity Clause: Security personnel cannot be prosecuted for actions under AFSPA without prior sanction from the Central Government.

Significance vs. Concerns

- Supporters argue it ensures security in insurgency-hit regions.
- Critics highlight misuse and human rights violations, demanding review or repeal.

Essence: AFSPA remains one of India's most debated security laws—balancing the need for national security with protection of civil liberties.

Maitri II: India's New Antarctic Research Station

Context: The Finance Ministry has approved the establishment of Maitri II, India's upcoming Antarctic research station.

About Maitri II

- Purpose: Strengthen India's long-term scientific presence in Antarctica and promote research in climate science, glaciology, oceanography, geology, and meteorology.
- Timeline & Cost: To be completed by January 2029 with an estimated cost of ₹2,000 crore.
- Location: Eastern Antarctica.
- Nodal Agency: National Centre for Polar and Ocean Research (NCPOR), Goa, under the Ministry of Earth Sciences (MoES).
- Significance: Will be India's fourth Antarctic research base after Dakshin Gangotri, Maitri, and Bharati (2013).

About Maitri (Existing Station)

- Operational Since: 1989, replacing India's first base, Dakshin Gangotri.
- Location: Schirmacher Oasis, East Antarctica, about 100 km inland.
- Key Contributions: Major studies in atmospheric science, seismology, and glaciology, enhancing India's polar research profile.
- Future Role: After Maitri II becomes operational, Maitri will function as a seasonal summer camp for short-term scientific and logistical missions.

Essence: Maitri II reflects India's expanding commitment to polar science and climate research, cementing its role as a key player in Antarctic exploration and global environmental studies.

Article 304: Interstate Trade & Commerce

Context: The Supreme Court struck down a 2007 Rajasthan government notification that exempted VAT on locally made asbestos sheets and bricks but taxed those from other states. The Court held it discriminatory under Article 304(a) of the Constitution.

Constitutional Provisions

- Article 301: Ensures freedom of trade, commerce, and intercourse across India to maintain economic unity.
- Article 304(a): States can tax goods from other states only if similar local goods are taxed equally.
- Article 304(b): States may impose reasonable restrictions on trade in public interest, with President's prior approval.

Supreme Court's Key Observations

- No Tax Bias: States cannot use taxes to protect local industries or discriminate against goods from other states.
- Equal Treatment: Taxation is valid only when both local and outside goods bear equal tax burdens.
- Permissible Exceptions: Temporary incentives for backward regions aimed at economic development are not considered discriminatory.

Essence: The verdict reinforces economic federalism and the constitutional guarantee of free trade across India's states.

22nd ASEAN-India Summit

Context: The Prime Minister of India participated virtually in the 22nd ASEAN-India Summit held in Kuala Lumpur, Malaysia. The meeting reviewed the ASEAN-India Comprehensive Strategic Partnership and adopted the Plan of Action (2026-2030) to strengthen future cooperation.
Theme (2025): "Inclusivity and Sustainability"

Key Highlights

- Maritime Cooperation:
  - 2026 declared as the ASEAN-India Year of Maritime Cooperation.
  - India proposed the Second ASEAN-India Defence Ministers' Meeting and Maritime Exercise.
  - Announced East Asia Summit Maritime Heritage Festival at Lothal, Gujarat.

- Economic Cooperation:
  - India emphasized an early review of the ASEAN-India Trade in Goods Agreement (AITIGA) to unlock trade potential.
  - ASEAN-India trade stands at USD 130 billion, with ASEAN accounting for 9.9% of India's total trade.
- Sustainable Development:
  - Adoption of ASEAN-India Joint Leaders' Statement on Sustainable Tourism.
  - India extended Quick Impact Projects (QIPs) to Timor-Leste and offered training in renewable energy.
- Education & Technology:
  - Proposal for a Centre for Southeast Asian Studies at Nalanda University.
  - Cooperation to expand in science, fintech, semiconductors, and critical minerals.
- Security & Humanitarian Cooperation:
  - India reaffirmed unity against terrorism and its role as a First Responder in disaster relief and HADR operations.

20th East Asia Summit (EAS) 2025

- Adopted the Kuala Lumpur Declaration on Peace and Stability.
- Focused on regional trust, transparency, and security cooperation.
- India, represented by EAM Dr. S. Jaishankar, emphasized a free and inclusive Indo-Pacific.

Significance of ASEAN-India Relations

- Economic: ASEAN is India's fourth-largest trading partner; Singapore is the top ASEAN investor in India.
- Strategic: Key partner in countering China's influence and advancing India's Act East Policy.
- Connectivity: Projects like the India-Myanmar-Thailand Highway and Kaladan Transport Project enhance regional linkages.
- Defence: Collaboration through ASEAN Defence Ministers' Meeting Plus (ADMM+) and joint maritime drills.

Challenges

- Trade Imbalance: India's deficit with ASEAN has grown from $9.6 bn (2016-17) to $45.2 bn (2023-24).
- Tariff Barriers & Misuse of FTA: Strict rules of origin allow Chinese goods to enter via ASEAN routes.
- Delayed Connectivity Projects and limited market access for Indian goods.
- China Factor: ASEAN's mixed stance on India's strategic balancing efforts.

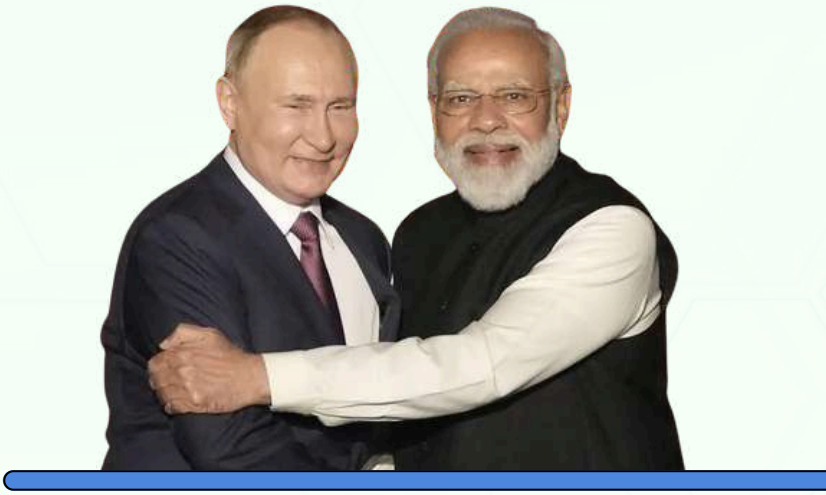
Way Forward

- Review AIFTA to correct trade imbalances and ensure fair market access.
- Accelerate connectivity projects aligned with ASEAN's Master Plan 2025.
- Boost manufacturing & semiconductor diplomacy with ASEAN partners.
- Deepen cultural and educational exchanges to strengthen people-to-people ties.

Conclusion: The 22nd ASEAN-India Summit marks a new chapter in regional cooperation focused on maritime security, sustainability, and economic balance, aligning with India's vision of a free, inclusive, and prosperous Indo-Pacific.

25 Years of India–Russia Strategic Partnership

Context: India and Russia marked 25 years of their Strategic Partnership, established in 2000, reflecting a long-standing relationship based on trust, defence, and energy cooperation.



Evolution of the Partnership

- 2000: India–Russia Strategic Partnership signed, transforming ties into a comprehensive post–Cold War relationship.
- 2010: Upgraded to a Special and Privileged Strategic Partnership.
- 2025: The partnership continues to demonstrate resilience and strategic endurance.

Key Pillars of Cooperation

1. Defence and Security:
   - Cornerstone of the partnership.
   - Russia remains India's largest defence supplier, though its share has declined from 72% (2010–14) to 36% recently.
   - Focus shifting toward joint production and technology transfer under Atmanirbhar Bharat.
2. Energy Partnership:
   - Russia is a major source of crude oil, coal, and nuclear energy.
   - Kudankulam Nuclear Power Project (Tamil Nadu) is a flagship civil nuclear collaboration.
   - Russia supplies 35–40% of India's crude oil.
3. Trade and Economic Ties:
   - Bilateral trade reached USD 65.7 billion (2023–24), driven by oil and fertilizers.
   - Target: USD 100 billion by 2030.
   - Connectivity projects: International North–South Transport Corridor (INSTC) and Chennai–Vladivostok Maritime Corridor (CVMC) to cut costs and boost logistics.
4. Multilateral Coordination:
   - Strong cooperation in UN, G20, SCO, and BRICS.
   - Russia supports India's bid for a permanent UNSC seat.
5. Science, Technology, and Space:
   - Collaboration in research, space, and innovation.
   - Russian assistance in astronaut training for Gaganyaan Mission.
6. Cultural and People-to-People Links:
   - Educational exchanges, tourism, and cultural events like Days of Russian Culture in India and Namaste India in Russia strengthen ties.

Key Achievements

- Trade Resilience: Sustained growth despite sanctions through rupee-ruble payment systems.
- Energy Security: Russia emerged as India's top oil supplier by 2024.
- Defence Modernisation: Shift from pure imports to co-production and technology sharing.
- Innovation Partnership: Establishment of joint R&D labs and space cooperation initiatives.

Challenges

- Sanctions and Payment Barriers: Financial restrictions complicate rupee-ruble settlements.
- Trade Imbalance: Imports outweigh exports by over USD 50 billion (FY 2024).
- Delayed Defence Deliveries: Example – S-400 systems delayed till 2026-27.
- China Factor: Russia's growing closeness with China affects India's strategic balance.
- Logistical and Infrastructure Gaps: Slow progress on INSTC and CVMC corridors.

Way Forward

- Conclude India-EAEU Free Trade Agreement (FTA): To enhance trade and market access.
- Expand Joint R&D: Focus on AI, semiconductors, and green energy.
- Strengthen Payment Systems: Integrate UPI with Russia's MIR for seamless transactions.
- Boost Connectivity: Accelerate INSTC and CVMC to reduce freight costs.
- Far East & Arctic Cooperation: Promote joint ventures in energy, mining, and workforce development.
- Cultural Diplomacy: Set up an IIT campus in Russia and revive academic exchanges.
- Balanced Foreign Policy: Maintain strategic autonomy while engaging both Russia and Western partners.

Conclusion: The 25th anniversary highlights a trusted and adaptive partnership rooted in mutual respect and strategic balance. It reinforces India's pursuit of sovereignty, self-reliance, energy security, and global stability, making the India-Russia bond a pillar of its foreign policy.

South-South and Triangular Cooperation (SSTC)

Context: India hosted 20 Global South nations on the sidelines of UNGA 2025, emphasizing unity and stronger cooperation as global multilateralism weakens.

About SSTC

South–South Cooperation (SSC):

- Collaboration among developing (Global South) nations through exchange of knowledge, skills, and technology.
- Conducted via bilateral, regional, or interregional partnerships involving governments, academia, and civil society.
- Based on equality and respect for sovereignty—not a substitute but complementary to North–South cooperation.

Triangular Cooperation (TrC):

- Southern-led projects supported by developed countries or multilateral organizations (e.g., UNDP).
- Aims to provide financial, technical, and institutional support to SSC.
- Must remain Southern-owned and led.

Key Challenges

- Financing Gap: Limited and fragmented funding; UNCTAD estimates a $4 trillion annual shortfall for developing countries to meet SDGs.
- Weak Institutions: No strong global body to coordinate or evaluate SSC; accountability remains poor.
- Geopolitical Rivalries: Competing models — India's demand-driven approach vs China's BRI loans ($800B–$1T).
- Climate & Development Stress: Global South faces high climate risks despite low emissions (Africa <4% of global CO_2).
- Digital Divide: Uneven digital capacity — 2.6 billion people still offline (ITU, 2023).
- Eroding Multilateralism: Funding cuts to UN bodies weakening global cooperation.
- Resource Dependence: China dominates refining of key minerals—up to 90% of rare earths.
- Limited Global Voice: Global South forms 85% of the world's population but has no permanent UNSC seat.
- Internal Divisions: Economic and political disparities hinder collective advocacy (e.g., differing UN votes).

Way Forward

- Bridge Funding Gaps: Strengthen South-led finance mechanisms (India-UN Fund, BRICS Bank, AIIB); promote green and blended finance.
- Institutional Reforms: Empower UNOSSC with better monitoring and transparency; make the Voice of Global South Summit an annual event.
- Technology Sharing: Replicate India's Digital Public Infrastructure (UPI, Aadhaar, CoWIN) across partner nations; expand South-South Galaxy for tech collaboration.
- Global Governance Reform: Push for UNSC, IMF, and WTO reforms to ensure fair representation and resources for the Global South.
- Unity Through Coalitions: Form issue-based alliances on climate, debt, and technology transfer even amid political differences.

- Transparent Development Models: Promote demand-driven and debt-free partnerships as alternatives to BRI.
- Climate & Food Security Leadership: Expand India's climate-resilient agriculture and nutrition initiatives; diversify critical mineral supply chains.

Institutional Framework

United Nations Office for South–South Cooperation (UNOSSC):
- Established: 1974
- Role: UN's nodal body to promote, coordinate, and support SSTC and implement Buenos Aires Plan of Action (BAPA, 1978).

South–South Galaxy (2019):
- A digital platform by UNOSSC & UNDP to connect and share best practices among Global South nations.

Conclusion: SSTC is emerging as a pillar of inclusive global development, aligned with India's vision of Vasudhaiva Kutumbakam ("One Earth, One Family, One Future").
India's digital, developmental, and financial models position it as a key driver of the Global South's transformation toward achieving the 2030 Agenda.

India Elected to UN Human Rights Council

Context: India has been elected unopposed to the UN Human Rights Council (HRC) for a three-year term (2026–28) — its seventh term since the Council's creation in 2006.

About the UN Human Rights Council (HRC):
- Established: 2006 by UN General Assembly Resolution 60/251, replacing the Commission on Human Rights.
- Headquarters: Geneva, Switzerland.
- Mandate: Promote and protect human rights worldwide, address violations, and make recommendations.
- Support: Assisted by the Office of the UN High Commissioner for Human Rights (OHCHR).
- Membership:
  - Total Members: 47 states elected by the UN General Assembly for three-year terms.
  - Regional Distribution: Africa – 13, Asia-Pacific – 13, Latin America & Caribbean – 8, Western Europe – 7, Eastern Europe – 6.
  - Election: Through direct and secret ballot, based on members' contribution to human rights.
  - Term Limit: Maximum of two consecutive terms.

New Sevilla Forum on Debt

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

About UNCTAD:

- Established: 1964 as a permanent UN body to promote inclusive and sustainable trade and development, especially for developing countries.
- UNCTAD 16: Held in Geneva from October 20–23, 2025.
- Theme: "Shaping the Future: Driving Economic Transformation for Equitable, Inclusive, and Sustainable Development."

About the Sevilla Forum on Debt:

- Initiative: Led by Spain with support from UNCTAD and UN DESA.
- Objective: To create an open platform for dialogue and action on sovereign debt reform.
- Participants: Includes developed and developing nations, creditors, global institutions, civil society, and academia.
- Function: Monitors the implementation of the Sevilla Commitment adopted at the 2025 Fourth International Conference on Financing for Development (FfD4) — aimed at reforming global finance, empowering borrower nations, and promoting responsible lending.

Global Debt Scenario:

- Total public debt reached $102 trillion in 2024, with developing countries owing $31 trillion and paying $921 billion in interest.

Securities Transaction Tax (STT)

Context: The Supreme Court has agreed to hear a petition questioning the constitutional validity of the Securities Transaction Tax (STT), introduced under the Finance Act, 2004.

About STT:

- Nature: A direct tax on the value of taxable securities transactions made through recognised stock exchanges in India.
- Legal Basis: Securities Transaction Tax Act, 2004 — administered by the Central Board of Direct Taxes (CBDT) under the Ministry of Finance.
- Applicability: Levied on the purchase and sale of shares, derivatives, and equity-oriented mutual funds.
- Objective: To reduce tax evasion in capital markets and simplify tax collection on securities trades.

Grounds for Constitutional Challenge:

- Violation of Rights: Alleged breach of
  - Article 14 – Right to Equality,
  - Article 19(1)(g) – Freedom of Trade/Profession, and
  - Article 21 – Right to Livelihood.
- Tax on Profession: Petitioners argue that STT unfairly taxes the act of trading itself, irrespective of profit or loss.
- Double Taxation: Since traders already pay capital gains tax, an additional STT is viewed as duplication of tax.
- No Refund Mechanism: STT is non-refundable even when trades result in losses, making it arbitrary and inequitable.

Finance Industry Development Council (FIDC)

Context: The Reserve Bank of India (RBI) has granted Self-Regulatory Organisation (SRO) status to the Finance Industry Development Council (FIDC).

About Self-Regulatory Organisation (SRO):

- An SRO is an industry-led body recognised by a regulator (like RBI) to oversee the conduct of entities within a specific sector.
- It serves as a link between the regulator and industry participants, ensuring ethical practices, compliance, and smooth coordination.

Eligibility Criteria for SRO Recognition:

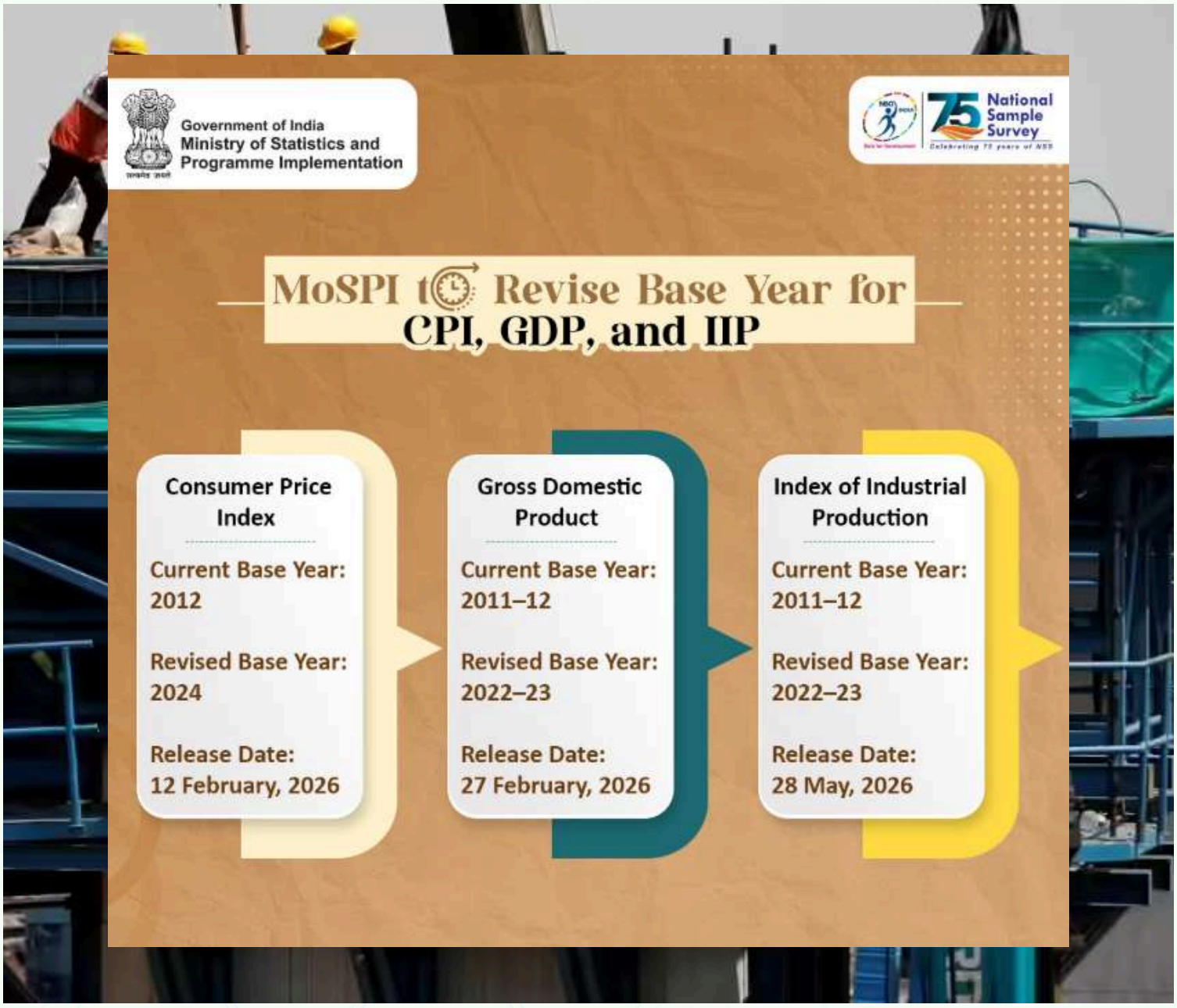
- Must be a Section 8 (Not-for-Profit) Company under the Companies Act, 2013.
- Should have adequate net worth and infrastructure to carry out regulatory duties.
- Must represent the sector comprehensively and meet membership requirements.
- Fit and Proper Criteria: Directors/promoters should have integrity, competence, and financial soundness, with no criminal/legal proceedings.

About Finance Industry Development Council (FIDC):

- Nature: Representative body of Non-Banking Finance Companies (NBFCs) in India.
- Recognition: Granted "In-Principle Recognition" by the RBI as an SRO for NBFCs and Asset Managers (AMs).
- Role: Serves as the collective voice of the NBFC sector, liaising with regulators, policymakers, and financial institutions.
- Membership: Represents NBFCs across all regulatory layers of the RBI framework.
- Mission:
  - Promote the growth and development of India's NBFC sector.
  - Encourage self-regulation, compliance, transparency, and good governance within the industry.

All India Index of Industrial Production (IIP) Revision

Context: The government is revising the base year of the Index of Industrial Production (IIP) to 2022–23, aligning it with the latest GDP base year to better reflect structural and technological shifts in India's industry.



About IIP:

- The IIP is a monthly indicator that measures changes in the volume of production across various industrial sectors.
- It covers Mining & Quarrying, Manufacturing, Electricity, Gas, Water Supply, and Waste Management, following global IRIIP guidelines.
- The data helps in estimating quarterly GVA and guides policy decisions and research.

About the All-India IIP:

- Tracks the overall industrial output across the country.
- Compiled by: Central Statistics Office (CSO) under the Ministry of Statistics and Programme Implementation (MoSPI).

About the Base Year:

- The base year is the reference point against which current output is compared.
- India has revised the IIP base nine times since 1937, the latest aligning with 2022–23.
- The first IIP was compiled in 1937 for 15 major industries, and since 1950, it has been published monthly.

Need for Revision:

- Industrial structures and technologies evolve rapidly, making older bases outdated.
- Revising the base helps:
  - Capture new and emerging products,
  - Remove obsolete items, and
  - Reflect changing sectoral weights and market dynamics for a more accurate measure of industrial growth.

LEAPS 2025 (Logistics Excellence, Advancement, and Performance Shield)

Context: The Union Commerce and Industry Minister launched LEAPS 2025 at Bharat Mandapam, New Delhi, marking the 4th anniversary of PM GatiShakti.

About LEAPS 2025:

- A flagship initiative by the Department for Promotion of Industry and Internal Trade (DPIIT) under the Ministry of Commerce and Industry.
- Aims to benchmark logistics excellence and boost India's global supply chain competitiveness.
- Aligned with the goals of the National Logistics Policy (NLP) and PM GatiShakti.

Objectives:

- Recognize and reward best practices, innovation, and leadership in logistics.
- Promote efficiency, transparency, and resilience through collaboration between government, industry, and academia.

Coverage and Categories:

- Involves logistics players from air, road, rail, and sea, along with warehousing, MSMEs, startups, and educational institutions.
- Awards are given across 13 categories under five segments:
  - Core Logistics: Air, Road, Rail, Maritime, Multimodal, and Warehouse.
  - MSMEs and Startups in logistics.
  - Institutions: Promoting logistics education.
  - Special Categories: E-commerce logistics and 3PL providers.

Sustainability Focus:

- Highlights Green Logistics, ESG practices, and innovation, supporting India's vision of Atmanirbhar Bharat and Viksit Bharat 2047.

State Mining Readiness Index (SMRI)

Context: The Ministry of Mines has launched the State Mining Readiness Index (SMRI) — India's first framework to evaluate States' preparedness in the mining sector.

About SMRI:

- Published by: Ministry of Mines
- Objective:
  - Promote transparency, accountability, and efficiency in mining governance.
  - Assess non-coal mineral development and encourage reforms at the State level.

Key Indicators:

- Auction Performance: Success and efficiency in mineral block auctions.
- Early Mine Operationalisation: Speed of making auctioned mines functional.
- Exploration Thrust: Investments in geological mapping and exploration.
- Sustainable Mining: Compliance with ESG (Environmental, Social, and Governance) standards.

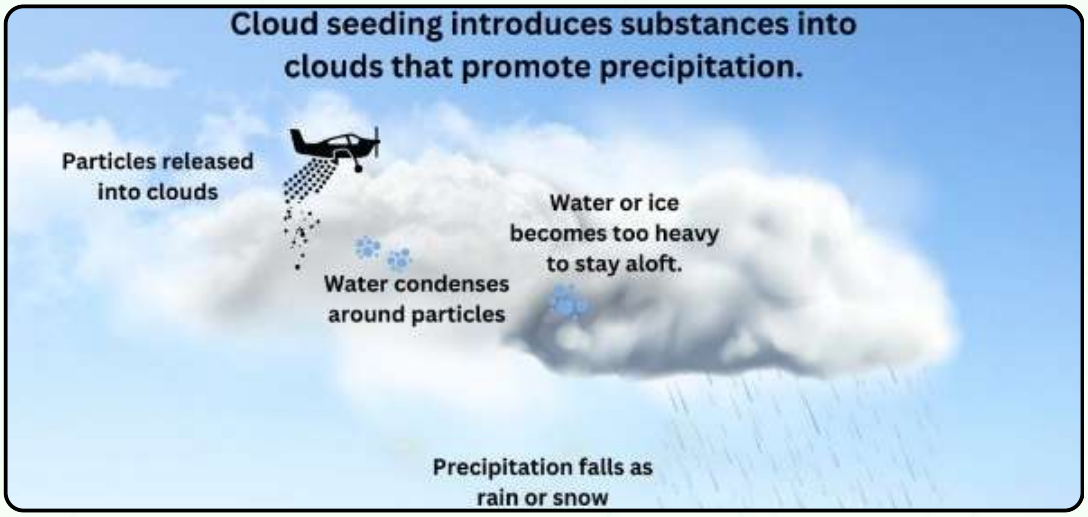
Categorisation of States:
States are grouped based on their mineral endowment:

- Category A (High): Madhya Pradesh (1st), Rajasthan (2nd), Gujarat (3rd)
- Category B (Medium): Goa (1st), Uttar Pradesh (2nd), Assam (3rd)
- Category C (Low): Punjab (1st), Uttarakhand (2nd), Tripura (3rd)

Significance: SMRI serves as a benchmark for mining performance, helping States improve governance, attract investment, and adopt sustainable mining practices.

Cloud-Seeding in Delhi

Context: The Delhi government, in partnership with IIT Kanpur, carried out cloud-seeding trials to induce artificial rain and reduce air pollution levels in the city.



What is Cloud Seeding?
-Cloud seeding is a weather modification technique used to enhance rainfall by dispersing substances into clouds that act as condensation or ice nuclei.
Objective: To trigger rainfall in moisture-laden clouds and improve air quality by washing out pollutants.

How It Works:

1. Cloud Selection: Moisture-rich clouds (mainly cumulus) are identified using weather data.
2. Seeding Agents:
   - Silver Iodide (AgI), Sodium Chloride (NaCl), Potassium Iodide (KI), or Dry Ice (CO_2).
   - These help water vapour condense or freeze into droplets or crystals.
3. Dispersal Methods:
   - Aerial: Chemicals released via aircraft or drones.
   - Ground-Based: Generators or rockets release particles from the surface.
4. Rain Formation: Water droplets grow, become heavy, and fall as rain or snow.

Benefits:

- Air Pollution Reduction: Artificial rain removes dust, smoke, and PM2.5 from the atmosphere.
- Temporary Cooling: Reduces temperature and dryness.
- Supports Groundwater & Agriculture.
- Helps Control Forest Fires.

Limitations:

- Works only if clouds are moisture-laden — cannot create rain from clear skies.
- Short-term effect on pollution (lasts a few days).
- Rainfall increase is limited (~10–20%).
- Environmental concerns over chemical residues (like silver iodide).
- High operational cost and uncertain outcomes.

Past Cloud-Seeding Efforts in India:

- Project: CAIPEEX (Cloud Aerosol Interaction and Precipitation Enhancement Experiment)*
  - Conducted by Ministry of Earth Sciences (MoES) from 2009–2019.
  - Locations: Southern India (e.g., Solapur, Maharashtra).
  - Results: Rainfall increase up to 46% in specific areas; led to national cloud-seeding guidelines.

Seasonal Challenges:

- The post-monsoon season (Oct–Dec) has dry conditions with weak moisture systems.
- Lack of mature clouds limits the success of cloud-seeding in Delhi during this period.

Great Nicobar Island Project

Context: The Great Nicobar Island (GNI) Project has raised concerns over its impact on ecology, tribal rights, and compliance with the Forest Rights Act (FRA), 2006.

About the Project - A multi-component mega infrastructure plan to turn Great Nicobar into a strategic, trade, and defence hub in the Indian Ocean.

- Implementing Agency: Andaman and Nicobar Islands Integrated Development Corporation Ltd (ANIIDCO).
- Timeline: 2024–2050 (Phased development).
- Regulatory Framework: EIA Notification (2006) and Shompen Policy (2015) to protect the indigenous Shompen tribe.

Key Components

1. International Container Transshipment Terminal (ICTT):
   - Capacity: 14.2 million TEUs.
   - Aim: Reduce dependence on foreign ports like Colombo and Singapore.
2. Greenfield International Airport: Boosts tourism and defence mobility.
3. 450 MVA Gas + Solar Power Plant: Sustainable energy mix for continuous power supply.
4. Integrated Township: 16,000+ hectares for ~65,000 residents and workers.

Significance

- Strategic Importance: Located near the Malacca Strait, a crucial trade route for global energy and cargo movement.
- Economic Impact: Supports the Sagarmala initiative; promotes India as a regional logistics hub.
- Defence Value: Strengthens India's presence in the eastern Indian Ocean.
- Regional Diplomacy: Enhances India's influence in the Bay of Bengal and BIMSTEC region.

Major Concerns

1. Ecological Impact
   - GNI is a biodiversity hotspot with coral reefs, mangroves, and nesting sites for the giant leatherback turtle (Galathea Bay).
   - Risk to UNESCO Biosphere Reserve and potential World Heritage status.
2. Tribal and Legal Issues
   - Shompen Tribe (PVTG): ~300–400 members face risk of displacement from ancestral lands.
   - FRA Violations:
     - Incomplete recognition of community forest rights.
     - Alleged lack of genuine Gram Sabha consent.
   - High risk of disease exposure due to isolation.
3. Governance Concerns
   - ANIIDCO lacks prior experience in large-scale projects.
   - Conflict of Interest: Same officials oversee both project implementation and environmental approvals.
   - Questions over transparency and independent oversight.

Bio-cultural Rights

- Collective rights of indigenous communities to protect their natural ecosystems and cultural heritage.
- Recognized globally (e.g., Colombia, 2016) to ensure sustainable coexistence between people and nature.

Way Forward

- Ensure FRA Compliance: Revisit Gram Sabha consultations and settle community rights before land diversion.
- Independent Environmental Oversight: Create an external monitoring body with biodiversity experts.
- Strengthen ANIIDCO: Add professionals in ecology, urban planning, and tribal welfare.
- Tribal Safeguards: Guarantee no forced displacement; include tribal advisory councils.
- Adopt 'Earth Jurisprudence': Give nature legal rights, as seen in countries like Ecuador, Bolivia, and New Zealand.

IUCN World Conservation Congress 2025

Context: The IUCN World Conservation Congress 2025, held in Abu Dhabi, UAE, concluded with key global commitments to address biodiversity loss, climate change, and environmental crime.

Key Outcomes

1. Abu Dhabi Call to Action
   - A 20-year vision document outlining IUCN's global conservation roadmap.
   - Focus areas:
     - Climate resilience and adaptation
     - Biodiversity restoration
     - Nature-positive innovation and technology
   - Includes a 4-year action plan for implementation and country-level cooperation.
2. Regulation of Wildlife Trade
   - Over 90% of members supported a motion for global guidelines to regulate the capture and trade of wild animals, especially for the pet industry.
3. Responsible Use of Synthetic Biology
   - Introduced an ethical and scientific oversight framework for using genetic engineering in conservation.
   - Ensures innovations are biosafe, ecologically sound, and used for sustainable restoration.
4. Fossil Fuel Phaseout
   - Supported by WWF and the Fossil Fuel Non-Proliferation Treaty Initiative.
   - Calls for a just and equitable global transition away from coal, oil, and gas, especially supporting developing nations.

Other Developments
- Zimbabwe Reinstated as an IUCN State Member, signaling renewed conservation commitment.
- World Heritage Outlook 2025: Only 57% of natural World Heritage sites show a positive outlook (down from 62% in 2020) due to climate change, invasive species, and emerging diseases.
- Indigenous Leadership: The 1st World Summit of Indigenous Peoples and Nature emphasized indigenous stewardship and equitable governance in ecosystem management.

National Red List Roadmap and Vision 2025–2030

Context: India launched the National Red List Roadmap and Vision 2025–2030 at the IUCN World Conservation Congress 2025 to strengthen biodiversity assessment and conservation.

About the Initiative
- Developed by: Zoological Survey of India (ZSI) and Botanical Survey of India (BSI) in collaboration with IUCN.
- Nodal Ministry: Union Ministry of Environment, Forest & Climate Change (MoEFCC).
- Objective: Create a science-based national framework to assess and monitor the status of India's flora and fauna.
  - Helps identify endangered species and guide targeted conservation policies.

Scope and Features

- Coverage: About 11,000 species — including 7,000 flora and 4,000 fauna — to be assessed over five years.
- Baseline Data: Provides updated, evidence-based inputs for conservation planning up to 2030.
- Global Alignment:
  - Follows IUCN Red List standards.
  - Supports India's commitments under the Convention on Biological Diversity and the Kunming–Montreal Global Biodiversity Framework.
- Deliverables: Publication of National Red Data Books for both plants and animals by 2030.

Significance

- Strengthens India's biodiversity governance and conservation planning.
- Enhances India's contribution to global biodiversity targets through transparent and data-driven species assessments.

Gokul Jalashay and Udaipur Jheel Added to Ramsar List

Context: Bihar's Gokul Jalashay and Udaipur Jheel have been designated as new Ramsar Sites, taking India's total to 93.

- India now ranks 1st in Asia and 3rd globally, after the UK (176) and Mexico (144), in the number of Ramsar sites.

About Gokul Jalashay

- Type: Oxbow lake on the southern edge of the river Ganga.
- Ecological Role: Acts as a natural flood buffer, protecting nearby villages.
- Biodiversity:
  - Habitat for 50+ bird species.
  - The 2025 Water Bird Census recorded nearly 3,500 water birds across 65 species.
- Socio-economic Value: Supports fishing, irrigation, and agriculture.
- Community Involvement: Local villagers conduct annual cleaning during a traditional festival to maintain the wetland.

About Udaipur Jheel

- Location: Within Udaypur Wildlife Sanctuary, West Champaran, Bihar.
- Type: Oxbow lake encircling a village.
- Biodiversity:
  - Home to 280+ plant species, including Alysicarpus roxburghianus, a herb endemic to India.
  - Serves as a wintering ground for ~35 migratory bird species, including the vulnerable common pochard.

Significance

- Enhances wetland conservation and biodiversity protection in the Ganga basin.
- Strengthens India's role in the Ramsar Convention on Wetlands, promoting sustainable ecosystem management.

UNESCO's World Network of Biosphere Reserves (WNBR)

Context: The Cold Desert Biosphere Reserve in Himachal Pradesh has been added to UNESCO's World Network of Biosphere Reserves (WNBR) during the 37th session of the International Coordinating Council of the Man and the Biosphere (MAB) Programme held in Hangzhou, China.

About the MAB Programme

- **Launched: 1971 by UNESCO.**
- **Objective: To improve the relationship between people and their environment through science-based approaches to conservation and sustainable development.**

About WNBR

- **A global network under UNESCO's MAB Programme that promotes:**
  - **Biodiversity conservation**
  - **Sustainable development**
  - **Community participation**
- **Collaboration: Encourages North-South and South-South cooperation for sharing best practices and building ecological resilience.**
- **Current Coverage: 785 sites across 142 countries.**

Biosphere Reserve	State/UT	Year of Inclusion
Nilgiri	Tamil Nadu, Kerala, Karnataka	2000
Gulf of Mannar	Tamil Nadu	2001
Sundarbans	West Bengal	2001
Nanda Devi	Uttarakhand	2004
Nokrek	Meghalaya	2009
Pachmarhi	Madhya Pradesh	2009
Simlipal	Odisha	2009
Achanakmar–Amarkantak	Madhya Pradesh, Chhattisgarh	2012
Great Nicobar	Andaman & Nicobar Islands	2013
Agasthyamalai	Kerala, Tamil Nadu	2016
Khangchendzonga	Sikkim	2018
Panna	Madhya Pradesh	2020
Cold Desert	Himachal Pradesh	2025

Green Crackers

Context: The Supreme Court has permitted the manufacture of green firecrackers in Delhi.

About Green Crackers

- Developed by: National Environmental and Engineering Research Institute (NEERI) under CSIR in 2018.
- Purpose: To reduce air and noise pollution caused by conventional firecrackers.
- Features:
  - Emit 30–40% less pollutants than traditional crackers.
  - Use potassium nitrate and aluminium instead of harmful barium nitrates.
  - Produce lower noise levels (100–130 dB) compared to 160–200 dB from traditional ones.
  - Have a QR code and green logo to verify authenticity.

Types of Green Crackers

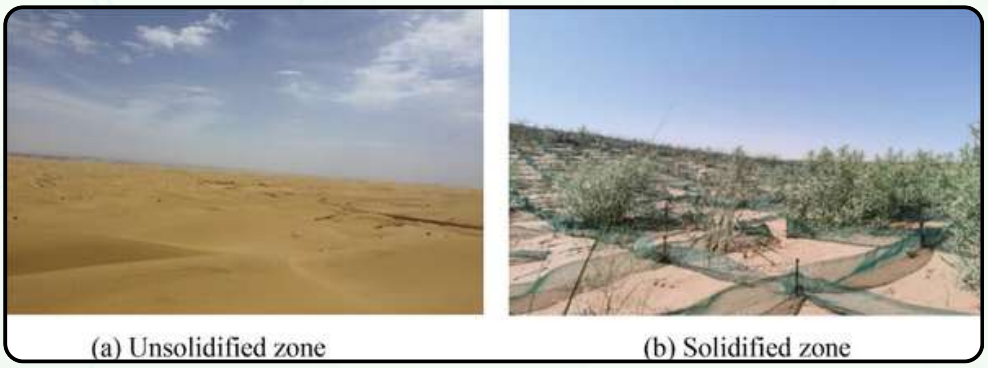
Type	Full Form / Feature	Impact
SWAS	*Safe Water Releaser*	Emits water vapour, reduces SO_2 and particulate matter by ~30%.
SAFAL	*Safe Minimal Aluminium*	Uses less aluminium; cuts particulate emissions by 35–40%.
STAR	*Safe Thermite Cracker*	Reduces use of sulphur and KNO_3; lowers SO_2 and NOx emissions.

Desert 'Soilification' Technology

Context: Researchers at the Central University of Rajasthan (CUoR) have successfully cultivated wheat in the Thar Desert using an indigenous bioformulation-based soilification technology.

What is Desert Soilification?

- A biotechnological process that converts barren desert sand into soil-like, fertile land by enhancing:
  - Water retention capacity
  - Soil structure
  - Microbial activity



(a) Unsolidified zone (b) Solidified zone

What is Desertification?

- Meaning: Degradation of land in arid, semi-arid, and dry sub-humid regions due to climate change and human activities.
- Land Degradation: Loss of land productivity from soil erosion, salinity, deforestation, or unsustainable land use.
- Extent in India (ISRO Atlas, 2021):
  - 29.77% of India's area (~97.85 million ha) is degraded.
  - Rajasthan alone accounts for nearly 20% of the desertified area.
  - Major affected states: Rajasthan, Maharashtra, Gujarat, Karnataka, Jharkhand, Odisha, Madhya Pradesh, Telangana.
- Causes: Destruction of Aravalis, erratic rainfall, expansion of sand dunes, and poor land management.

Technology and Methodology

- Technique: Desert sand is modified using natural polymers and an indigenous bioformulation.
- Functions of Bioformulation:
  - Improves water-holding capacity of sand.
  - Promotes bonding of sand particles to create soil texture.
  - Activates beneficial microbes that enhance plant stress tolerance.
- Objective: Develop a sustainable and scalable method to make arid regions agriculturally productive.
- Trials: Initially tested on bajra, guar, and chickpea before successful field trials on wheat.

Significance

- Offers a low-cost, eco-friendly solution to combat desertification.
- Can transform barren desert ecosystems into productive farmlands, boosting food security and rural livelihoods.

Blue Flag Certification

Context: Five beaches in Maharashtra have received the prestigious Blue Flag certification, recognizing their commitment to cleanliness, safety, and sustainable coastal management.

Certified Beaches

- Shrivardhan Beach – Raigad district
- Nagaon Beach – Raigad district
- Parnaka Beach – Palghar district
- Guhagar Beach – Ratnagiri district
- Ladghar Beach – Ratnagiri district

About Blue Flag Certification

- Awarding Authority: Foundation for Environmental Education (FEE), Denmark
- Purpose: To recognize beaches, marinas, and sustainable boating operators that meet global environmental and safety standards.

Certification Criteria (33 Parameters)

Includes stringent measures on:

- Cleanliness and solid waste management
- Water quality and hygiene maintenance
- Environmental education and awareness for visitors
- Safety infrastructure and trained lifeguards
- Sustainable environmental management and eco-friendly facilities

Implementation in India

- Nodal Agency: Society of Integrated Coastal Management (SICOM) under the Ministry of Environment, Forest and Climate Change (MoEFCC).
- Implemented under:
  - Integrated Coastal Zone Management (ICZM) Project
  - BEAMS Initiative (Beach Environment & Aesthetics Management Services)

Significance

- Promotes eco-tourism and public awareness on coastal sustainability.
- Positions India among countries adopting global best practices for beach conservation and management.

India's First DNA-Based Elephant Count

Context: The All-India Synchronous Elephant Estimation (SAIEE) 2025 marks India's first-ever DNA-based elephant census, providing a more scientific and accurate estimate of the country's wild elephant population.

About SAIEE 2025

- Conducted by: Ministry of Environment, Forest and Climate Change, Project Elephant, and the Wildlife Institute of India (WII).
- Objective: To use genetic tools for precise identification and avoid double counting of elephants across states.

Top States

State	Population (2025)
Karnataka	6,013
Assam	4,159
Tamil Nadu	3,136
Kerala	2,785

Survey Methodology

- Dung DNA Sampling:
  - 21,056 dung samples collected from 6.7 lakh km of forest trails and 3.1 lakh dung plots.
- Genetic Identification:
  - DNA fingerprinting used to identify 4,065 unique elephants, applying the mark-recapture model for estimation.
- Technology Used:
  - Ground surveys via M-Stripes app
  - Satellite-based habitat mapping
  - DNA sequencing for population validation
- Timeline: 2021–2025 (delayed due to complex genetic data validation).

Key Findings

- Total Population Estimate: 22,446 elephants (range: 18,255–26,645).
- Decline: About 18% decrease from the 2017 estimate (27,312 elephants).
- Regional Distribution:
  - Western Ghats: 11,934 (largest population)
  - Northeast & Brahmaputra Floodplains: 6,559
  - Shivalik Hills & Gangetic Plains: 2,062
  - Central India & Eastern Ghats: 1,891

Significance

- India holds over 60% of the world's remaining Asian elephants, making this assessment crucial for global conservation planning.
- DNA-based methods enhance accuracy, help track migration, and reduce human-elephant conflict through better habitat mapping.

Indian Elephant (Elephas maximus indicus)

- Range: India, Bangladesh, Bhutan, Nepal, and parts of Southeast Asia.
- Habitat: Grasslands and tropical forests (dry, moist deciduous, and evergreen).
- National Status: India's National Heritage Animal.

Conservation Status:

- IUCN Red List: Endangered
- CITES: Appendix I
- Wildlife (Protection) Act, 1972: Schedule I

State of Climate Action Report 2025

Context:The State of Climate Action Report 2025 warns that global efforts remain far behind in meeting the Paris Agreement goal of limiting global warming to 1.5°C, despite record investments in clean energy.

Key Findings

- Coal Use: Global coal consumption hit a record high in 2024, even though its share in the energy mix declined.
- Renewable Energy: Renewables generated over 50% of global electricity in early 2025, but rising coal use offset these gains.
- Temperature Trends: The last decade was the hottest on record, with greenhouse gas emissions showing no major slowdown.
- Investment Patterns:
  - Clean energy investments in 2024 were almost double fossil fuel investments.
  - Global renewable project investments rose 10% in early 2025.
  - The U.S. saw a 30% drop in clean energy spending in late 2024.
  - The IEA noted that current investments are still inadequate to meet Paris targets.

Acceleration Needed to Meet 2030–2035 Targets

To stay on the 1.5°C pathway, the report calls for drastic action:

- Coal Phase-Out: 10× faster — retiring ~360 coal plants per year and cancelling all new ones.
- Deforestation Control: 9× faster — equivalent to saving 22 football fields of forest per minute.
- Public Transport Expansion: 5× faster — building 1,400 km of rail, metro, and bus lanes annually.
- CO_2 Removal: 10× faster — constructing nine large DAC (Direct Air Capture) facilities every month.
- Climate Finance: Increase by $1 trillion per year, about two-thirds of current fossil fuel subsidies.

About the Report

- Launched: 2020
- Published by: World Resources Institute (WRI) in collaboration with the ClimateWorks Foundation, WWF, and the Bezos Earth Fund.
- Scope: Tracks progress across 42 indicators in energy, transport, agriculture, forests, finance, and industry sectors.
- Purpose: To assess how current global actions compare to the required pace for achieving 1.5°C-compatible targets by 2030.

State of Global Air Report 2025

Context: The State of Global Air Report 2025 highlights that air pollution remains the world's second-largest health risk, responsible for millions of deaths annually — particularly in developing countries.

About the Report

- Released by: Health Effects Institute (HEI) in collaboration with the University of Washington's Institute for Health Metrics and Evaluation (IHME) and the NCD Alliance.
- Nature: Annual, evidence-based assessment on global air quality and health impacts.
- Data Source: Global Burden of Disease (GBD) Study.
- Objective: To provide open-access, credible scientific data for policymaking on air quality and public health.

Key Findings

Global Overview

- Deaths (2023): Air pollution caused 7.9 million deaths globally — roughly 1 in every 8 deaths.
- Health Impact:
  - 232 million healthy years of life were lost due to pollution exposure.
  - The heaviest burden falls on low- and middle-income countries, especially South Asia, Sub-Saharan Africa, and Southeast Asia.

Country-Wise Data

- India & China: Each recorded over 2 million deaths due to air pollution in 2023 — together accounting for over half of global pollution-related deaths.
- India: Pollution-related deaths increased 43% in two decades — from 1.4 million (2000) to 2 million (2023).

Disease Burden

- Dementia & Neurological Disorders: Linked to 626,000 deaths and 11.6 million healthy years lost in 2023.
- Non-Communicable Diseases (NCDs): Accounted for 86% of pollution-related deaths, including heart disease, stroke, diabetes, and COPD.

Demographic Impact

- Older Adults at Risk: 95% of deaths occurred among those aged 60 and above.
- NCD Link: 6.8 million out of 7.9 million pollution-related deaths were due to non-communicable diseases.

Methane 2025 Report

Context: The United Nations Environment Programme (UNEP) released "An Eye on Methane 2025: From Measurement to Momentum", highlighting the urgent need for faster methane mitigation to meet global climate goals.

About the Report

- Released by: UNEP's International Methane Emissions Observatory (IMEO).
- First Published: 2021.
- Purpose: Provides transparent, science-based data on methane emissions and global progress in reduction efforts.
- Focus Areas:
  - Major sources — oil & gas, agriculture, and waste.
  - Promotes measurement, reporting, and verification (MRV).
  - Operates the Methane Alert and Response System (MARS) for real-time emission tracking.

About the Global Methane Pledge

- Launched by: United States and European Union at COP26 (2021).
- Goal: Reduce global methane emissions by 30% from 2020 levels by 2030 to slow near-term warming.

Key Findings

1. Detection vs. Action Gap
   - Methane detection capacity increased tenfold due to satellite technology.
   - Yet, 90% of "super-emitter" events detected remain unaddressed.
   - Since 2022, MARS has issued 3,500+ alerts across 33 countries.
   - Follow-up actions improved from 1% to 12%, but remain insufficient to meet the Global Methane Pledge.
2. Methane's Climate Impact
   - 80× more potent than CO_2 over 20 years but short-lived in the atmosphere.
   - Cutting methane offers immediate climate benefits, acting as a "climate emergency brake."
3. Advances in Monitoring
   - One-third of oil & gas emissions now tracked through real-world measurements instead of estimates.
   - Oil and Gas Methane Partnership (OGMP) 2.0:
     - 153 companies from 90 countries.
     - Covers 42% of global oil & gas production.
4. India's Role
   - For the first time, Indian companies joined OGMP 2.0, pledging to adopt direct measurement-based methane reporting.
   - India remains among the top methane emitters, mainly from agriculture, waste, and fossil fuels.

SODAR (Sound Detection and Ranging) System

Context: The SODAR (Sound Detection and Ranging) system, developed by CSIR–AMPRI, Bhopal, has been inaugurated at the India Meteorological Department (IMD), Delhi to enhance atmospheric monitoring capabilities.

About SODAR

- Full Form: Sound Detection and Ranging.
- Developed by: CSIR-Advanced Materials and Processes Research Institute (AMPRI), Bhopal.
- Purpose: To measure wind speed, direction, and temperature gradients at various altitudes.
- Working Principle: Similar to RADAR, but uses sound waves instead of radio waves to analyze the atmosphere.

How It Works

1. Sound Emission:
2. Emits high-frequency sound waves vertically into the air.
3. Reflection:
4. Sound waves scatter back upon hitting air turbulence.
5. Doppler Shift Analysis:
6. Measures changes in frequency of returned waves to calculate wind speed and direction.
7. Vertical Profiling:
8. Provides a layered wind profile at different heights.

Applications

- Meteorology:
- Used for weather forecasting, studying vertical wind shear, and atmospheric stability.
- Wind Energy:
- Assesses wind potential at various heights for wind farm site selection.
- Pollution Monitoring:
- Tracks air movement and dispersion of industrial or urban pollutants.
- Aviation Safety:
- Detects wind shear to ensure safer takeoffs and landings.
- Oceanography:
- Helps study wind-sea interactions in coastal and marine environments.

Raksha-IBR Vaccine

Context: Indian Immunologicals Ltd. (IIL), a subsidiary of the National Dairy Development Board (NDDB), has launched Raksha-IBR — India's first indigenously developed glycoprotein E (gE) deleted DIVA marker vaccine against Infectious Bovine Rhinotracheitis (IBR).

About Glycoprotein E (gE)

- A structural protein on the surface of Bovine Herpes Virus-1 (BHV-1).
- Plays a major role in virus virulence, cell-to-cell spread, and immune evasion in cattle.

About Raksha-IBR Vaccine

- Type: gE-deleted DIVA (Differentiating Infected from Vaccinated Animals) marker vaccine.
- Purpose: Enables distinction between naturally infected and vaccinated animals — a key feature for disease eradication.

How It Works:

- The vaccine lacks the gE gene, so vaccinated animals do not produce antibodies against gE.
- Animals infected with the wild-type virus do produce anti-gE antibodies.
- This allows diagnostic tests to differentiate infection from vaccination — the DIVA approach.

About Infectious Bovine Rhinotracheitis (IBR)

- Cause: Bovine Herpes Virus-1 (BHV-1).
- Nature: A highly contagious viral disease affecting cattle's respiratory and reproductive systems.
- Transmission: Through aerosols, direct contact, or infected semen.
- Symptoms:
  - Respiratory form: Fever, nasal discharge, conjunctivitis, coughing, pneumonia.
  - Venereal form: Lesions on genital organs, infertility, and abortions.
- Impacts: Leads to infertility, abortions, and reduced milk yield — causing major economic loss in dairy herds.
- Treatment: No specific cure; vaccination and biosecurity are essential preventive measures.
- Diagnosis: Serology, virus isolation, and real-time PCR testing for viral DNA.

About Bovine Herpes Virus-1 (BHV-1)

- Causes two major cattle diseases:
  - Infectious Bovine Rhinotracheitis (IBR)
  - Infectious Pustular Vulvovaginitis (IPV)
- Both are endemic in India, affecting livestock productivity and breeding efficiency.

India's Indigenous 4G Technology Stack

Context: India has unveiled its first indigenously developed 4G technology stack, comprising both telecom hardware and software, now ready for domestic deployment and export.

About India's 4G Stack

- Developed by: Bharat Sanchar Nigam Ltd (BSNL), Tejas Networks, Tata Consultancy Services (TCS), and Centre for Development of Telematics (C-DoT).
- Components:
  - Radio Access Network (RAN): Tejas Networks
  - Core Network: C-DoT
  - System Integration: TCS

Key Features

- Self-Reliance: Reduces dependence on foreign telecom vendors.
- 5G-Ready Design: Architecture allows seamless and cost-effective upgradation to 5G.
- Enhanced Security: Strengthens India's digital sovereignty and strategic autonomy in communications.
- Export Potential: Several countries have shown interest, giving India a foothold in the global telecom market.

Significance

- India joins an exclusive group of five nations — Denmark, Sweden, South Korea, China, and India — capable of independently developing and deploying telecom infrastructure.
- Marks a major step toward Atmanirbhar Bharat and counters China's dominance under its Digital Silk Road initiative.

UN Convention Against Cybercrime

Context: At the UN Conference in Hanoi, 72 countries signed the first-ever global treaty on cybercrime, aimed at strengthening international cooperation to combat digital offenses.

About the Convention

- Purpose: Establish a legally binding global framework to fight cybercrime through collaboration, evidence sharing, and extradition.
- Implemented by: UN Office on Drugs and Crime (UNODC).
- Activation: Comes into force 90 days after 40 countries ratify it.

Criticisms

- Human Rights Risks: Vague definitions could enable state surveillance or suppression of dissent.
- Tech Industry Concerns: The Cybersecurity Tech Accord warns the treaty could become a "surveillance tool" if misused.
- Host Controversy: Vietnam's role as host drew criticism due to its record of online censorship.

Key Provisions

- International Cooperation:
  - Creates 24/7 contact points for rapid information exchange.
  - Simplifies cross-border investigations and evidence sharing.
- Criminal Offenses Covered:
  - Cyber-dependent crimes: Hacking, data interference, ransomware.
  - Cyber-enabled crimes: Online fraud, non-consensual sharing of private images.
  - Child Protection: Criminalizes online sexual abuse, exploitation, and grooming of minors.
- Legal Alignment:
  - Countries must adapt domestic laws to match treaty definitions once ratified.

India's Position

- Participated in negotiations but has not yet signed the treaty.
- The UN Cybercrime Convention marks a milestone in global digital governance — balancing security, sovereignty, and privacy in cyberspace.

Military Combat Parachute System (MCPS)

Context:The DRDO has successfully tested India's indigenously developed Military Combat Parachute System (MCPS) from a record altitude of 32,000 feet.

About MCPS

- Purpose: A next-generation parachute system for high-altitude combat freefall operations by special forces and paratroopers.
- Developed by:
  - Aerial Delivery Research & Development Establishment (ADRDE), Agra
  - Defence Bioengineering & Electromedical Laboratory (DEBEL), Bengaluru

Key Features

- High-Altitude Performance:
  - Only Indian system capable of operating above 25,000 feet.
- Enhanced Safety & Control:
  - Provides low descent rate and precise steering, ensuring stable landings.
- Navigation Integration:
  - Linked with NaVIC (Navigation with Indian Constellation) for accurate, independent geolocation — free from foreign satellite reliance.
- Operational Flexibility:
  - Allows pre-set altitude deployment and accurate landing in hostile zones.
- Maintenance Benefits:
  - Easier repair and quicker reuse, making it more cost-effective than imported systems.

150 Years of 'Vande Mataram'

Context: The Union Cabinet has approved nationwide celebrations to commemorate 150 years of the national song "Vande Mataram", honouring its pivotal role in India's freedom struggle.

About Vande Mataram

- Composer: Bankimchandra Chatterji
- Language: Written in Sanskrit, first published in Bengali script.
- First Appearance: Featured in Bankimchandra's 1882 novel Anandamath, inspired by the Sannyasi Rebellion.
- Recognition: On 24 January 1950, the Constituent Assembly granted Vande Mataram the status of National Song, at par with the National Anthem (Jana Gana Mana).
- Essence: Comprises six devotional stanzas celebrating the motherland — symbolizing divine reverence and patriotic spirit.

Dogri Language

Context: The Dogri language is facing a gradual decline in use and literacy, especially among younger and urban populations.

About Dogri Language

- Family: Indo-Aryan language, primarily spoken in the Jammu region, serving as a key marker of Dogra cultural identity.
- Recognition:
  - Added to the Eighth Schedule of the Constitution in 2003.
  - Declared one of Jammu & Kashmir's five official languages under the J&K Official Languages Act, 2020.
- Current Concern:
  - Though not yet classified, Dogri is increasingly at risk of falling under UNESCO's "Vulnerable Languages" category.
- Geographical Spread:
  - Spoken by around 2.6 million people across Jammu, parts of Himachal Pradesh and Punjab, and among the Indian diaspora and some communities in Pakistan.

Linguistic Features

- Phonetics: 10 vowels and 28 consonants, with distinct tonal variations.
- Grammar: Exhibits nasalization, metathesis, and tone-based differentiation.
- Vocabulary: Retains Sanskritic roots while incorporating words from Persian and English.

Baratang Mud Volcano

Context: India's only active mud volcano, located on Baratang Island in the Andaman and Nicobar Islands, erupted on October 2, 2025, after nearly 20 years of dormancy.

What are Mud Volcanoes?

- Definition: Natural geological structures where mud, water, and gases escape from deep underground, forming craters and bubbling mounds.
- Cause: Triggered by the buildup of underground gases, pressure, or seismic activity.
- Global Example: The Sidoarjo Mudflow in Indonesia is the world's largest mud volcano.

About Baratang Mud Volcano

- Location: Found on Baratang Island, between the Middle and South Andaman Islands.
- Significance:
  - India's only active mud volcano, also a popular eco-tourism site.
  - Indicates ongoing geothermal and tectonic activity in the region due to its proximity to the subduction zone of the Indo-Burma plate.

UMEED Portal

Context: The Government of India launched the UMEED Portal to digitize and streamline the registration and management of Waqf properties nationwide.

About UMEED (Unified Waqf Management, Empowerment, Efficiency, and Development) Portal

- Launch Date: 6 June 2025
- Administered by: Ministry of Minority Affairs, in coordination with State Waqf Boards and judicial authorities.
- Legal Framework: Operates under the UMEED Rules, 2025, framed as per Section 108B of the Waqf Act, 1995.

Objectives

- Enable transparent and time-bound registration of Waqf properties.
- Provide digital access to beneficiaries for rights, obligations, and legal protection.
- Help resolve property disputes and strengthen accountability.
- Support policy planning through real-time data and geo-tagged mapping of Waqf assets.

India Re-Elected to ICAO Council

Context: India has been re-elected to Part II of the Council of the International Civil Aviation Organization (ICAO) for the 2025–2028 term, securing a stronger mandate than in the 2022 election.

About ICAO (International Civil Aviation Organization)

- Established: 1944 under the Chicago Convention on International Civil Aviation
- Headquarters: Montreal, Canada
- Members: 193 countries (India is a founding member)
- Mandate: Sets global civil aviation standards to ensure safety, security, efficiency, and environmental sustainability, and to promote international cooperation in air transport.

Governance Structure

- ICAO Assembly: The top decision-making body, comprising all 193 member states; meets once every three years.
- ICAO Council: The executive body with 36 member states, elected for three-year terms and divided into three categories:
  - Part I: Major air transport nations
  - Part II: States contributing significantly to air navigation facilities
  - Part III: States ensuring fair geographic representation

India's Role

- Founding member since 1944
- Has maintained an uninterrupted presence on the ICAO Council for 81 years
- The re-election reinforces India's growing influence in shaping global aviation policy and infrastructure development.

MONDIACULT 2025

Context: India was represented by Union Minister Gajendra Singh Shekhawat as Chair of the Asia-Pacific Group at MONDIACULT 2025, where he emphasized culture as a global public good.

About MONDIACULT 2025

- Full Name: UNESCO World Conference on Cultural Policies and Sustainable Development
- Organizer: UNESCO
- Host Country & Venue: Spain (Barcelona)
- Nature: World's largest cultural policy conference uniting ministers, cultural leaders, civil society, and youth to frame the global cultural agenda.

Objectives

- To recognize culture as a standalone goal in the post-2030 UN development framework.
- To highlight culture's role as a unifying force, promoting peace, inclusion, and sustainable growth.

Focus Areas

- Culture for Peace: Promoting global dialogue and harmony.
- Artificial Intelligence & Culture: Ensuring ethical and inclusive integration of AI in cultural sectors.

Significance for India

- India chaired the Asia-Pacific Group during the Ministerial Plenary — showcasing its leadership in global cultural diplomacy.
- Reaffirmed that culture is central to sustainable and inclusive development, aligning with India's civilizational ethos of Vasudhaiva Kutumbakam (the world is one family).

2025 Gaza Peace Summit

Context: A major diplomatic summit was held in Sharm El Sheikh, Egypt, where U.S. President Donald Trump, along with the leaders of Egypt, Qatar, and Turkey, signed a declaration to solidify the Gaza ceasefire deal.

About the 2025 Gaza Peace Summit

- Venue: Sharm El Sheikh International Convention Centre, Egypt
- Host: Egypt
- Chaired by: President Abdel Fattah el-Sisi (Egypt) and Donald Trump (U.S.)
- Participants: Delegates from around 30 countries; Israel and Hamas did not attend.

Purpose & Outcomes

- To discuss the implementation of the Gaza peace plan, ensuring lasting stability in the region.
- Focus on:
  - Humanitarian aid and access to affected populations.
  - Security arrangements and post-conflict governance of Gaza.
  - Endorsement of the "Trump Declaration for Enduring Peace and Prosperity."

India Re-Elected as Vice-Chair of COP10 Bureau

Context: India has been re-elected as Vice-Chair of the Bureau for the Asia-Pacific Group (Group IV) during the 10th Session of the Conference of Parties (COP10) to the International Convention against Doping in Sport, held at UNESCO Headquarters, Paris, France.

About the International Convention against Doping in Sport

- Nature: Multilateral treaty under UNESCO to prevent and eliminate doping in sport.
- Adoption: 19 October 2005, during UNESCO's 33rd General Conference.
- Entry into Force: 1 February 2007 (after ratification by 30 countries).
- Membership: 192 States Parties – UNESCO's second most ratified treaty.
- Objective: Harmonize national and international anti-doping laws and regulations to ensure fair and safe competition.

Key Features

- Legal Framework: Aligns national measures with the World Anti-Doping Code (WADA Code).
- Global Cooperation: Encourages collaboration between governments, sports bodies, and scientific institutions.
- Funding Mechanism: Supports capacity building, education, and awareness via an Anti-Doping Fund.
- Ethical Oversight: Addresses emerging issues like gene doping and use of traditional pharmacopoeia.
- Governance: Bureau and Approval Committee monitor compliance, financing, and implementation of anti-doping measures.

Significance

- Reinforces India's leadership in promoting sports integrity and athlete protection in the Asia-Pacific region.
- Strengthens global cooperation for fair play and ethical sports governance.

UPI Launched in Qatar

Context: Union Minister Piyush Goyal launched India's Unified Payments Interface (UPI) in Doha, Qatar, marking another milestone in UPI's global expansion.

About UPI

- Full Form: Unified Payments Interface
- Nature: Digital payment system linking multiple bank accounts to a single mobile application for real-time, seamless transactions.
- Launch: 2016 by National Payments Corporation of India (NPCI)
  - NPCI: Non-profit organization established in 2008 by RBI and the Indian Banks' Association.
- Applications:
  - Peer-to-peer money transfers
  - Bill payments and merchant transactions
  - 24/7 access, fast and affordable transactions
  - Unified platform connecting 675 banks

Global Expansion

- UPI is now live in over 7 countries, including:
  - UAE, Singapore, Bhutan, Nepal, Sri Lanka, France, Mauritius, and now Qatar
- Enables Indians and international users to make seamless payments abroad using the same UPI infrastructure.

Significance:

- Strengthens India's digital payments diplomacy.
- Boosts cross-border trade and financial inclusion for Indians and businesses overseas.
- Positions UPI as a global standard for instant digital payments.

Bharat Taxi – India's First Cooperative Ride-Hailing Platform

Context: The National e-Governance Division (NeGD) under MeitY has partnered with Sahakar Taxi Cooperative Limited to launch Bharat Taxi, set to roll out by December 2025.

About Bharat Taxi

- Nature: India's first cooperative-driven national ride-hailing platform.
- Objective:
  - Provide transparent, citizen-centric, and technology-enabled mobility services.
  - Empower local taxi cooperatives and ensure fair earnings for drivers.
- Promoters & Supporters:
  - Key cooperative and financial institutions backing the platform include:
    - NCDC, IFFCO, AMUL, KRIBHCO, NAFED, NABARD, NDDB, NCEL

Significance

- Pioneers a cooperative model in the mobility sector, reducing dominance of private ride-hailing giants.
- Supports digital governance and financial inclusion by integrating cooperatives into the tech ecosystem.
- Enhances citizen access to reliable, accountable, and affordable ride services nationwide.

Compressed Bio-Gas (CBG) and Potash Granule Project

Context: India inaugurated its first cooperative-based Compressed Bio-Gas (CBG) and Spray Dryer Potash Granule Project at Kopargaon, Maharashtra, promoting circular economy practices.

Key Features

- CBG Production: 12 tons per day from organic waste.
- Potash Granules: 75 tons per day, produced from jaggery by-products using spray dryer technology.
- Objective: Reduce imports of CBG and potash, promote clean fuel, and support sustainable agriculture.

About Compressed Bio-Gas (CBG)

- Renewable gaseous fuel produced via anaerobic digestion of agricultural residues, animal dung, food waste, and municipal solid waste.
- Benefits:
  - Clean fuel alternative to fossil fuels.
  - Reduces carbon emissions and environmental pollution.
  - Promotes rural energy self-reliance.

◆ About Potash Granules

- Fertilizer rich in potassium, produced using spray dryer technology from sugar factory by-products.
- Benefits:
  - Enhances soil fertility.
  - Improves crop yield.
  - Supports sustainable agricultural practices in rural areas.

Significance
- Integrates renewable energy and circular economy approaches in agriculture.
- Boosts cooperative-led rural development, reducing dependency on imports.
- Provides a model for eco-friendly, locally sourced energy and fertilizers.

Dugong – India's Marine "Sea Cow"

Context: At the IUCN World Conservation Congress 2025, India's first Dugong Conservation Reserve in Palk Bay, Tamil Nadu (448 km², declared in 2022) was recognized.

About Dugongs (Dugong dugon)
- Large marine herbivorous mammals, closely related to manatees.
- Nicknamed the "sea cow".

Habitat
- Shallow coastal waters, generally within 10-metre depth.
- Prefer tropical and subtropical regions.
- Depend on seagrass meadows, especially species like Cymodocea, for grazing.

Distribution
- Global: Found across 40 countries in the Indo-Pacific region (East Africa, Red Sea to Australia).
- India: Concentrated in Gulf of Mannar, Palk Bay, Gulf of Kutch, and Andaman & Nicobar Islands.

Conservation Status
- Wildlife (Protection) Act, 1972: Schedule I species.
- IUCN Status: Vulnerable.

Significance
- Dugongs play a critical role in maintaining healthy seagrass ecosystems.
- Protecting dugongs also conserves coastal biodiversity and supports fisheries and livelihoods in adjacent communities.

Red Sanders – Endangered Jewel of the Eastern Ghats

Context: The National Biodiversity Authority (NBA) sanctioned ₹82 lakh to the Andhra Pradesh Biodiversity Board for the conservation of Red Sanders (Pterocarpus santalinus), an endemic and endangered species of the Eastern Ghats.

About Red Sanders

- Scientific Name: Pterocarpus santalinus
- Common Name: Red Sandalwood / Red Sanders
- Family: Fabaceae (Legume family)
- Native Range: Eastern Ghats of southern India (Andhra Pradesh – Chittoor, Kadapa, Kurnool, Anantapur)

Habitat

- Rocky hillsides and dry deciduous forests
- Often found on steep slopes with shallow soils

Wood Qualities and Uses

- Appearance: Deep reddish hue, dense, fine-grained, heavy, durable
- Uses:
  - Luxury furniture, veneers, and carvings
  - Musical instruments (woodwinds, percussion)
  - Traditional medicine (Ayurveda, Siddha)
  - Prestige wood products and ceremonial staves

Threats

- Illegal logging and smuggling (high commercial value)
- Habitat loss and fragmentation
- Regeneration challenges: low natural regeneration, seed predation, grazing

Conservation Status

- India: Schedule IV, Wildlife (Protection) Act, 1972
- CITES: Appendix II — trade allowed under strict regulation
- IUCN Status: Endangered

Significance

- Red Sanders is ecologically important for the Eastern Ghats ecosystem.
- Its conservation protects biodiversity, traditional livelihoods, and cultural heritage.

Interstellar Mapping and Acceleration Probe (IMAP)

Context: NASA recently launched the Interstellar Mapping and Acceleration Probe (IMAP) to study the Sun's solar wind and the heliosphere's boundary, aiming to better understand the interaction between our solar system and interstellar space.

Mission Overview

- Objective: Explore the outer boundaries of the heliosphere and investigate interactions with the local galactic environment.
- Heliosphere: A protective bubble created by the solar wind around the solar system.
- Launch Vehicle: SpaceX Falcon 9
- Spacecraft Mass: 900 kg
- Scientific Payload: 10 instruments to study solar wind, energetic particles, interstellar dust, and magnetic fields.

Scientific Instruments

Energetic Neutral Atom Detectors:

- IMAP-Lo: Low Energy Neutral Atom Imager
- IMAP-Hi: High Energy Neutral Atom Imager
- IMAP-Ultra: Ultra High Energy Neutral Atom Imager

Charged Particle Detectors:

- High-energy Ion Telescope (HIT)
- Solar Wind Electron (SWE)
- Solar Wind and Pickup Ion Instrument (SWAPI)
- Compact Dual Ion Composition Experiment (CoDICE)

Other Instruments:

- Magnetometer (MAG)
- Global Solar Wind Structure (GLOWS)
- Interstellar Dust Experiment (IDEX)

Mission Objectives

- Map the heliosphere's boundary and interstellar particle interactions.
- Study energization of charged particles from the Sun.
- Monitor real-time solar wind and energetic particles to forecast space weather hazards near Earth.
- Provide data for safer spacecraft design for future human exploration.

Significance: IMAP will improve our understanding of space weather, help protect satellites and astronauts, and advance knowledge of the Sun's influence on the solar system.

Mission Drishti

Context: Space-tech start-up GalaxEye announced Mission Drishti, set for launch in Q1 2026, as the world's first multi-sensor Earth Observation (EO) satellite. It will integrate multiple sensing technologies to enable all-weather, day-and-night observation.

Mission Overview

- Objective: Explore the outer boundaries of the heliosphere and investigate interactions with the local galactic environment.
- Heliosphere: A protective bubble created by the solar wind around the solar system.
- Launch Vehicle: SpaceX Falcon 9
- Spacecraft Mass: 900 kg
- Scientific Payload: 10 instruments to study solar wind, energetic particles, interstellar dust, and magnetic fields.

Scientific Instruments-

Energetic Neutral Atom Detectors:

- IMAP-Lo: Low Energy Neutral Atom Imager
- IMAP-Hi: High Energy Neutral Atom Imager
- IMAP-Ultra: Ultra High Energy Neutral Atom Imager

Charged Particle Detectors:

High-energy Ion Telescope (HIT)

- Solar Wind Electron (SWE)
- Solar Wind and Pickup Ion Instrument (SWAPI)
- Compact Dual Ion Composition Experiment (CoDICE)

Other Instruments:

- Magnetometer (MAG)
- Global Solar Wind Structure (GLOWS)
- Interstellar Dust Experiment (IDEX)

Mission Objectives

- Map the heliosphere's boundary and interstellar particle interactions.
- Study energization of charged particles from the Sun.
- Monitor real-time solar wind and energetic particles to forecast space weather hazards near Earth.
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Significance: IMAP will improve our understanding of space weather, help protect satellites and astronauts, and advance knowledge of the Sun's influence on the solar system.

Chiron and Its Rings

Context: Astronomers have observed rings forming and evolving around Chiron, providing the first evidence of ring formation around a small centaur. This discovery challenges prior assumptions that rings only form around large planets.

About Chiron

- Designation: (2060) Chiron
- Type: Centaur — small icy body with both asteroid- and comet-like characteristics
- Orbit: Between Saturn and Uranus, completes one orbit around the Sun in ~50 years
- Composition: Rock, water ice, and complex organic compounds
- Activity: Occasionally ejects gas and dust; showed a small comet-like tail in 1993

Significance of Rings

- First evidence of rings around a small celestial body
- Shows that ring formation is not exclusive to giant planets
- Provides insights into disk dynamics, satellite formation, and early solar system processes

Contaminants in Cough Syrups

Context: The Rajasthan government recently banned the distribution of cough syrups containing Dextromethorphan (DXM) after reports of child deaths allegedly linked to the drug.

About Dextromethorphan (DXM)

- Function: Widely used antitussive (cough suppressant) acting on the brain's cough centre
- Legal Status: Approved under the Drugs & Cosmetics Act, 1940 (Schedule H)
- Advisory: The Union Ministry of Health & Family Welfare advises against cough syrups for children under 5 years

Contamination Concerns

- Some cough syrups have been adulterated with industrial solvents:
  - Diethylene Glycol (DEG)
  - Ethylene Glycol (EG)
- These are sometimes used as cheap substitutes for propylene glycol
- Health Risks: Highly toxic; ingestion can cause acute kidney injury and death

Prussian Blue Capsules

Context: India has gifted urgently required Prussian Blue capsules to Indonesia to mitigate the effects of Cesium-137 contamination.

About Cesium-137 Contamination

- Nature: Radioactive isotope produced during nuclear fission (reactors or weapons)
- Half-life: ~30 years
- Environmental Presence: Can contaminate soil, water, and food chains after accidental releases or improper disposal
- Health Impacts: Increases risk of radiation sickness, cancer, and organ damage

About Prussian Blue Capsules (Pru-Decorp)

- Nature: Dark blue pigment compound used as a pharmaceutical agent
- Mechanism of Action:
  - Binds to radioactive cesium and thallium in the intestines
  - Prevents absorption into the body
  - Promotes excretion through feces, reducing radiation dose to internal organs
- Global Recognition: Listed by WHO as an essential medicine for radiological emergencies

Significance: Prussian Blue capsules are critical in nuclear disaster preparedness, offering a safe and effective method to reduce internal radiation exposure.

BRO Builds World's Highest Motorable Road

Context: The Border Roads Organisation (BRO), under Project Himank, has constructed the world's highest motorable road at Mig La Pass, eastern Ladakh, at 19,400 ft above sea level.

About Mig La Pass Road

- Record: Surpasses Umling La Pass (19,024 ft), previously built by BRO in 2021.
- Location & Connectivity:
  - Situated in eastern Ladakh, near the Indo-China border
  - Connects Hanle region with the border village of Fukche

About Project Himank (BRO)

- Raised: 4 December 1985 at Leh
- Purpose: Develop and maintain road communication in Ladakh, even under extreme weather and challenging terrain
- Significance: Strategic and civilian connectivity in high-altitude border regions.

Tejas Mk1A and HTT-40 Production Lines Inaugurated

Context: The Defence Minister inaugurated the third production line of HAL Tejas Mk1A and the second production line of HAL HTT-40 at Hindustan Aeronautics Limited (HAL), Nashik.

Tejas Mk1A – Light Combat Aircraft (LCA)

- Type: Indigenously developed multi-role, single-engine, supersonic LCA
- Developer: Aeronautical Development Agency (ADA) under DRDO
- Manufacturer: Hindustan Aeronautics Limited (HAL)
- Generation: 4.5
- Key Features:
  - Speed: ~Mach 1.8 (~2,200 km/h)
  - Combat Range: ~500 km (Ferry range ~1,700 km)
  - Weapons: Air-to-air, air-to-ground missiles, bombs, precision-guided munitions
  - Systems: Fly-by-wire for enhanced manoeuvrability

HAL HTT-40 – Basic Trainer Aircraft

- Type: Indigenously designed turboprop trainer
- Purpose: Basic flight training for IAF pilots before advanced jet trainers
- Manufacturer: Hindustan Aeronautics Limited (HAL)

Mahatma Gandhi and Ethics – Summary for Gandhi Jayanti 2025

Context: Gandhi Jayanti, observed on 2 October, marks the 156th birth anniversary of Mahatma Gandhi (1869–1948). Recognized as the International Day of Non-Violence, the day celebrates Gandhi's principles of truth (Satya) and non-violence (Ahimsa), highlighting his enduring influence on India and the world.

About Mahatma Gandhi

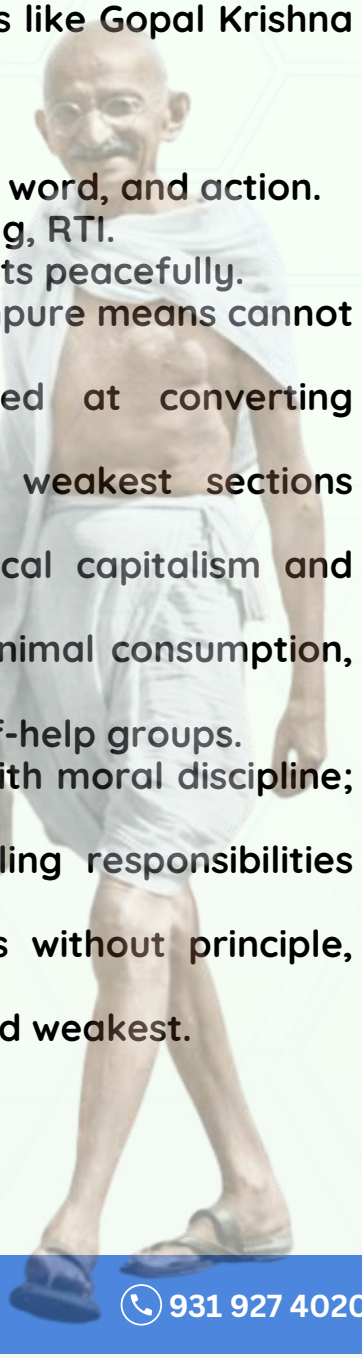
- Birth & Early Life: Born in Porbandar, Gujarat; trained as a lawyer.
- Role in Freedom Struggle: Father of the Nation; pioneered Satyagraha, nonviolent resistance against colonial rule.
- Philosophy: Emphasized truth, non-violence, swaraj (self-rule), rural development, social equality, and simple living.
- Leadership: Led Champaran & Kheda agitations, Non-Cooperation Movement, Salt March, Quit India Movement; promoted communal harmony and upliftment of marginalized communities.
- Global Legacy: His teachings continue to inspire peace, justice, and ethical leadership worldwide.

Historical Context

- South Africa (1893–1915): Confronted racial discrimination; developed mass mobilization and political strategy forming the basis of Satyagraha.
- Practical Ethics: Combined ethical principles with political action; emphasized mass participation and disciplined leadership.
- Impact on India: Politicized ordinary citizens, including women, peasants, and lower castes; strengthened social awareness and civic engagement.
- Influences: Leo Tolstoy, John Ruskin, and Indian reformers like Gopal Krishna Gokhale.

Major Principles of Gandhian Ethics

1. Satya (Truth): Ultimate moral reality; harmony of thought, word, and action.
    - Application: Transparency in governance, whistleblowing, RTI.
2. Ahimsa (Non-Violence): Active compassion; resolves conflicts peacefully.
3. Purity of Means: Righteous ends require ethical means; "Impure means cannot yield pure ends."
4. Satyagraha (Truth-Force): Nonviolent resistance aimed at converting oppressors' conscience.
5. Sarvodaya (Welfare of All): Focus on uplifting the weakest sections (Antyodaya).
6. Trusteeship: Wealth should serve society; basis of ethical capitalism and modern CSR.
7. Self-Sufficiency (Swadeshi): Promote local production, minimal consumption, dignity of labor.
    - Modern Example: "Vocal for Local" campaign, rural self-help groups.
8. Swaraj (Self-Rule / Ethical Autonomy): Self-governance with moral discipline; foundation for decentralization and Panchayati Raj.
9. Duties Precede Rights: Ethical citizenship requires fulfilling responsibilities first.
10. Seven Deadly Sins: Commerce without morality, politics without principle, science without humanity—still relevant today.
11. Gandhi's Talisman: Decisions should benefit the poorest and weakest.



Contemporary Relevance

- Religion: Emphasized ethical living over ritual; promoted Sarva Dharma Sambhava (respect for all faiths).
- Inclusive Growth: Advocated wealth serving society, Sarvodaya, social justice; calls for reducing inequality and bridging rural-urban divide.
- Societal Ethics: Removal of untouchability, gender equality, dignity of labor, and moral reform.
- Simplicity & Minimalism: Counter to consumerism; resource-conscious living.
- Eco-Ethics: Respect for nature, sustainable living, trusteeship of environment; aligns with circular economy and low-impact lifestyles.

Conclusion: Mahatma Gandhi's ethics of truth, non-violence, trusteeship, and moral integrity remain a guiding framework for justice, peace, social harmony, and sustainable development. His ideals continue to inspire ethical living and civic responsibility in modern society.

Rashtriya Ekta Diwas 2025

Context: Rashtriya Ekta Diwas, observed on 31 October, commemorates the 150th birth anniversary of Sardar Vallabhbhai Patel, celebrating his vision of a united India and the ideal of "Unity in Diversity."

About Rashtriya Ekta Diwas

- Date: 31 October
- Significance: Honors Sardar Patel's role in national integration and unity.
- 2025 Celebrations:
  - President of India paid tribute at Rashtrapati Bhavan.
  - Green Mobility Initiative: Flagged off electric buses in the Statue of Unity region.
  - Infrastructure Boost: ₹280 crore projects to enhance tourism and civic facilities around Statue of Unity.
- Statue of Unity:
  - Height: 182 meters, world's tallest statue.
  - Symbolizes Patel's leadership, determination, and commitment to national unity.

About Sardar Vallabhbhai Patel

- Birth: 31 October 1875, Nadiad, Gujarat.
- Title & Legacy: Known as the "Iron Man of India" for his decisiveness and firmness; revered as a symbol of national unity and resilience.
- Inspiration: Influenced by Mahatma Gandhi; joined the Indian freedom struggle.

Role in the Freedom Struggle

1. Kheda Satyagraha (1918): Led farmers demanding tax relief during drought.
2. Bardoli Satyagraha (1928): Organized resistance against unjust tax hikes; earned title "Sardar".
3. Non-Cooperation & Civil Disobedience: Mobilized funds and volunteers; played a key organizational role.
4. Congress Leadership: Chaired 46th session in 1931.
5. Quit India Movement (1942): Arrested and imprisoned for active participation.

Post-Independence Contributions

- Integration of Princely States: Unified 562 princely states into the Indian Union, ensuring stability and democracy.
- Civil Services Reforms: Established modern All India Services; National Civil Services Day (21 April) honors his 1947 speech calling civil servants the "steel frame of India."

PM SHRI Scheme

Context: Kerala has joined the PM SHRI (PM Schools for Rising India) scheme to secure funds for modernising government schools.

About PM SHRI

- Full Form: PM Schools for Rising India
- Objective: Upgrade 14,500+ government schools into model institutions reflecting the National Education Policy (NEP) 2020.
- Launch: 2022
- Target Schools:
  - Elementary: Classes 1–5 / 1–8
  - Secondary: Classes 1–10 / 6–10
  - Senior Secondary: Classes 1–12 / 6–12
  - Must have UDISE+ code

Funding Pattern

Category	Centre : State Share
General States/UTs with legislature	60:40
Northeastern & Himalayan States, J&K	90:10
UTs without legislature	100% Central Funding

Selection Process

1. State/UT MoU: States/UTs sign MoU agreeing to implement NEP 2020 fully.
2. Shortlisting: Schools evaluated on ~60 parameters including infrastructure, electricity, and toilets.
3. Physical Verification: Teams from State, KVs, and JNVs inspect schools; recommendations sent to Ministry of Education.
4. Final Selection: Maximum of two schools per block/urban local body – one elementary, one secondary/senior secondary, approved by an expert committee.

PM-SETU Yojana

Context: The Prime Minister launched the Pradhan Mantri Skilling and Employability Transformation through Upgraded ITIs (PM-SETU) to modernize government ITIs and improve employability.

About PM-SETU

- Objective: Transform 1,000 Government ITIs into modern, industry-aligned training institutions.
- Model: Hub-and-Spoke
  - 200 Hub ITIs linked to 800 Spoke ITIs
- Ministry: Ministry of Skill Development and Entrepreneurship

Key Features

1. Industry-Aligned Courses: Introduce new demand-driven courses and revamp existing ones in collaboration with industries.
2. Cluster Management: Establish Special Purpose Vehicles (SPVs) with Anchor Industry Partners to manage ITI clusters and ensure outcome-based training.
3. Flexible Learning Pathways: Offer long-term diplomas, short-term courses, and executive programs for skill upgradation.
4. National Skill Training Institutes: Strengthen five key institutes located in:
   - Bhubaneswar, Odisha
   - Chennai, Tamil Nadu
   - Hyderabad, Telangana

SPARK–4.0 (2025–26)

Context: The Central Council for Research in Ayurvedic Sciences (CCRAS) has launched SPARK–4.0, a program to encourage research aptitude among undergraduate Ayurveda students across India.

About SPARK–4.0

- Full Form: Studentship Program for Ayurveda Research Ken
- Edition: Fourth edition (2025–26)
- Nodal Body: CCRAS under the Ministry of Ayush
- Eligibility: Open to students from NCISM-recognized Ayurveda colleges

Objectives

1. Promote Research Interest: Ignite curiosity and analytical thinking among BAMS students.
2. Bridge Knowledge: Integrate classical Ayurvedic knowledge with modern scientific inquiry.
3. Strengthen Research Ecosystem: Build a long-term evidence-based research culture in the Ayush sector.

Fare Se Fursat Scheme

Context: The Civil Aviation Minister recently launched "Fare Se Fursat", a fixed-fare scheme by government-owned regional airline Alliance Air.

About the Scheme

- Nature: Pilot initiative offering a single fixed airfare.
- Key Feature: Fare remains unchanged regardless of booking date, season, or last-minute demand.

Objectives

1. Eliminate Fare Uncertainty: Provide passengers with cost predictability even for last-minute bookings.
2. Promote Regional Connectivity: Encourage first-time flyers from smaller towns.
3. Passenger-Centric Approach: Make air travel convenient, affordable, and hassle-free across regional routes.

Times Higher Education (THE) World University Rankings 2026

Context: India has become the second most-represented country in the THE World University Rankings 2026, with 128 institutions featured globally.

About THE World University Rankings

- Publisher: UK-based Times Higher Education.
- 2026 Edition: Features 2,191 universities from 115 countries and territories.
- Purpose: Provides a comparative assessment of global academic excellence.
- Ranking Criteria: Evaluated across five broad areas:
  a. Teaching (learning environment)
  b. Research environment
  c. Research quality
  d. International outlook
  e. Industry impact
- Indicators: 18 performance indicators, covering research strength, innovation, and global engagement.
- Ranking Method: Universities beyond the top 100 are placed in rank bands rather than specific positions.

Global Highlights

- World No. 1: University of Oxford, UK, retained the top spot for the 10th consecutive year.

India in THE 2026 Rankings

- Representation: 128 Indian universities (up from 107 in 2025), second only to the United States.
- Top Indian University: Indian Institute of Science (IISc), Bangalore, in the 201–250 rank band.

Henley Passport Index 2025

Context: The Henley Passport Index (HPI) 2025 ranks countries based on the travel freedom their citizens enjoy.

Top 10 Passport Rankings (2025)

1. Singapore – Visa-free access to 193 destinations
2. South Korea – Visa-free access to ~190 destinations
3. Japan – Visa-free access to ~189 destinations

India's Position

- Rank: 85th, down from 80th in 2024
- Visa-Free / Visa-on-Arrival Access: 57 destinations
- Historical Fluctuations:
  - Lowest Rank: 90 in 2021
  - Highest Rank: 71 in 2006

About Henley Passport Index

- Purpose: Measures global travel freedom for passport holders.
- Launched by: Henley & Partners, a global citizenship and residence advisory firm.
- First Published: 2006
- Data Source: IATA database, covering visa regulations of 199 countries and 227 destinations

World Para-Athletics Championships 2025

Context: The 12th edition of the World Para-Athletics Championships was held in New Delhi from 26 September to 5 October 2025. It is a premier global event for differently-abled athletes, organized under the International Paralympic Committee (IPC).

Purpose

- Promote inclusivity and excellence in para-sports.
- Serve as a qualification platform for the upcoming Paralympic Games.

Medal Tally Highlights

- Top Nation: Brazil – 44 medals (15 Gold, 20 Silver, 9 Bronze)
- India's Performance:
  - Rank: 10th (best-ever finish)
  - Medals Won: 22 (6 Gold, 9 Silver, 7 Bronze)

India Wins ISSA Award 2025

Context: India was honored with the International Social Security Association (ISSA) Award for Outstanding Achievements in Social Security at the World Social Security Forum held in Kuala Lumpur, Malaysia.

India's Achievement

- Recognition for remarkable progress in social security coverage over a decade.
- Coverage increased from 19% in 2015 to 64.3% in 2025, benefiting over 940 million citizens.

About ISSA

- Full Form: International Social Security Association
- Established: 1927 under the International Labour Organization (ILO)
- Headquarters: Geneva, Switzerland
- Objective: Promote excellence in social security administration via research, knowledge-sharing, and policy innovation.
- Membership: 320+ institutions from 160 countries, including governments, social insurance agencies, and labour organizations.

Kenton R. Miller Award 2025

Awardee:

- Dr. Sonali Ghosh, Field Director of Kaziranga National Park and Tiger Reserve
- First Indian recipient of this prestigious conservation award.
- Co-recipient: Roque Simón Sevilla from Ecuador.

About the Kenton R. Miller Award

- Instituted: 1999 by IUCN World Commission on Protected Areas (WCPA)
- Purpose: Recognizes innovation and excellence in sustainable management of protected areas.
- Named After: Dr. Kenton R. Miller, former IUCN Director-General and conservation pioneer, known for advancing global park governance and sustainability.

Reason for Dr. Ghosh's Recognition

- Developed community-integrated conservation models in Kaziranga and Manas National Park.
- Blended traditional ecological knowledge with scientific research to enhance biodiversity protection.
- Promoted sustainable and inclusive protected area management.

PM-JAY Award 2025

Awardee:

- Chhattisgarh – Recognized as the best performing state under Pradhan Mantri Jan Arogya Yojana (PM-JAY).

About the PM-JAY Award

- Purpose: Recognizes states demonstrating exemplary implementation of PM-JAY.
- Focus Areas:
  - Efficiency in hospital participation and claim processing
  - Transparency and fraud prevention
  - Beneficiary satisfaction and trust

Chhattisgarh's Key Achievements

1. Hospital Participation:
   - 97% of empanelled hospitals active (national average ~52%)
2. Claim Processing Efficiency:
   - Near-zero pendency
   - Claim approval time reduced to 7–10 days
3. Fraud Detection & Compliance:
   - 32,000+ field audits conducted
   - Disciplinary action against 45 out of 52 non-compliant hospitals
   - Nearly 75% reduction in suspect claims
4. Transparency & Trust:
   - Strong confidence among hospitals and beneficiaries in scheme's functioning

About PM-JAY

- Full Form: Pradhan Mantri Jan Arogya Yojana
- Launch: 2018 under Ayushman Bharat Mission
- Nodal Ministry: Ministry of Health and Family Welfare via National Health Authority (NHA)
- Key Features:
  - Covers hospitalisation up to ₹5 lakh per family per year
  - Provides cashless treatment at empanelled hospitals
  - Focus on fraud prevention, timely claim disbursal, and quality service
  - Encourages state-level reforms in health administration

World Food India (WFI) 2025

Event: World Food India (WFI) 2025
Venue: Bharat Mandapam, New Delhi, India
Host: Ministry of Food Processing Industries (MoFPI)

About World Food India (WFI)

- Launched: 2017
- Purpose: Flagship international event to position India as a Global Food Hub
- Objectives:
  - Foster innovation, investment, and partnerships across the food value chain
  - Showcase India's capabilities in food processing, exports, and technology

WFI 2025 Highlights

- Participation:
  - 90+ countries
  - 2,000+ exhibitors
  - Multiple international delegations
- Partner Countries:
  - New Zealand
  - Saudi Arabia
- Focus Countries:
  - Japan, UAE, Vietnam, Russia
- Key International Events:
  - 3rd Global Food Regulators Summit – organized by FSSAI
  - 24th India International Seafood Show – organized by SEAI

Nobel Prize in Physiology or Medicine 2025

Awarded to:

- Shimon Sakaguchi (Japan)
- Mary E. Brunkow (USA)
- Fred Ramsdell (USA)

Recognition: For discoveries on Regulatory T cells (Tregs) and FOXP3, which transformed understanding of immune self-tolerance and autoimmune regulation.

Immune System Overview

- The human immune system defends against bacteria, viruses, and abnormal cells.
- Self-Tolerance: Immune cells must distinguish self from non-self. Failure leads to autoimmune diseases.
- Central Tolerance: Thymus eliminates self-reactive T cells, but some still circulate in healthy individuals.

Shimon Sakaguchi's Contribution

- Identified Regulatory T cells (Tregs) in the 1990s.
- Function: Act as "security guards," suppressing excessive immune responses to maintain peripheral tolerance.
- Experiments in mice: Removing Tregs caused autoimmune disorders; restoring them prevented disease.
- Laid the foundation for peripheral immune tolerance.

Brunkow & Ramsdell's Contribution

- Studied mice with fatal autoimmune disorders and identified FOXP3 gene mutation on the X chromosome.
- Human Link – IPEX Syndrome: FOXP3 mutation causes rare autoimmune disease in boys.
- FOXP3 is critical for Treg development and function.

Connection Between Discoveries

- Sakaguchi later demonstrated that FOXP3 controls Treg development, linking the genetic and cellular mechanisms.
- Together, these findings explained how the immune system distinguishes self from non-self.

Medical and Scientific Significance

- Autoimmune Diseases: Therapies aim to enhance Tregs to prevent self-attacks.
- Cancer: Tumours exploit Tregs to evade immune attack; research explores inhibiting Tregs around tumours.
- Transplant Medicine: Understanding Tregs improves graft survival and prevents rejection.
- New Research Field: Launched the field of immune-regulation biology.

About T Cells

- Type: White blood cells (lymphocytes) crucial for immune defense.
- Functions: Detect and destroy abnormal/infected cells.
- Types:
  - Helper T-cells: Monitor and alert immune system.
  - Killer T-cells: Directly attack pathogens or infected cells.

Impact: These discoveries provide the molecular and cellular basis of immune self-tolerance, revolutionizing therapies for autoimmune diseases, cancer, and transplantation medicine.

Nobel Prize in Physics 2025

Awarded to:

- John Clarke (USA)
- Michel Devoret (USA)
- John Martinis (USA)

Recognition: For demonstrating macroscopic quantum tunnelling and energy quantisation in an electric circuit, showing that quantum phenomena can exist in systems made of billions of particles.

About the Discovery

- Built on Josephson's 1962 prediction (Josephson Effect) that electrons can quantum tunnel between superconductors separated by a thin insulating barrier.
- The 1980s experiments at University of California involved superconducting circuits with Josephson Junctions, cooled to near absolute zero and isolated from external interference.
- Key Findings:
  - The entire circuit behaved according to quantum laws.
  - It exhibited discrete energy levels—energy quantisation, similar to atoms.
  - The circuit showed macroscopic quantum tunnelling, jumping between energy states without passing through intermediate levels.

Scientific Breakthrough

- First demonstration of quantum effects at a macroscopic level, not limited to atoms or subatomic particles.
- This work laid the foundation for superconducting qubits, now central to quantum computers by companies like Google and IBM.

Quantum Mechanics Concepts Relevant to the Discovery

1. Superposition:
   - Particles can exist in multiple states simultaneously until measured.
   - A qubit can be both 0 and 1 at once, enabling parallel computation.
   - Analogy: A spinning coin is both heads and tails until it lands.
2. Quantum Tunnelling:
   - Particles can cross energy barriers they classically shouldn't be able to.
   - Applications: Fusion in the Sun, tunnel diodes, flash memories, superconducting qubits.
3. Quantum Entanglement:
   - Two particles remain connected; changing one affects the other instantly, enabling quantum communication.
4. Quantum Interference:
   - Quantum waves overlap to reinforce or cancel outcomes, enhancing computational efficiency.

Energy Quantisation

- Energy in quantum systems is restricted to specific discrete levels.
- Classical energy changes smoothly; quantum energy "jumps" in quanta.
- Clarke, Devoret, and Martinis showed a macroscopic circuit obeying these discrete energy rules, confirming the universality of quantum laws.

Josephson Junction

- Concept: Two superconductors separated by a thin insulator allow electrons to tunnel without applied voltage.
- Produces a supercurrent (current without resistance).
- Applications: SQUIDs, precision magnetometers, and foundational devices for quantum computing.

Nobel Prize in Chemistry 2025

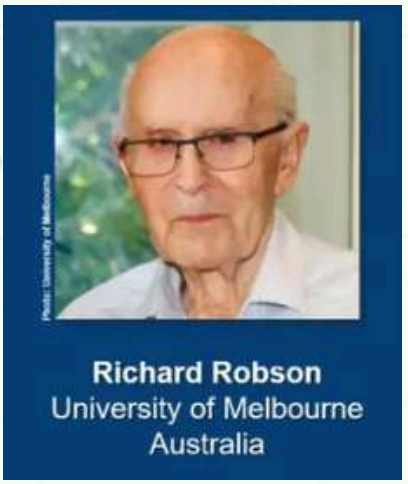
Awarded to:

- Susumu Kitagawa (Japan)
- Richard Robson (Australia)
- Omar Yaghi (Jordan–USA)

Recognition: For pioneering Metal-Organic Frameworks (MOFs) — crystalline materials with highly tunable porous structures enabling multiple scientific and industrial applications

About Metal–Organic Frameworks (MOFs)

- Structure:
  - Composed of metal ions (nodes) connected by organic linkers (carbon-based molecules), forming 3D networks with cavities.
  - These voids allow gases, liquids, or molecules to move in and out.
- Mechanism:
  - Metal ions act as anchors; organic molecules act as flexible connectors.
  - The resulting structure creates ordered, tunable pores.
- Functionality:
  - MOFs behave like molecular sponges, temporarily trapping or releasing molecules.
  - Analogy: Unlike a solid brick (ordinary compound), MOFs are like a scaffolded building with controllable empty spaces at the molecular level.



Development of MOFs

1. Richard Robson (1970s):
   - Conceptualized linking metals with molecules to create expanded structures.
   - Early MOFs were unstable but groundbreaking.
2. Susumu Kitagawa:
   - Stabilized MOFs and demonstrated that gases could pass through the cavities.
3. Omar Yaghi (1995):
   - Created thermally stable 2D MOFs (Cu, Co) capable of hosting "guest molecules."
   - Coined the term "metal-organic framework" in Nature.
   - Laid the foundation for Reticular Chemistry, designing predictable extended frameworks.

Distinctive Features

- Customisable Porosity: Control pore size, shape, and chemical properties.
- Design Flexibility: Target specific molecules for capture or release.
  - Example: CO_2 capture for climate mitigation.
- Chemical Stability: Can withstand high temperatures and harsh conditions.

Real-World Applications

1. Water Harvesting: Extract water from dry air for arid regions.
2. Pollutant Removal: Filter contaminants like PFAS from water.
3. Carbon Capture: Trap CO_2 to reduce greenhouse gases.
4. Hydrogen Storage: Efficient and safe storage for green energy.
5. Food Preservation: Capture ethylene gas to slow ripening and reduce spoilage.

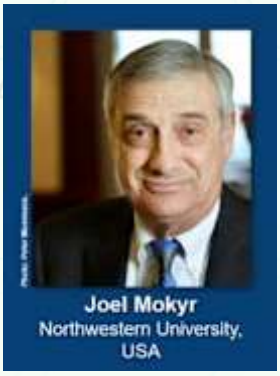
Nobel Prize in Economic Sciences 2025

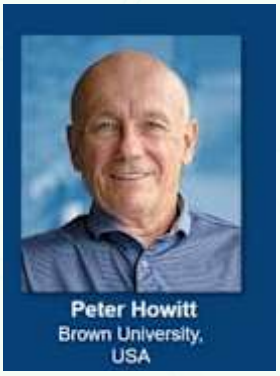
Awarded to:

- Joel Mokyr (USA/Netherlands)
- Philippe Aghion (France)
- Peter Howitt (Canada)

Recognition: For their pioneering work on innovation-driven economic growth, linking historical knowledge, technological progress, and economic theory to explain how innovation fuels sustained growth.

Joel Mokyr – Knowledge as the Engine of Growth





- Core Idea: Innovation thrives on useful knowledge, divided into:
  a. Propositional Knowledge: Understanding why things happen (scientific principles).
  b. Prescriptive Knowledge: Knowing how to apply this understanding practically.
- Historical Transition:
  - Before the Industrial Revolution, innovations often lacked practical application.
  - The Scientific Revolution (16th–17th century) enabled experimentation, measurement, and reproducibility, linking theory with practice.
- Examples:
  - Steam engines: Advances driven by understanding atmospheric pressure.
  - Steel production: Improvements via chemical knowledge of oxygen-carbon reactions.

Aghion–Howitt Model – Creative Destruction and Growth

- Concept: Mathematical model formalizing Joseph Schumpeter's creative destruction, showing how innovation replaces old technologies, driving growth.
- Mechanism:
  a. Firms invest in R&D to innovate, gaining temporary monopoly advantages.
  b. New innovations replace old technologies, boosting societal productivity.
- Policy Implications:
  - Balancing R&D incentives:
    - Support R&D to benefit society from outdated technologies.
    - Avoid over-concentration of profits from marginal innovations.
  - Informs innovation subsidies, patent laws, and competition regulation.

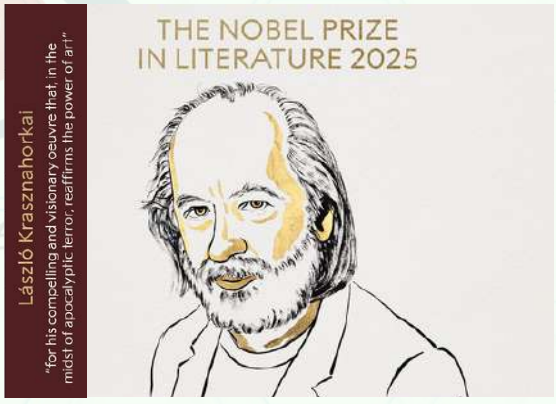
Joseph Schumpeter's Theory of Creative Destruction

- Definition: Innovation reshapes the economy by destroying outdated industries and creating new ones.
- Examples:
  - Automobiles replacing horse-drawn carriages.
  - Digital photography displacing film cameras.
  - Online retail and fintech transforming traditional commerce and banking.

Nobel Prize in Literature 2025

Awarded to:

- László Krasznahorkai (Hungary)



Recognition: For his visionary and compelling literary works that combine apocalyptic narratives, philosophical depth, and incisive social critique.

About László Krasznahorkai

- Birth & Background: Born in 1954 near the Romanian border in Hungary.
- Literary Debut: Sátántangó (1985; English translation Satantango, 2012), which established his reputation.
- Style & Themes:
  - Known for apocalyptic storytelling and dense, complex narratives.
  - Explores themes of violence, beauty, impermanence, and moral ambiguity.
  - Philosophical and reflective prose, often examining the human condition in chaotic societies.

Notable Works

1. Herscht 07769 (2025) – Focuses on social unrest, violence, and ethical complexity in a small German town.
2. Seiobo There Below (2008; English 2013) – A collection of 17 stories, arranged in a Fibonacci sequence, exploring artistic creation and fleeting beauty.
3. A Mountain to the North, a Lake to the South, Paths to the West, a River to the East (2022) – Continues his exploration of existential and societal themes.

Key Points:

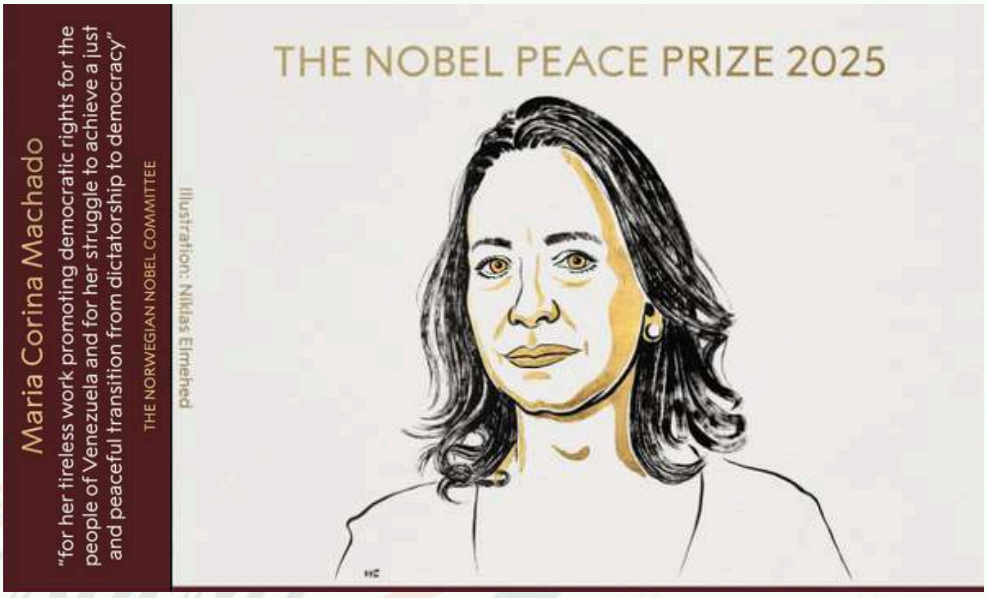
- Krasznahorkai's writing is philosophical, dense, and challenging, offering profound insight into human nature and society.
- He follows a lineage of Nobel laureates who blend literary innovation with social and existential reflection.
- Previous Literature Nobel (2024) was awarded to Han Kang (South Korea).

Nobel Peace Prize 2025

Awarded to:

- María Corina Machado (Venezuela)

Recognition: For her courageous advocacy for democracy, human rights, and free and fair elections in Venezuela.



About María Corina Machado

- Birth & Background: Born in 1967 in Caracas, Venezuela.
- Education: Industrial Engineering at Universidad Católica Andrés Bello; Finance at IESA.
- Political Career:
  - Founder of Vente Venezuela, a political party promoting democratic governance.
  - Co-founded Súmate (2002), an organization advocating transparent and fair elections.
  - Served in the National Assembly (2010–2014); expelled for opposing the government.

Key Points:

- Machado is recognized for defending democratic principles amid political repression.
- Her work highlights the importance of civic engagement, electoral integrity, and human rights activism.
- The 2024 Nobel Peace Prize was awarded to Nihon Hidankyo (Japan), an organization of atomic bomb survivors promoting nuclear disarmament and peace.