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OCTOBER 2025

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Over Rare Earths

Supreme Court to Review
Validity of STT

DAC Clears ₹79,000
Crore Defence Proposals

RBI Expands Rupee Trad
to Boost Regional Use

UAE to Impose Sugar Tax
from 2026

India Adds Record
24.5 GW Solar in 2024

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FOREWORD

The **November Edition** of *EPIC UPSC Current Affairs* continues our commitment to move beyond routine news compilation – turning information into **exam-oriented insights**. Each topic in this issue has been **systematically mapped to the UPSC syllabus**, enabling aspirants to understand **what happened, why it matters, and how it links** to both Prelims and Mains perspectives.

This edition reflects our ongoing effort to **simplify, prioritise, and distil** current affairs into **high-yield, concept-driven content**. Every section is crafted to strengthen **conceptual clarity**, enhance **analytical depth**, and help aspirants think like future administrators – with precision and purpose.

Note from the Team

To ensure **faster loading and smooth offline access**, we've intentionally kept visual content minimal in this edition.

Meanwhile, **Team Educasium** has undergone a **strategic restructuring** this month to support the expansion of upcoming initiatives – all aimed at improving your learning experience. We sincerely thank you for your **trust, patience, and continued support** during this transition phase.

At **Educasium IAS Academy**, our vision remains unwavering:

To empower every serious UPSC aspirant with structured, reliable, and meaningful guidance.

Under the direction and mentorship of **Purushoth Sir**, we continue to deliver **innovative, value-driven learning experiences** that cultivate excellence, resilience, and a deep sense of purpose.

On behalf of the **EPIC UPSC Team**, we reaffirm our pledge to uphold **consistency, academic integrity, and innovation** – ensuring each edition of this magazine stands as a **trusted, substantial companion** in your civil services journey.

Team EDUCASIUM

EPIC UPSC Classes – Educasium IAS Academy

Disclaimer: While every effort has been made to ensure accuracy, occasional errors may occur. Any such inaccuracies will be acknowledged and corrected in subsequent editions.

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INDIAN POLITY GOVERNANCE

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1. Supreme Court Orders All States and UTs to Frame Comprehensive Road Safety Rules Within Six Months



The **Supreme Court of India** has directed all States and Union Territories to **formulate uniform and comprehensive road safety rules within six months**, addressing the rising number of road fatalities and ensuring accountability in road design, construction, and enforcement.

Legal Basis (Motor Vehicles Act, 1988)

Provision	Key Mandate
Section 138(1A)	Empowers State Governments to regulate movement of pedestrians, cyclists, and non-mechanically propelled vehicles.
Section 210-D	Requires uniform safety standards for road design, construction, and maintenance.
Section 198-A	Fixes liability on officials/contractors for accidents due to faulty road design or poor upkeep.

Key Directives of the Supreme Court

Area	Directive Highlights
Framing of Rules	States/UTs must include provisions on helmet enforcement, pedestrian safety, wrong-lane driving, overtaking rules, and LED headlight standards.
Helmet Enforcement	Both rider and pillion must comply; camera-based e-enforcement and digital challans mandated.
Pedestrian Safety	Adoption of Indian Roads Congress (IRC) standards for crossings, shaded waiting areas, tactile pavements, and design compliance at terminals/stations.
Road Engineering Accountability	Contractors and engineers may face prosecution under Section 198A for fatal design flaws.
LED Headlights & Hooters	MoRTH and States to cap luminance and beam angles; complete ban on unauthorised red-blue strobes and sirens.
Monitoring & Grievances	States, ULBs, and NHAI to create online grievance systems for pedestrian and footpath issues, with review mechanisms for unresolved complaints.



UPSC Relevance: GS Paper III: Internal Security & Disaster Management – Road Safety as Human Security. **Prelims Facts:** Sections 138(1A), 198A, and 210D – MV Act, 1988. MoRTH report 2023: 4.6 lakh accidents; ~1.68 lakh deaths. UN Road Safety Target: 50% reduction by 2030



HOT Question: “The Supreme Court’s recent intervention in road safety highlights gaps in India’s enforcement and design standards. Discuss how legal accountability and engineering reforms can together achieve India’s 2030 road fatality reduction targets



2. Supreme Court Flags Systemic Discrimination, Directs Centre and States to Frame a Comprehensive Equal Opportunity Policy for Transgender Persons



The Supreme Court of India has directed the Central and State Governments to formulate a **comprehensive Equal Opportunity Policy** for transgender persons within six months, citing persistent discrimination despite existing legal protections under the **Transgender Persons (Protection of Rights) Act, 2019**.

Case Origin: Based on a plea by a transgender woman terminated from teaching positions in UP and Gujarat, exposing institutional bias.

Legal Context:

- **Transgender Persons (Protection of Rights) Act, 2019** – prohibits discrimination in education, employment, healthcare, and public services.
- **NALSA v. Union of India (2014)**: Recognised transgender persons as the “third gender” under **Articles 14, 15, 16 & 21**, ensuring equality and self-identification rights.

Key Directives of the Supreme Court

Directive Area	Action Ordered
Advisory Committee	Formation of a panel headed by Justice Asha Menon (Retd.) to draft the Equal Opportunity Policy and institutional reforms within 6 months.
Institutional Mechanisms	Establishment of Transgender Welfare Boards in all States/UTs (as per 2020 Rules) and Protection Cells under DMs and DGPs.
Support Systems	Launch of a nationwide toll-free helpline for reporting rights violations.
Monitoring	Periodic review of policy implementation by MoSJ&E and submission of status reports to the Supreme Court.

Challenges Faced by Transgender Community

Dimension	Key Data/ Issues
Employment	Only 6% in formal jobs; 92% in informal sectors (begging, sex work) – NHRC-NITI Aayog Report 2021.
Education	46% drop out before secondary school; <2% reach higher education – NHRC 2022.
Healthcare	Only 30% have access to gender-affirming care; 25% face medical refusal – MoSJ&E 2023.
Governance	Only 11 States have active Welfare Boards; average welfare spending <₹1,000 per person annually – CAG 2023.



HOT Question: “Despite legislative safeguards, transgender persons continue to face systemic exclusion in education, healthcare, and employment. Analyse how an Equal Opportunity Policy can bridge this gap



3. Supreme Court Rules Surrogacy Age Limits Non-Retroactive;



The Supreme Court of India ruled that the **age limits prescribed under the Surrogacy (Regulation) Act, 2021** cannot apply **retrospectively** to couples who had already initiated the surrogacy process **before the law took effect (January 2022)**.

Constitutional Context

- **Case Cited:** *Suchita Srivastava v. Chandigarh Administration* (2009) – recognised a woman’s **reproductive choice** as an integral aspect of **bodily autonomy and personal liberty** under **Article 21**.
- **Judicial Stand:** The right to reproductive autonomy includes **the right to procreate, to abstain, and to choose assisted methods** such as surrogacy.

Key Takeaways from the Judgment

Aspect	Supreme Court’s Observation
Reproductive Autonomy	Falls within right to privacy and personal liberty (Art. 21) – includes the choice to become a parent via surrogacy.
Equality in Parenthood	Adoption laws have no age restrictions; hence, selective age limits in surrogacy lack rational justification.
State Regulation	State may impose medical safeguards, but cannot retrospectively interfere with lawful reproductive decisions already undertaken.
Protection of Intentional Parents	Couples who began the surrogacy process before Jan 2022 are exempt from new age limits.

About Surrogacy (Regulation) Act, 2021

Parameter	Provision
Objective	To ban commercial surrogacy and permit only altruistic surrogacy (no monetary compensation except medical costs).
Eligibility (Couples)	Female: 23–50 years; Male: 26–55 years.
Eligibility (Single Woman)	Only widows/ divorcees (35–45 years) allowed.
Surrogate Mother	Must be close relative, aged 25–35, with at least one child, and can be a surrogate only once.
Not Eligible	Foreigners, single men, live-in partners, same-sex couples, or couples with an existing biological/ adopted child.



UPSC Relevance: **GS Paper II:** Welfare schemes, Rights of Women, **GS Paper IV (Ethics):** Autonomy vs State Control; Ethical Dimensions of Assisted Reproduction. *Commercial Surrogacy:* Prohibited; only altruistic permitted.



HOT Question: “The Supreme Court’s interpretation of reproductive autonomy under Article 21 expands the ethical and constitutional framework of assisted reproduction in India.” Discuss in light of the Surrogacy (Regulation) Act, 2021

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4. Supreme Reiterates That Preventive Detention Cannot Substitute Regular Criminal Law



In *Dhanya M. vs State of Kerala (2025)*, the **Supreme Court** reaffirmed that **preventive detention** must be used **sparingly**, not as a tool to bypass bail or replace ordinary criminal proceedings. The Court criticised its continued misuse under laws like the **Kerala Anti-Social Activities (Prevention) Act (KAAPA)** and the **National Security Act (NSA)**.

Constitutional and Legal Context

- **Article 22 (Clauses 3–7):** Authorises **preventive detention** — permits holding an individual **without trial for up to 12 months** under specific laws.
- **Objective:** To prevent anticipated threats to public order, security, or essential supplies — *not* to punish past conduct.
- **Judicial Safeguards:**
 - Advisory Board review within 3 months.
 - Detention beyond 3 months requires Central/State approval.

Judicial Observations

Case	Judicial View
Dhanya M. (2025)	Preventive detention cannot be used to avoid bail or compensate weak investigation; must meet “compelling necessity” test.
Rekha vs Tamil Nadu (2011)	Preventive detention should not replace normal legal process.
Banka Sneha Sheela (2021)	Detention must not be used to overcome bail denial or re-arrest arbitrarily.

Issues and Concerns

Concern Area	Key Insights
Colonial Legacy	Originates from Bengal Regulation III, 1818; retained post-Independence, despite its arbitrary nature.
Overuse	Over 24,000+ detentions annually under preventive laws (NCRB, 2023).
Erosion of Liberty	Undermines Articles 14, 19, 21 — the “Golden Triangle” of rights ensuring equality, freedom, and life with due process.
Vague Definitions	Broad terms like “goonda”, “anti-social element” enable arbitrary interpretation.
Weak Accountability	Low review and conviction rates; minimal oversight of executive powers.
Global Concern	India ranks lowest among G20 nations in Rule of Law Index (WJP 2024).



UPSC Relevance: **GS Paper II:** Fundamental Rights, Constitutional Safeguards, Judicial Review. **GS Paper III:** Internal Security – Legal Mechanisms and Human Rights Concerns.



HOT Question: “Preventive detention, a colonial relic, continues to undermine constitutional guarantees of liberty. Critically analyse its use in India with recent judicial interventions



5. Supreme Court in Swacch Association v. State of Maharashtra (2025) Extends Public Trust Doctrine to Artificial Lakes, Protecting Futala Lake, Nagpur



The **Supreme Court of India** expanded the scope of the **Public Trust Doctrine (PTD)** to cover **artificial waterbodies**, ruling that even man-made lakes, once dedicated for public use, carry equal ecological and cultural importance as natural ones. The case arose over the alleged encroachment and commercial use of **Nagpur’s historic Futala Lake**.

About the Public Trust Doctrine (PTD)

- **Definition:** A legal principle that holds the **State as a trustee** of certain natural and cultural resources meant for public use and enjoyment.
- **Objective:** To ensure **sustainable use** and **intergenerational equity** – resources cannot be converted for private profit or exclusive ownership.
- **Origins:**
 - **Roman Law:** Concept of *res communis* – resources like air, water, and shores belong to everyone.
 - **English Common Law:** Adopted as part of the King’s fiduciary duty to preserve natural commons.
- **Indian Adoption:**
 - Formally recognised in **M.C. Mehta v. Kamal Nath (1997)**, where leasing forest land for private business was deemed a **breach of public trust**.
- **Constitutional Basis:**
 - **Article 21:** Right to life includes the right to a clean and healthy environment.
 - **Article 48A:** State’s duty to protect and improve the environment.

Landmark Judgements Expanding the Doctrine

Case	Year	Key Principle / Extension
M.C. Mehta v. Kamal Nath	1997	Introduced PTD in India; prohibited diversion of public forest land for private gain.
M.I. Builders v. Radhey Shyam Sahu	1999	Applied PTD to protect urban public spaces (parks).
Intellectuals Forum v. State of A.P.	2006	Applied PTD to natural lakes and wetlands.
Fomento Resorts v. Minguel Martins	2009	Extended PTD to coastal zones and beaches.
T.N. Godavarman v. Union of India	2022	Broadened definition of forests and eco-sensitive zones under PTD.
Swacch Association v. State of Maharashtra	2025	Extended PTD to artificial waterbodies, affirming their ecological and cultural value.

UPSC Relevance: GS Paper II: Role of Judiciary, Fundamental Rights, DPSPs. GS Paper III: Environmental Governance, Resource Conservation, Sustainable Development.

HOT Question: “The Public Trust Doctrine has evolved from protecting forests to encompassing artificial waterbodies and urban commons. Discuss its constitutional basis and judicial expansion in India.

6. With Over 4.57 Crore Pending Cases (NJDG, 2025), ADR Emerges as India’s Pathway to Speedy Inclusive Justice



As per the National Judicial Data Grid (NJDG, 2025), India faces over 4.57 crore pending cases, straining judicial capacity amid 33% vacancy in High Courts. The Supreme Court and Ministry of Law & Justice have emphasised Alternative Dispute Resolution (ADR) as a viable means to ensure speedy, affordable, and participatory justice, aligned with Article 39A (Equal Access to Justice).

About ADR (Alternative Dispute Resolution)

- Definition:** ADR refers to mechanisms that resolve disputes outside traditional courts, including arbitration, mediation, conciliation, negotiation, and Lok Adalats.
- Objective:** To achieve speedy, cost-effective, and harmonious justice through participatory dispute resolution.

Constitutional Link: Rooted in Article 39A – “State shall ensure equal justice and free legal aid.”

Statutory Framework

Mechanism	Legal Basis / Governing Law
Arbitration & Conciliation	Arbitration and Conciliation Act, 1996 (amended 2021) – mandates completion within 180 days.
Mediation	Mediation Act, 2023 – first dedicated legislation for voluntary and institutional mediation.
Lok Adalats	Legal Services Authorities Act, 1987 – statutory Lok Adalats organised under NALSA.
Conciliation under CPC	Section 89, Civil Procedure Code (CPC), 1908 – judicial recognition of ADR methods.
Rural ADR	Gram Nyayalayas Act, 2008 – promotes village-level, mobile, low-cost dispute resolution.



UPSC Relevance: **GS Paper II:** Separation of powers, Judiciary, Legal Reforms, Access to Justice. **GS Paper IV (Ethics):** Conflict resolution, Non-adversarial justice, Gandhian reconciliation.



HOT Question: “Alternative Dispute Resolution mechanisms embody the spirit of Article 39A by democratising justice delivery. Critically evaluate their potential and limitations in reducing India’s judicial pendency.”



7. Tamil Nadu Government Moves Supreme Court Against Governor’s Decision



The Tamil Nadu government has filed a petition in the **Supreme Court**, challenging Governor R.N. Ravi’s decision to **reserve the Kalaigarnar University Bill, 2025**, for the **President’s consideration** under *Article 200*. The State argues that this move violates the **constitutional mandate** that the Governor must act **on the aid and advice of the Council of Ministers**.

Judicial and Constitutional Context

Provision / Case	Key Point
Article 200	Governor may: (a) give assent, (b) withhold assent, (c) return Bill for reconsideration (except Money Bills), or (d) reserve it for President’s consideration.
Governor’s Discretion	Largely limited – must act in line with the advice of the Council of Ministers (Article 163 & Nabam Rebia v. Deputy Speaker, 2016).
Article 142	Empowers the Supreme Court to pass necessary orders for complete justice – including setting timelines for Governors to act on Bills.
Article 143(1)	Allows the President to seek the SC’s advisory opinion on matters of constitutional interpretation or public importance.

Judicial Developments

April 2025: SC ruled that **Governors and the President must act within three months** on Bills pending assent.

September 2025: SC reserved judgment in the **Presidential Reference** on whether Governors have discretion to **delay or deny assent** against ministerial advice.

Current Petition: TN argues that reserving the Bill without reasons amounts to **“constitutional sabotage”** of legislative will and **federal autonomy**.



UPSC Relevance: GS Paper II: Separation of Powers, Federal Relations, Constitutional Offices, Judicial Review. **Prelims Facts:** Article 200 – Governor’s options on Bills. Article 142 – Complete justice powers of SC. Article 143(1) . *Nabam Rebia Case (2016)* – Governor bound by ministerial advice.



HOT Question: “The discretionary powers of the Governor under Article 200 have often strained the federal balance of the Constitution. Discuss in light of recent Supreme Court interventions



8. Draft Rules under PROG Act, 2025 Ban Real Money Gaming, Establish National Online Gaming Authority



On **2nd October 2025**, the Government released **draft rules** to operationalize the **Promotion and Regulation of Online Gaming (PROG) Act, 2025**. The Act introduces India’s first **centralized legal framework** to regulate the online gaming ecosystem – banning **Real Money Gaming (RMG)** while allowing **social games** and **e-sports** under supervision.

About the PROG Act, 2025

Aspect	Details
Objective	To regulate online gaming, protect users, prevent addiction, and curb gambling-related harm.
Scope	Applies to all digital gaming platforms offering online games in India.
Status of Games	 Banned: Real-money games (RMG) such as poker, rummy, fantasy sports.  Allowed: Social games & e-sports (skill-based, non-monetary).
Penalty Framework	Severe criminal and financial penalties for violations (non-bailable offences).

Institutional Framework

Feature	Details
Regulatory Authority	Online Gaming Authority (OGA) - a statutory corporate body headquartered in Delhi-NCR.
Legal Powers	Permanent body with a common seal, power to own property, enter contracts, and sue/be sued in its own name.
Composition	Representatives from Ministry of IT, I&B, Youth Affairs, financial regulators, and legal experts.
Digital Functioning	Can conduct hearings virtually, summon witnesses, and examine persons under oath through digital means.

Area	Key Provisions
Registration & Certification	Mandatory registration for social games & e-sports. Valid for up to 5 years. Only registered games can be advertised or operated.
National Registry	Central database of approved games classified as lawful or betting
Grievance Redressal System	Multi-tier mechanism:  User → Platform complaint cell  Appellate Committee  Final appeal to OGA, resolution within 30 days.
Prohibition of Betting Games	All games involving cash stakes, wagering, or cash-convertible prizes are strictly prohibited.
Liability Clause	All employees and executives of non-compliant firms are personally liable.



HOT Question: “Critically evaluate the Promotion and Regulation of Online Gaming (PROG) Act, 2025, in balancing innovation, consumer protection, and the moral boundaries of digital entertainment in India.



9. Supreme Court to Review Constitutional Validity of Securities Transaction Tax (STT)



On 6 October 2025, the **Supreme Court of India** agreed to examine a **plea challenging the constitutional validity** of the **Securities Transaction Tax (STT)**, imposed under the **Finance Act, 2004**.

The petition argues that **STT**, a **direct tax on securities trades** executed through **recognized stock exchanges**, violates **fundamental rights** under **Articles 14, 19(1)(g), and 21** – relating to **equality, freedom of trade, and right to livelihood**.

Key Points:

- **Grounds for Challenge:** The plea contests the **legality of STT itself**, not its rate, claiming it results in **double taxation**, as traders already pay **capital gains tax** on profits.
- **Punitive Nature:** Unlike income-based taxes, **STT applies regardless of profit or loss**, making it **punitive and arbitrary** in nature.
- **TDS Comparison:** Introduced in 2004 to **curb tax evasion**, STT – unlike TDS – offers **no refund or adjustment mechanism**, compelling traders to pay it **irrespective of income outcomes**.

Significance:

The case could redefine the **tax treatment of market transactions** and clarify whether **transaction-based levies** like STT align with **constitutional guarantees** of **fair and equitable taxation**.

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10. CJI Flags Rising Case Pendency, Commends ITAT for Reducing Backlog and Calls for Reforms



The Chief Justice of India (CJI) praised the Income Tax Appellate Tribunal (ITAT) for cutting its backlog from 85,000 to 24,000 cases in five years, while urging institutional reforms to tackle rising pendency and ensure consistency in rulings.

Key Highlights:

- **ITAT's Achievement:** Reduced pendency by nearly 72%, reflecting stronger case management and improved efficiency.
- **Concerns Raised:** Warned that **conflicting rulings across benches** erode **public trust**, create **legal uncertainty**, and undermine **institutional integrity**.
- **Structural Gaps:** Identified weaknesses in **appointments, tenure, training, case management, and technology integration**.

Reform Measures Proposed by CJI:

- **Transparent Appointments:** Ensure **merit-based, objective selection** to eliminate administrative arbitrariness.
- **Tenure Restructuring:** Modify eligibility to attract **younger and more experienced practitioners**, fostering **long-term institutional expertise**.
- **Capacity Building:** Institutionalise **induction and continuous training** to strengthen **adjudicatory consistency and judgment quality**.

About the ITAT:

- Established in **1941**, the **Income Tax Appellate Tribunal** is a **quasi-judicial body** under the **Income Tax Act, 1961**.
- Operates under the **Ministry of Law & Justice**, maintaining **independence** from the Income Tax Department.
- Its orders are **binding unless overturned by a higher court**, and it possesses **civil court powers** such as summoning, evidence evaluation, and rectification.

The CJI's remarks underscore an urgent push toward **judicial efficiency, consistency, and modernization** in India's **tax adjudication system**, aligning with broader goals of **timely justice delivery** and **economic governance reform**.



11. Supreme Court Expands Eligibility for District Judge Recruitment to Include Serving Judicial Officers



In a landmark judgment, the **Supreme Court** ruled that **serving judicial officers** are eligible to apply for the **post of District Judge through direct recruitment**, revising the interpretation of **Article 233(2)** of the Constitution.

The decision overturns previous restrictions under the *Dheeraj Mor* (2020) ruling, which had barred serving judicial officers from applying under the **advocate quota** for District Judge appointments. The Court held that the constitutional provision must be read **liberally** to promote **merit-based judicial advancement**.

Key Directions:

- **Eligibility Expansion:** Judicial officers currently serving in the subordinate judiciary may apply under the **direct recruitment quota**.
- **Experience Requirement:** Must possess a **minimum of seven years of continuous professional experience** — whether as an **advocate, judicial officer, or combined service**.
- **Age Criterion:** Applicants must be **at least 35 years old**.
- **Eligibility Timeline:** Eligibility will be determined **at the time of application**, not at the time of appointment.

Significance:

This judgment broadens the **pathways for elevation** within the judicial system, balancing **career progression opportunities** for serving officers with the need to maintain **judicial competence and independence** in higher courts.



12. Delhi High Court Allows Exemption from Doctrine of Lis Pendens to Protect Genuine Property Owners



The **Delhi High Court** ruled that courts have the **discretion to exempt property** from the **Doctrine of Lis Pendens** to protect **bona fide owners** from **frivolous or malicious litigation**.

The judgment clarifies that while the **Doctrine of Lis Pendens** aims to prevent manipulation of property rights during litigation, courts may **relax its application** in cases where enforcing it would **unfairly harm genuine owners** or **stall legitimate transactions**.

About the Doctrine of Lis Pendens

- **Meaning:** Derived from Latin for “*pending litigation*”, it prohibits the **transfer or alteration of property rights** while a case concerning that property is sub judice.
- **Legal Basis:** Defined under **Section 52 of the Transfer of Property Act, 1882**.
- **Judicial Interpretation:** In *Jayaram Mudaliar v. Ayyaswami & Ors* (1972), the **Supreme Court** held that **notice of a pending suit is not required** for the doctrine to apply — it operates on **public policy** to ensure that **litigation outcomes remain enforceable**.

The ruling introduces **judicial flexibility** into property law, balancing the **public interest in preventing fraudulent transfers** with the **protection of genuine property transactions** from misuse of legal proceedings.



13. Banking Laws (Amendment) Act, 2025 Nomination Provisions to Take Effect from 1 November 2025



From 1 November 2025, key **nomination-related provisions** under the **Banking Laws (Amendment) Act, 2025** will come into force, offering depositors **greater flexibility, transparency, and uniformity** in claim settlements across banks.

The Central Government has notified the enforcement of **Sections 10, 11, 12, and 13** of the **Banking Laws (Amendment) Act, 2025**, modernising the nomination framework for **bank deposits, safe custody articles, and locker contents**.

Key Provisions:

- **Scope:** Applies to **deposit accounts, safe custody articles, and locker contents** held in banks.
- **Multiple Nominations:** Customers can now **nominate up to four persons**, either **simultaneously or successively**, ensuring **clarity and ease in claim settlement**.
- **Deposit Accounts:** Allow both **simultaneous and successive nominations**, giving depositors flexibility in naming and sequencing beneficiaries.
- **Safe Custody & Lockers:** Permit only **successive nominations** to maintain orderly transfer of ownership.
- **Simultaneous Nomination Mechanism:** Depositors must allocate **specific shares or percentages (total = 100%)** among nominees for transparent and dispute-free distribution.

Significance:

This reform strengthens **financial inclusion and depositor rights**, streamlining **inheritance procedures** and ensuring **efficient, uniform claim processing** across the Indian banking system.



14. ECI Holds Conference of Chief Electoral Officers to Review Readiness for Nationwide Voter List Revision



The Election Commission of India (ECI) convened a conference of Chief Electoral Officers (CEOs) in New Delhi to assess preparations for the nationwide Special Intensive Revision (SIR) of electoral rolls.

The meeting reviewed **electoral preparedness**, focusing on **voter mapping**, **address verification through door-to-door surveys**, and limiting **polling stations to a maximum of 1,200 electors** for better accessibility and efficiency.

Key Updates:

- **Phase I Implementation:** The first phase of the SIR will begin in **10 states and one UT**, including **Assam, Tamil Nadu, Puducherry, Kerala, and West Bengal**.
- **Objective:** Ensure **error-free voter rolls**, strengthen **electoral transparency**, and enhance **polling station management** ahead of upcoming elections.

About the Chief Electoral Officer (CEO):

- **Status:** A **statutory authority** appointed by the ECI in consultation with the **State or UT Government**.
- **Supervision:** Operates under the **overall control and direction** of the ECI.

Roles and Responsibilities:

- **Electoral Roll Management:** Prepare, revise, and verify voter lists; address objections and ensure accuracy.
- **Election Conduct:** Arrange **polling stations, EVMs, logistics**, and maintain **law and order** during elections.
- **Monitoring & Awareness:** Enforce the **Model Code of Conduct (MCC)**, track **campaign expenditure**, and lead **voter education programmes**.
- **Counting & Reporting:** Supervise **vote counting**, ensure **transparency**, and relay **official results** to the ECI.

Significance:

The conference reinforces the ECI's focus on **voter inclusion, database integrity**, and **electoral efficiency**, ensuring a **free, fair, and transparent democratic process** nationwide.



15. Bihar's Final Electoral Roll Records 7.42 Crore Voters After 6% Decline in Special Intensive Revision



The Election Commission of India (ECI) released Bihar's final electoral roll listing 7.42 crore electors, showing a 6% decrease after the Special Intensive Revision (SIR) process.

The SIR, a comprehensive house-to-house verification exercise by the ECI, resulted in the **removal of 68.6 lakh names** and the **addition of 21.53 lakh new voters**, ensuring greater accuracy and transparency in the state's electoral database.

Key Highlights:

- **Reasons for Deletion:** Nearly 99% of removals were due to death, permanent migration, or duplication.
- **Revision Details:**
 - **Draft Stage Deletions:** 65 lakh names — 55% migration, 34% deaths, 11% duplication.
 - **Claims Stage Removals:** Additional 3.66 lakh deletions.
- **Appeal Mechanism:**
 - First appeal lies with the **District Magistrate**.
 - Second appeal can be made to the **Chief Electoral Officer (CEO)** under the **Representation of the People Act, 1950**.

About Special Intensive Revision (SIR):

A **targeted voter verification drive** by the ECI, involving **field-level checks** to ensure **error-free, updated electoral rolls** by identifying **deceased, migrated, or duplicate voters** while adding new eligible electors.

Significance:

The Bihar SIR underscores the ECI's push for **clean and credible electoral rolls**, a **prerequisite for transparent and fair elections** in the world's largest democracy.



16. Law Ministry Launches 'Live Cases' Dashboard Under LIMBS for Real-Time Court Case Monitoring



The Ministry of Law and Justice unveiled the new “Live Cases” Dashboard of the Legal Information Management and Briefing System (LIMBS) in New Delhi, enabling real-time monitoring of government litigation.

The LIMBS Live Cases Dashboard offers **real-time visualisation** and **24/7 case tracking** for all court matters involving the **Union of India**, enhancing **efficiency, transparency, and coordination** among legal departments.

About LIMBS:

- **Nature:** A **web-based platform** to monitor and manage all **court cases** involving the **Government of India**.
- **Development:** Created by the **Department of Legal Affairs, Ministry of Law and Justice**, in partnership with the **National Informatics Centre (NIC)**.
- **Timeline:**
 - **Initial Launch:** 2016, for Ministries, Departments, Autonomous Bodies, and **Central PSUs**.
 - **Upgraded Version:** 2020.
 - **New Addition (2025):** “Live Cases” Dashboard for instant litigation updates.

Scope & Features:

- **Coverage:** Tracks cases across the **Supreme Court, High Courts, District & Sessions Courts, and various Tribunals**.
- **Functionality:** Provides **centralised access** to case details, hearing dates, and progress updates for all stakeholders.
- **Benefits:**
 - Promotes **real-time coordination** and **data-driven decision-making**.
 - **Eliminates fragmented records**, reduces **dependency on physical files**, and ensures **accountability** in litigation management.

Significance:

The upgraded LIMBS Dashboard strengthens **digital governance in the legal sector**, aligning with India’s **e-governance** and **paperless administration** goals.



17. UPSC Celebrates 100 Years of Upholding Meritocracy and Launches 'PRATIBHA Setu' Initiative



On 1 October 2025, the Union Public Service Commission (UPSC) entered its 100th year, reaffirming its legacy as India's guardian of merit-based governance and unveiling 'PRATIBHA Setu', an employment linkage platform for UPSC-qualified candidates.

Marking a century of public service excellence, the UPSC celebrated its 100th anniversary by launching PRATIBHA Setu, a centralised online repository connecting interview-qualified but non-recommended candidates with government and private sector opportunities, promoting talent utilisation beyond the civil services.

About the Union Public Service Commission (UPSC):

- **Status:** An independent constitutional body under Part XIV (Articles 315–323) of the Indian Constitution.
- **Establishment:** Founded on 1 October 1926 as the Public Service Commission, based on the Lee Commission (1924) recommendations.
- **Evolution:**
 - Reconstituted as the Federal Public Service Commission under the Government of India Act, 1935.
 - Renamed the Union Public Service Commission (UPSC) post-Independence in 1947.
- **Role:** Conducts recruitment to All India Services and Central Services, ensuring fairness, transparency, and meritocracy in public appointments.

Significance:

As the UPSC enters its centennial year, it continues to symbolise integrity in governance, evolving through digital initiatives like PRATIBHA Setu to align with India's modern administrative needs and the vision of inclusive nation-building.



18. NITI Aayog Releases Fourth Edition of Trade Watch Quarterly Reviewing India's Q4 FY 2024–25 Trade Performance



On 6 October 2025, NITI Aayog launched the fourth edition of Trade Watch Quarterly in New Delhi, analysing India's Q4 FY 2024–25 trade trends, diversification, and sectoral performance.

The Trade Watch Quarterly (Q4 FY'25), released by the CEO of NITI Aayog, presents a detailed overview of India's merchandise and services trade (Jan–Mar 2025), assessing export resilience, emerging markets, and policy priorities for boosting competitiveness.

Key Highlights:

- **Total Trade:** India's combined trade stood at **\$441 billion**, marking a **2.2% year-on-year increase**, reflecting **resilience amid moderate global demand**.
- **Merchandise Exports:** Showed a **slight contraction** due to reduced exports of **mineral fuels** and **organic chemicals**.
- **Growth Sectors:** Strong performance recorded in **electrical machinery**, **pharmaceuticals**, and **cereals**.
- **Imports:** Rose **marginally**, driven by higher demand for **nuclear reactors**, **electrical machinery**, and **inorganic chemicals**, signalling **robust industrial investment**.

Significance:

The report underscores India's **structural trade stability**, **export diversification**, and **sectoral adaptability** in a volatile global environment, reinforcing NITI Aayog's role in **evidence-based policy formulation** for trade competitiveness.



19. NITI Aayog's WEP and DP World Launch 'We Rise' to Empower Women-Led MSMEs for Global Trade



NITI Aayog's Women Entrepreneurship Platform (WEP) and DP World launched the "We Rise" initiative under the Award to Reward (ATR) programme to strengthen the **global trade participation of women-led MSMEs**.

The **We Rise initiative** aims to build **export readiness** among **high-potential women entrepreneurs**, providing them with access to **international trade networks, mentorship, and market linkages**.

Key Highlights:

- **Objective:** Enable **women-led MSMEs** to expand globally by improving **trade capabilities and export competitiveness**.
- **Scale:** The first phase will support **100 women entrepreneurs**, helping them become **export-ready** through **mentorship and strategic partnerships**.
- **Market Access:** Selected participants will showcase their products at **Bharat Mart**, located in **Dubai's Jebel Ali Free Zone (JAFZA)** – a major **B2B/B2C platform** linking Indian sellers with global buyers.
- **Ecosystem Strength:**
 - **WEP**, launched in **2018** and structured as a **Public-Private Partnership (PPP)** since **2022**, will leverage its **network of 90,000+ women entrepreneurs** and **47 institutional partners** to identify and support beneficiaries.

Significance:

The initiative enhances **India's women entrepreneurship ecosystem**, promotes **inclusive and sustainable trade participation**, and aligns with **India's G20 commitment** to foster **women-led economic growth and export empowerment**.



20. Vital Statistics of India 2023: Birth Registrations Decline Slightly, Sex Ratio at Birth Highest in Arunachal Pradesh



The Registrar General of India (RGI) released the **Vital Statistics of India 2023** based on the **Civil Registration System (CRS)**, highlighting demographic patterns in **births, deaths, and sex ratio** across the country.

According to the **CRS Report 2023**, India recorded **2.52 crore births** with a **98.4% registration rate**, marking the **third decline in five years** (2020, 2021, and 2023). The **death registration** rose marginally to **86.6 lakh**, showing **stabilised post-pandemic mortality levels**.

Key Findings:

- **Births:** 2.52 crore registered; slight fall from 2022 — part of a continuing downward trend in registration.
- **Deaths:** 86.6 lakh registered (up from 86.5 lakh in 2022); **no post-COVID mortality spike** observed.
- **Sex Ratio at Birth:**
 - **Highest:** Arunachal Pradesh (1,085), Nagaland (1,007), Goa (973).
 - **Lowest:** Jharkhand (899), Bihar (900).
- **Institutional Births:** 74.7% of total births occurred in **healthcare institutions**, reflecting improved **maternal and child health access**.
- **Timely Registration:** Over **90% of registrations** completed within **21 days** in states like **Gujarat, Tamil Nadu, Haryana, and Puducherry**.
- **Lagging States:** Bihar, Jharkhand, Uttar Pradesh, and West Bengal had lower registration rates (50%–80%).

Significance:

The report underscores India's **progress in vital event registration and institutional healthcare access**, while pointing to **regional disparities** and the need for **improved birth and death reporting mechanisms** to strengthen demographic data accuracy.



21. Satark Nagrik Sangathan Report 2025 Flags Severe Backlogs and Vacancies in India's Information Commissions



As the Right to Information (RTI) Act, 2005 nears its 20th anniversary, the Satark Nagrik Sangathan (SNS) 2025 report highlights vacancies, pendency, and transparency lapses in India's Information Commissions.

The report reveals a **crisis of functionality** within India's **Central and State Information Commissions (CIC & SICs)**, undermining the effectiveness of the RTI framework meant to uphold **transparency and accountability** in governance.

Key Findings:

- **Vacancies & Non-Functionality:** Several commissions remain **non-operational** due to **unfilled posts**. The **Central Information Commission (CIC)** currently operates **without a Chief Information Commissioner**, severely restricting its efficiency.
- **Severe Backlogs:** Over **2.4 lakh appeals and complaints** were pending nationwide in **2024**, with some state commissions projected to take **decades** to clear existing cases.
- **Transparency Deficit:** **20 of 29 commissions** failed to publish their **2023–24 annual reports**, violating the RTI Act's disclosure requirements.
- **Weak Enforcement:** Penalties were imposed in only **~2% of eligible cases** against **Public Information Officers (PIOs)**, reducing deterrence and accountability.

About the Information Commissions:

- **Legal Status:** Statutory bodies under the **RTI Act, 2005**.
- **Structure:**
 - **CIC** – handles **Central Government** matters.
 - **SICs** – handle **State and UT** cases.
- **Composition:** A **Chief Information Commissioner** and up to **10 Information Commissioners**, appointed by the **President (CIC)** or **Governor (SIC)**.

Significance:

The findings call for **urgent institutional reforms** – including **filling vacancies**, **digitising appeals**, and **strengthening enforcement** – to restore the **credibility and functionality** of India's RTI ecosystem.



22. Government Launches 'Model Youth Gram Sabha' Initiative to Train Students in Grassroots Democracy.



The Ministry of Panchayati Raj, along with the Ministries of Education and Tribal Affairs, has launched the **Model Youth Gram Sabha (MYGS)** initiative from **October 2025** to familiarise students with **village-level governance**.

The **Model Youth Gram Sabha (MYGS)** initiative is designed to simulate the real-world functioning of **Gram Sabhas** (village assemblies), offering students hands-on experience in **local self-governance, civic participation, and community planning** — much like a **Model UN** for rural democracy.

Key Highlights:

- **Objective:** To provide **practical exposure** to students on the working of **Gram Sabhas** and grassroots decision-making processes.
- **Participants:** Students from **Classes 9-12** will enact the roles of key local functionaries such as **Sarpanch, Village Secretary, Anganwadi Worker, ANM, and Junior Engineer**.
- **Format:** Conduct **mock Gram Sabha sessions** where students debate and discuss developmental issues, budgets, and welfare schemes.
- **Pilot Phase Coverage:**
 - 600 Jawahar Navodaya Vidyalayas (JNVs)
 - 200 Eklavya Model Residential Schools (EMRSs)
- **Inspiration:** Modeled on the **Model United Nations (MUN)** format to encourage youth leadership and participatory governance awareness.

Significance:: The initiative aims to **nurture civic responsibility, bridge classroom learning with real-world governance, and inspire the next generation of Panchayati Raj leaders, especially from rural and tribal communities.**



23. India to Showcase PM-KUSUM and PM Surya Ghar Muft Bijli Yojana at International Solar Alliance Platform

India will highlight its flagship solar energy schemes – PM-KUSUM (2019) and PM Surya Ghar Muft Bijli Yojana (2024) – at the International Solar Alliance (ISA) to demonstrate its commitment to **decentralised renewable energy adoption**.

PM-KUSUM (Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan)

- **Launch:** 2019 | **Nodal Ministry:** Ministry of New and Renewable Energy (MNRE)
- **Objective:** Promote solar energy use in agriculture and reduce dependence on diesel.
- **Target:** Add 34,800 MW solar capacity by March 2026.
- **Key Components:**
 1. Installation of **small grid-connected solar plants** with power sales to DISCOMs.
 2. Deployment of **stand-alone solar pumps** in off-grid areas.
 3. **Solarisation of existing grid-connected pumps** for irrigation with surplus power fed into the grid.
- **Progress:** ~70% of stand-alone solar pumps installed; slower progress on grid-connected systems.

PM Surya Ghar Muft Bijli Yojana

- **Launch:** 2024 | **Type:** Central Sector Scheme
- **Nodal Ministry:** MNRE, implemented through state DISCOMs.
- **Objective:** Provide **free electricity up to 300 units/month** via rooftop solar systems.
- **Target:** Cover 1 crore households by 2026–27.

Achievement: Over 10 lakh rooftop solar installations completed, with steady expansion underway.

Significance

Both schemes exemplify India's twin approach – promoting farm-based solar power (PM-KUSUM) and residential solar generation (Surya Ghar) – contributing to **energy security, emission reduction, and rural economic empowerment** while aligning with the ISA's mission of "Solar for All."



24. Centre Launches 100 'Aspirational Agriculture Districts' Under PM Dhan-Dhaanya Krishi Yojana



The Government of India has launched **100 Aspirational Agriculture Districts** under the **PM Dhan-Dhaanya Krishi Yojana (PMDDKY)** to boost agricultural productivity, credit access, and self-reliance across **29 States and UTs**.

Key Highlights:

- **Scope:** 100 districts selected across **29 States and UTs**.
- **Selection Criteria:** Based on **low productivity, moderate crop intensity, and below-average access to agricultural credit**.
- **Integration Framework:** Merges **36 central schemes** from **11 departments** into one umbrella framework to simplify coordination and funding.
- **Implementation Mechanism:**
 - Each district will prepare a **District Agriculture Development Plan (DADP)**.
 - Plans will be executed through **local committees** involving panchayats, cooperatives, and agri-extension officials.
 - **100 Central Nodal Officers** will monitor and rank district performance.
- **Inspiration:** Modeled after **NITI Aayog's Aspirational Districts Programme**, focusing on **real-time data tracking, outcome-based evaluation, and inclusive agricultural governance**.

Significance:

- Aims to **modernize rural agriculture ecosystems** through better credit access, digital extension, and convergence of schemes.
- Promotes **self-reliance (Atmanirbhar Krishi)** by addressing region-specific constraints and fostering community participation.
- Expected to enhance **farm incomes, sustainability, and food security**, serving as a blueprint for **district-level agricultural transformation** in India.



25. PM Launches ₹60,000 Crore PM-SETU Scheme to Transform ITIs and Boost Youth Employability



The Pradhan Mantri Skilling and Employability Transformation through Upgraded ITIs (PM-SETU) scheme aims to modernise 1,000 Government ITIs under a hub-and-spoke model to align vocational training with industry skill demands.

Key Highlights:

- **Nodal Ministry:** Ministry of Skill Development and Entrepreneurship (MSDE).
- **Total Outlay:** ₹60,000 crore.
- **Funding Pattern:** Co-financed by the **World Bank** and the **Asian Development Bank (ADB)** in collaboration with state governments and private industry partners.

Implementation Framework:

- **Hub-and-Spoke Model:**
 - **200 “Hub ITIs”** — act as **innovation and placement centres** with advanced labs and industry partnerships.
 - **800 “Spoke ITIs”** — connected to hubs for expanded training access.
- **Cluster Design:** Each hub links to around **four spoke ITIs**, forming a **regional skill network**.
- **Governance:** Managed by a **Special Purpose Vehicle (SPV)** with an **anchor industry partner** for localised implementation and accountability.
- **Centres of Excellence:** Five National Skill Training Institutes at **Bhubaneswar, Chennai, Hyderabad, Kanpur, and Ludhiana** upgraded as Centres of Excellence to drive innovation and curriculum reform.

Significance

The **PM-SETU Scheme** marks a major leap in India's skill development architecture — integrating **training, technology, and talent pipelines** to meet global workforce demands while supporting **Atmanirbhar Bharat** and the **Make in India** vision.



26. 'Fare Se Fursat' Scheme Launched to Offer Fixed Airfares via Alliance Air



The **Ministry of Civil Aviation** has launched the '**Fare Se Fursat**' scheme through **Alliance Air**, introducing **fixed airfares** to make regional air travel predictable and affordable.

Key Highlights:

- **Implementing Body:** Alliance Air (subsidiary of AI Asset Holding Ltd).
- **Pilot Phase:** Introduced on select regional routes to test feasibility and passenger response.
- **Pricing Model:** Replaces market-linked, demand-based dynamic fares with **pre-determined fixed rates**, ensuring **price stability**.
- **Objective:** To provide **affordable, predictable air travel** and reduce passenger anxiety over fare fluctuations.
- **Alignment with UDAN:** Supports the **Ude Desh ka Aam Nagrik (UDAN)** mission of enabling common citizens to access air travel and improving last-mile connectivity in India's aviation network.

Significance

- Strengthens **regional air mobility** under the government's **connectivity-first** approach.
- Expected to **boost tourism, trade, and accessibility** for smaller cities.
- Demonstrates India's effort to balance **commercial viability** with **social inclusivity** in the aviation sector.



INTERNATIONAL AFFAIRS

Intl. Organizations / Events.
India and the World
International Relations

1. India-UK Seal Defence and Education Deals
2. India-UK Launch 6G Innovation Centre
3. India to Restore Ties with Afghanistan
4. India Deepens Security Ties in Central Asia
5. India Sends Anti-Radiation Aid to Indonesia
6. India-EFTA Trade Pact Brings \$100 Billion Boost
7. ASEAN-India Summit Declares 2026 Maritime Year
8. East Asia Summit Adopts Peace Declaration
9. India Leads Global South Cooperation Drive
10. India-EU Link Carbon Credit Trading Schemes
11. UN Adopts First Global Cybercrime Treaty
12. IMEC Faces Uncertainty Amid Regional Conflicts
13. Russia Exits Plutonium Pact, Tensions Rise
14. IUCN Warns Fossil Fuels Threaten Nature
15. Ceasefire Revives Red Sea Trade Route
16. Peru Declares Emergency Amid Crime Surge
17. U.S. Nears Government Shutdown Over Budget
18. China-U.S. Clash Over Rare Earths
19. India Warns Pakistan Over Sir Creek
20. Protests in PoK, Bangladesh Test India
21. India Hosts World Maritime Week in Mumbai
22. India-Mongolia Mark 70 Years of Ties
23. India Proposes Global Governance Index (IGI)
24. India to Host APAC Aviation Meet
25. India Elected Co-Chair of UN-GGIM
26. India-Egypt Hold Strategic Dialogue 2025
27. India-Nepal Ink Power Transmission Pacts
28. India-China Resume Direct Flights Operations
29. India-UK Navies Conduct Exercise KONKAN-2025
30. India Elected to UN Rights Council
31. India Re-Elected to ICAO Council
32. 120 Nations Attend 8th ISA Assembly
33. Small Island Developing States Meeting Held
34. Global Leaders Gather for Gaza Summit
35. Nobel Peace Prize 2025 Announced
36. Global Satcom Summit Highlights IMC 2025
37. U.S., Japan, Korea Hold APEC Talks
38. U.S. Signs Gaza Declaration for Ceasefire
39. E-Passports Launched for Indians in UAE
40. Henley Passport Index 2025 Released
41. M.F. Hussain Remembered for Artistic Legacy
42. Yunus Launches 'New Bangladesh' National Charter
43. India-Qatar Hold Joint Meetings 2025

1. India–UK Seal Defence, Tech & Education Deals During PM Keir Starmer’s Visit



During UK Prime Minister **Keir Starmer’s visit to India**, both nations signed agreements spanning **defence, critical minerals, fintech, AI, and higher education**, deepening the India–UK Comprehensive Strategic Partnership.

Key Outcomes of the Bilateral Talks

Sector	Key Initiative	Significance
Defence Cooperation	Procurement of Lightweight Multirole Missiles (LMM ‘Martlet’) from the UK.	Enhances India’s short-range precision attack capability across land, air, and naval platforms.
Naval Technology	Joint development of electric-powered engines for next-generation Indian naval vessels.	Supports India’s transition toward green and silent propulsion systems in line with net-zero maritime goals.
Fintech & Digital Economy	Launch of the India–UK Fintech Corridor, connecting regulators, startups, and investors.	Fosters collaboration in digital payments, cross-border innovation, and regulatory interoperability.
Artificial Intelligence (AI)	Joint AI Research Centre for developing AI-native 6G technologies.	Strengthens cybersecurity, data governance, and next-gen telecom infrastructure.
Critical Minerals	Phase II of the UK–India Critical Minerals Observatory & creation of an Industry Guild.	Aims to secure sustainable mineral supply chains for EVs, electronics, and renewables.
Education & NEP 2020	Lancaster University and University of Surrey to set up campuses in India.	Marks a major step under NEP 2020’s internationalisation agenda in higher education.

EDUCASIUM IAS Academy
EPIC UPSC Classes



UPSC Relevance: GS Paper II – International Relations | GS Paper III – Defence & Technology *Themes:* India–UK Relations, Defence Technology Transfer, Critical Minerals Security, NEP 2020, AI & 6G Innovation.



2. India and UK Launch Connectivity and Innovation Centre (CIC) to Drive 6G, AI, and Secure Telecom Cooperation



India and the UK have jointly launched the **India-UK Connectivity and Innovation Centre (CIC)** to advance **AI-driven telecom innovation, 6G readiness, and secure digital infrastructure**, under the **UK-India Technology Security Initiative**.

Key Features of the India-UK Connectivity and Innovation Centre (CIC)

Parameter	Description
Objective	To promote inclusive, secure, and resilient digital connectivity between India and the UK and co-develop global 6G and AI-enabled telecom standards.
Implementation Framework	Established under the UK-India Technology Security Initiative. Jointly executed by UK Research and Innovation (UKRI) and India’s Department of Telecommunications (DoT).
Nature of Collaboration	Acts as a bridge between academic research and industrial application, facilitating joint lab testing, field trials, and applied research.
Tenure	4 years (initial phase).
Funding & Partnerships	Supported by public-private partnerships involving tech companies, startups, and academic institutions from both countries.

Strategic Focus Areas (2025–2029)

Domain	Focus & Expected Outcomes
1. AI-Driven Telecom	Utilise advanced AI tools to optimise network traffic, enhance bandwidth management, and develop intelligent digital services.
2. Non-Terrestrial Networks (NTNs)	Develop satellite- and drone-based communication systems to expand connectivity in remote and underserved regions.
3. Telecom Cybersecurity	Create interoperable and resilient security architectures for 6G and critical digital infrastructure, addressing global cyber threats.



UPSC Relevance: GS Paper II – International Relations | GS Paper III – Science & Technology *Themes:* India-UK Tech Cooperation, 6G Research, AI & Telecom, Digital Infrastructure Security, Vision 2035 Roadmap.



3. India to Restore Diplomatic Ties with Afghanistan



External Affairs Minister **S. Jaishankar** announced that **India will upgrade its diplomatic presence in Afghanistan** by **reopening its embassy in Kabul**, signaling a calibrated move toward re-engagement with the **Taliban regime**.

Background

- India had **closed its Kabul embassy** in **August 2021**, following the **Taliban's takeover** and the collapse of the U.S.-backed Afghan government.
- Since **June 2022**, India has operated a **Technical Mission** in Kabul to coordinate **humanitarian assistance**, including food, medicine, and COVID relief.
- The 2025 upgrade converts this mission into a **full-fledged embassy**, resuming formal diplomatic functions.

Strategic Context: Taliban Takeover of Afghanistan

Timeline	Event & Impact
Doha Accord (2020)	U.S.-Taliban agreement: U.S. troops to withdraw; Taliban to provide counterterrorism assurances.
Troop Withdrawal (2021)	NATO & U.S. forces exited; Afghan National Army collapsed.
Fall of Kabul (15 Aug 2021)	Taliban captured Kabul, toppling the Ashraf Ghani government.
Re-establishment of Emirate	Islamic Emirate of Afghanistan reimposed under Hibatullah Akhundzada; rollback of democracy & women's rights.

India's Evolving Afghanistan Policy

Phase	Approach
2021-22 (Crisis Response)	Humanitarian assistance: 50,000 MT wheat via Iran's Chabahar port; medical aid; vaccines.
2022-24 (Engagement via Technical Mission)	Coordination with Taliban authorities for aid distribution; contacts limited to operational issues.
2025 (Diplomatic Upgrade)	Transition from aid-only to structured engagement; reopening of embassy signals "de facto" recognition, though not "de jure."



UPSC Relevance: GS Paper II: India and its Neighbourhood Relations; International Institutions; India's Foreign Policy. **Prelims Facts:** Doha Accord (2020) – U.S.-Taliban peace deal. Taliban's Emirate restored (2021) under Hibatullah Akhundzada.



HOT Question: "India's diplomatic re-engagement with the Taliban marks a pragmatic shift from strategic distance to calibrated realism." Analyse in light of recent developments

4. India Deepens Security Ties with Central Asia at Bishkek NSA Meeting



At the **3rd India–Central Asia NSA/Secretaries of Security Councils’ Meeting in Bishkek, Kyrgyzstan**, NSA **Ajit Doval** reaffirmed India’s commitment to regional security, counterterrorism, and connectivity under the **‘Connect Central Asia’ policy**.

The meeting brought together **India, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan** to strengthen cooperation on **counterterrorism, border security, drug trafficking, and regional connectivity**. Established after the **1st India–Central Asia Summit (2022)**, this platform reflects India’s strategic engagement to enhance security coordination and energy partnerships amid evolving geopolitical dynamics in Afghanistan and the broader Eurasian region.

Key Highlights of the Meeting

Area	Discussion Focus
Security Cooperation	Enhanced intelligence sharing and capacity building to combat terrorism, extremism, and cross-border threats.
Regional Stability	Support for an inclusive and peaceful Afghanistan and collective action against radicalisation and narco-terrorism.
Connectivity and Trade	Expediting projects under the International North–South Transport Corridor (INSTC) and leveraging Chabahar Port for improved access to Central Asia.
Energy and Minerals	Exploring joint ventures in renewable energy, oil, and gas; promoting cooperation in critical minerals.

Strategic Significance

- Reinforces India’s **Connect Central Asia Policy** as a strategic counterbalance to China’s BRI.
- Strengthens India’s role as a **security and development partner** in the Eurasian region.
- Enhances regional coordination on **terrorism, cyber threats, and narcotics trafficking**.
- Deepens India–Kyrgyzstan ties in **education, defence, and digital cooperation**.



UPSC Relevance: GS Paper II – International Relations

Themes: India–Central Asia Relations, Connect Central Asia Policy, SCO, Counterterrorism Cooperation, INSTC, Regional Security Architecture.

5. India Sends Prussian Blue Capsules to Indonesia Amid Caesium-137 Radiation Emergency



India supplied **Prussian Blue capsules** to Indonesia at the request of its Ministry of Health to mitigate health risks from **Caesium-137 (Cs-137) contamination**, reinforcing India's role as a **regional humanitarian and disaster-response partner**.

India swiftly dispatched **radioactive contamination antidotes (Prussian Blue)** to Indonesia to treat internal exposure to **Caesium-137**, a radioactive isotope released due to local contamination. The move underscores India's **regional leadership in nuclear safety, public health, and humanitarian response**, aligning with its **Neighbourhood First and Indo-Pacific Cooperation** policies.

About Prussian Blue	Details
Nature	A dark blue pigment and FDA-approved oral drug used to treat contamination by radioactive caesium (Cs-137) and thallium.
Mechanism	Binds to radioactive particles in the gut and prevents their absorption; enhances elimination through feces.
Administration	Given orally under medical supervision; typically used after nuclear accidents or radiological exposure.
WHO Essential Medicine	Listed for use in managing radiation emergencies globally.

About Caesium-137 (Cs-137)

Parameter	Description
Nature	A radioactive isotope of caesium produced during nuclear fission in reactors and atomic explosions.
Half-Life	~30 years – meaning it remains radioactive for decades.
Radiation Type	Emits beta and gamma rays, capable of penetrating tissues and causing severe biological harm.
Health Impact	Exposure can lead to burns, radiation sickness, and increased cancer risk; ingestion causes internal contamination.
Stable Isotope	Caesium-133, the only stable isotope, is used in atomic clocks for precise timekeeping.



UPSC Relevance: GS Paper II – International Relations | GS Paper III – Disaster Management & Nuclear Technology. *Themes:* India–Indonesia Cooperation, Nuclear Safety, Radioactive Contamination, Regional Health Security, Science Diplomacy.

6. India–EFTA Trade and Economic Partnership Agreement (TEPA) Comes into Force: \$100 Billion Investment and 1 Million Jobs Expected



The **India-European Free Trade Association (EFTA) TEPA**, effective **1st October 2025**, commits **\$100 billion in FDI over 15 years** and **1 million direct jobs**, marking India's most investment-focused free trade deal.

About EFTA: The **European Free Trade Association (EFTA)** comprises **Switzerland, Norway, Iceland, and Liechtenstein**, founded in **1960** to promote free trade and economic cooperation outside the EU framework.

Key Provisions of the TEPA

Dimension	Highlights
Investment Commitment	First Indian FTA with a binding FDI commitment of \$100 billion over 15 years, projected to generate 1 million direct jobs.
Investment Scope	Focuses on long-term capital for technology transfer, R&D, and innovation – excludes portfolio investments.
Goods Market Access	- EFTA offers 92.2% tariff line concessions, covering major Indian exports such as textiles, marine goods, gems, jewellery, and machinery. - India opens 82.7% of tariff lines, protecting dairy, coal, and medical devices.
Gold Exception	Gold (80% of EFTA's exports to India) remains exempt from tariff cuts.
Services Access	India gains improved access to 128 Swiss, 114 Norwegian, 110 Icelandic, and 107 Liechtenstein service sub-sectors – especially in IT, business, education, and culture.
Professional Mobility	Introduces Mutual Recognition Agreements (MRAs) for professions such as nursing, chartered accountancy, and architecture, enhancing mobility for Indian professionals.
Export Gains	Tariff elimination (up to 55%) for basmati rice, guar gum, mangoes, coffee, tea, and marine products, boosting India's export competitiveness.



UPSC Relevance: GS Paper II – International Relations | GS Paper III – Indian Economy *Themes:* India–Europe Relations, Free Trade Agreements, Foreign Direct Investment, Services Liberalization, Economic Diplomacy.

7. 22nd ASEAN–India Summit Strengthens Strategic Partnership; 2026 Declared ‘Year of Maritime Cooperation’



At the **22nd ASEAN–India Summit** chaired by **Malaysia**, India and ASEAN renewed their **Comprehensive Strategic Partnership (2026–2030)** and declared **2026 as the ASEAN–India Year of Maritime Cooperation** to deepen blue economy and security ties.

The **22nd ASEAN–India Summit**, held **virtually** under Malaysia’s chairmanship as part of the **47th ASEAN Summit in Kuala Lumpur**, marked a new phase in ASEAN–India relations with **Timor-Leste** joining as the **11th ASEAN member**. The summit reaffirmed India’s commitment to **ASEAN centrality**, sustainable development, and **maritime and digital connectivity**, while aligning with the **Act East Policy** and **Indo-Pacific Vision**.

Key Outcomes of the Summit

Theme	Highlights
Maritime Cooperation	India declared 2026 as the ASEAN–India Year of Maritime Cooperation to enhance collaboration in blue economy, maritime security, and ocean research.
Sustainable Tourism	Adoption of a Joint Statement on Sustainable Tourism, promoting eco-friendly travel and green tourism, aligning with the 2025 ASEAN–India Year of Tourism.
Trade and Economy	India urged an early review of the ASEAN–India Trade in Goods Agreement (AITIGA) to address trade imbalances and strengthen supply chains.
Strategic Partnership (2026–2030)	Renewal of the Comprehensive Strategic Partnership focused on digital inclusion, food security, resilient supply chains, and innovation.
Institutional Initiatives	- Proposal for a Centre for Southeast Asian Studies at Nalanda University. - Announcement of a Maritime Heritage Festival at Lothal, Gujarat, celebrating shared seafaring traditions.



UPSC Relevance: GS Paper II – International Relations | GS Paper III – Economy & Maritime Security. *Themes:* ASEAN–India Relations, Act East Policy, Indo-Pacific Cooperation, AITIGA Review.



8. 20th East Asia Summit Adopts Kuala Lumpur Declaration to Uphold Peace and Stability in the Indo-Pacific



At the **20th East Asia Summit (EAS)** held in **Kuala Lumpur** under Malaysia’s chairmanship, leaders adopted the **Kuala Lumpur Declaration**, reaffirming commitment to **peace, stability, and rule-based cooperation** in the Indo-Pacific region.

About the East Asia Summit (EAS)

Aspect	Details
Nature	ASEAN-led annual forum for dialogue on strategic, political, and economic issues in the Indo-Pacific.
Formation	Established in 2005 in Kuala Lumpur, remains the only leader-led strategic forum in the Indo-Pacific.
Membership (2025)	19 countries – 10 ASEAN members + 8 dialogue partners (India, China, Japan, US, Russia, Australia, New Zealand, South Korea) + Timor-Leste (new ASEAN member).
Objective	Promote regional peace, prosperity, and rule-based cooperation through open, inclusive dialogue.
Core Principles	Openness, inclusivity, respect for international law, and ASEAN centrality.
Six Priority Areas	(a) Environment & Energy, (b) Education, (c) Finance, (d) Global Health, (e) Disaster Management, (f) ASEAN Connectivity.

Highlights of the 20th EAS (2025)

Theme	“Inclusivity and Sustainability”
Host & Chair	Malaysia
Key Declaration	Kuala Lumpur Declaration reaffirming the EAS’s collective role in upholding peace, multilateralism, and maritime stability in the Indo-Pacific.
Focus Areas	- Promoting inclusive growth and digital transformation. - Enhancing regional supply chain resilience. - Strengthening cooperation on climate action and renewable energy. - Reinforcing freedom of navigation and overflight in accordance with international law (UNCLOS 1982).
Significance	The inclusion of Timor-Leste expands EAS membership to 19, reflecting ASEAN’s evolving regional architecture and inclusivity.



UPSC Relevance: GS Paper II – International Relations | GS Paper III – Environment & Economy
Themes: Indo-Pacific Strategy, ASEAN Centrality, India’s Act East Policy, Multilateralism, Maritime Security, Kuala Lumpur Declaration 2025



9. SSTC: India Leads Global South Cooperation for Development and Solidarity



With traditional aid declining and global inequalities widening, **South-South and Triangular Cooperation (SSTC)** has become a key mechanism for promoting **mutual development, solidarity, and innovation** among developing nations. India has emerged as a pivotal player in this global framework.

About South–South and Triangular Cooperation (SSTC)

Aspect	Description
South–South Cooperation (SSC)	Collaboration among developing countries in political, economic, social, cultural, and technical domains.
Triangular Cooperation (TC)	Partnerships where developing countries (Global South) collaborate with support from developed countries or multilateral institutions.
Core Principles	Mutual respect for sovereignty, equality, non-interference, mutual benefit, solidarity, and peaceful coexistence.

Evolution of SSTC

Milestone / Year	Significance
UNOSSC (1974)	Creation of United Nations Office for South–South Cooperation to promote economic and technical collaboration among developing countries.
Buenos Aires Plan of Action (BAPA), 1978	First formal framework for SSC – emphasised solidarity, shared learning, and mutual respect.
Nairobi Outcome Document (2009)	Expanded SSC from technical cooperation to include political, institutional, and infrastructural dimensions.
India–UN Development Partnership Fund (2017)	Financing mechanism for demand-driven SSTC projects across developing nations.
UN Day for SSTC 2025 Theme	“New Opportunities and Innovation through SSTC” highlights innovation-driven South–South partnerships.



UPSC Relevance: **GS Paper II:** India’s foreign policy, international institutions, and global groupings. Prelims Facts: UNOSSC (1974), BAPA (1978), Nairobi Document (2009). India–UN Fund (2017). Theme of UN Day for SSTC (2025): “New Opportunities and Innovation.”



HOT Question: “South–South and Triangular Cooperation is not charity but shared development.” Examine India’s role in redefining global partnerships through SSTC.



10. Linking India's Carbon Credit Trading Scheme (CCTS) with the EU's Carbon Border Adjustment Mechanism (CBAM)



The European Union (EU) has proposed linking India's Carbon Credit Trading Scheme (CCTS) with the EU's Carbon Border Adjustment Mechanism (CBAM) to prevent **double taxation on exports** and promote **North-South collaboration** in climate action.

The proposed linkage aims to ensure **mutual recognition of carbon credits**, aligning India's emission standards with European benchmarks.

About India's Carbon Credit Trading Scheme (CCTS)

Aspect	Details
Launched by	Ministry of Power, under the Energy Conservation (Amendment) Act, 2022.
Objective	To establish a domestic carbon market that rewards emission reductions and promotes low-carbon technologies.
Mechanism	Carbon credits are assigned for each tonne of CO ₂ -equivalent (tCO ₂ e) reduced. Entities achieving emission cuts beyond targets earn tradable Carbon Credit Certificates.
Regulating Authority	Bureau of Energy Efficiency (BEE) issues and tracks carbon certificates.
Sectoral Coverage	Power, steel, cement, fertiliser, and transport sectors – aligned with India's Nationally Determined Contributions (NDCs).

About EU's Carbon Border Adjustment Mechanism (CBAM)

Feature	Details
Part of	EU's "Fit for 55 in 2030" climate package to cut emissions by 55% (from 1990 levels).
Operational Year	Begins 2026, with transitional reporting phase (2023–2025).
Objective	To ensure EU industries aren't disadvantaged by cheaper, high-emission imports; to push global producers toward low-carbon standards.
Coverage (Phase I)	Iron & steel, cement, fertilisers, aluminium, hydrogen, and electricity imports.
Mechanism	Importers must buy CBAM certificates reflecting the carbon cost difference between EU and exporting countries.



UPSC Relevance: GS Paper III: Environmental conservation, carbon markets, sustainable industrialisation. **Prelims Facts:** CCTS – launched under *Energy Conservation (Amendment) Act, 2022*. CBAM – part of EU's *Fit for 55* package, starts **2026**. Implementing agency for CCTS



HOT Question: "Linking India's carbon market with the EU's CBAM could transform climate policy into a trade opportunity rather than a penalty." Analyse the statement in the context of India-EU cooperation.

11. United Nations Convention against Cybercrime in Hanoi, Vietnam, marking the first global treaty



At least **72 of 193 UN member states** signed the **United Nations Convention against Cybercrime in Hanoi, Vietnam**, marking the **first global treaty** dedicated to combating cybercrime and harmonising international cooperation.

About the UN Convention against Cybercrime

Aspect	Details
Adoption	Adopted by the UN General Assembly (Resolution 79/243) in December 2024, opened for signature in October 2025 in Hanoi.
Entry into Force	Becomes legally binding 90 days after 40 countries ratify it.
Scope	Addresses both cyber-dependent crimes (e.g. hacking, ransomware) and cyber-enabled crimes (e.g. online fraud, human & drug trafficking).
Secretariat	United Nations Office on Drugs and Crime (UNODC).
Objective	To establish a uniform global legal framework for cybercrime prevention, investigation, and prosecution, balancing security with privacy and human rights.

Key Provisions

Privacy Protection	Criminalises non-consensual sharing of intimate images — a first in international law.
Cross-Border Cooperation	Sets up a 24×7 global coordination network for rapid evidence exchange in cross-border cases.
Digital Evidence Handling	Introduces global standards for collecting, sharing, and authenticating electronic evidence.
Asset Recovery	Enables freezing, confiscation, and repatriation of proceeds from cybercrime networks.
Research Freedom	Protects ethical cybersecurity research from criminalisation, encouraging innovation.
Capacity Building	Mandates training and technical assistance, especially for developing countries.
Human Rights Safeguards	All actions under the treaty must comply with international human rights law and judicial oversight.

Comparison: UN Cybercrime Treaty vs. Budapest Convention (2001)

Parameter	UN Convention (2025)	Budapest Convention (2001)
Membership Base	Open to all 193 UN members	Primarily Europe + select partners (India not a signatory)
Secretariat	UNODC	Council of Europe
Focus	Comprehensive cybercrime + privacy + development	Primarily procedural law & law enforcement
Inclusivity	Global South-driven framework	Western-led initiative



HOT Question: “The UN Convention against Cybercrime marks a paradigm shift from voluntary cooperation to a binding global cyber law framework.” Discuss its significance for developing countries like India.

12. IMEC Faces Uncertainty Amid West Asian Conflict and Emerging Arctic Trade Routes



The **India-Middle East-Europe Economic Corridor (IMEC)** – announced at the **G20 Summit 2023 in New Delhi** – faces strategic headwinds from regional instability and shifting global trade dynamics.

The **India-Middle East-Europe Economic Corridor (IMEC)**, envisioned as a **multimodal connectivity corridor** linking **India to Europe via the Middle East**, has encountered major challenges in its implementation. The **ongoing West Asian conflict**, security threats in the **Red Sea**, and the **emergence of alternate trade routes like the Arctic passage** have cast uncertainty over IMEC’s feasibility, timelines, and investment security.

Despite being a strategic alternative to **China’s Belt and Road Initiative (BRI)**, IMEC now faces the dual task of sustaining international investor confidence and maintaining geopolitical stability among its stakeholders.

About IMEC

Aspect	Details
Full Form	India-Middle East-Europe Economic Corridor (IMEC)
Announcement	G20 Summit 2023, New Delhi
Purpose	To enhance connectivity through rail, port, energy, and digital infrastructure, linking India to Europe via the Arabian Peninsula and the Mediterranean.
Route	India → UAE → Saudi Arabia → Jordan → Israel → Greece → Europe
Key Indian Ports	Mundra, Kandla (Deendayal Port), and Jawaharlal Nehru Port Trust (Navi Mumbai)
Strategic Objective	To serve as a counterbalance to China’s BRI, fostering transparent, sustainable, and rules-based infrastructure development.
Economic Benefits	Could reduce travel time to Europe by 40% and cut shipping costs by 30%.



UPSC Relevance: **GS Paper II – International Relations | GS Paper III – Infrastructure & Economy.** *Themes:* Global Connectivity Corridors, India-Gulf-Europe Relations, West Asia Geopolitics, Belt & Road Initiative (BRI) vs IMEC, Strategic Trade Routes.

13. Russia Withdraws from U.S. Plutonium Management Agreement, Escalating Nuclear Tensions



Russia has formally announced its **withdrawal from the Plutonium Management and Disposition Agreement (PMDA)** – a 2000 bilateral accord with the U.S. to dispose of **surplus weapons-grade plutonium**, citing **American non-compliance and geopolitical hostility**.

The **Plutonium Management and Disposition Agreement (PMDA)**, signed in 2000 and implemented in 2011, was a landmark nuclear disarmament accord between **Russia and the United States** to eliminate excess weapons-grade plutonium from Cold War arsenals.

Russia’s withdrawal marks a serious **setback to global nuclear arms control efforts**, reflecting deteriorating U.S.–Russia relations amid ongoing **sanctions, NATO expansion**, and mutual distrust over arms treaty compliance.

Aspect	Details
Full Name	Plutonium Management and Disposition Agreement (PMDA)
Signatories	United States and Russia
Signed	2000
Came into Force	2011
Objective	To safely dispose of surplus weapons-grade plutonium to reduce nuclear proliferation risks following post–Cold War arms reductions.
Commitment	Both nations agreed to eliminate 34 tonnes each of weapons-grade plutonium – enough to build ~17,000 nuclear warheads.
Disposal Method	Convert plutonium into mixed oxide (MOX) fuel for use in civilian nuclear reactors or irradiate it in fast-neutron reactors, ensuring it couldn’t be reused for weapons.

Reasons for Russia’s Withdrawal

Reason	Explanation
U.S. Non-Compliance Allegation	Russia accuses the U.S. of diluting plutonium instead of converting it into MOX fuel, violating the agreement’s technical terms.
Geopolitical Tensions	Moscow cites U.S. sanctions, NATO’s eastward expansion, and other “unfriendly actions” as undermining the spirit of bilateral cooperation.
Arms Control Breakdown	The move reflects broader mistrust following the collapse of other arms control treaties – such as the INF Treaty (2019) and the Open Skies Treaty (2020).



UPSC Relevance: GS Paper II – International Relations | GS Paper III – Science & Technology / Security Themes: Nuclear Disarmament, Arms Control Treaties, U.S.–Russia Relations, Plutonium Management Agreement, Global Security Order.



14. IUCN Declares Fossil Fuel Production a Direct Threat to Nature and Biodiversity



At the IUCN World Conservation Congress (Oct 2025), the **International Union for Conservation of Nature (IUCN)** adopted **Motion 042**, officially recognising **fossil fuel production** as a **direct threat to biodiversity and ecosystems** – the strongest-ever global conservation stance linking fossil fuels to ecological collapse.

About the IUCN World Conservation Congress

Aspect	Details
Nature of Event	Quadrennial global summit that sets global conservation priorities policies.
Organiser	International Union for Conservation of Nature (IUCN).
Outcome of 2025 Congress	Adoption of Motion 042 – Declaring fossil fuel production a direct biodiversity threat requiring phase-down aligned with climate goals.
Purpose	To influence international environmental frameworks such as the UNFCCC and CBD (Convention on Biological Diversity).

Motion 042: Key Provisions and Significance

Provision	Implication
Fossil Fuels as Direct Threat	Officially classifies extraction and combustion as major biodiversity risks – first time globally.
Phase-Down Commitment	Calls for halting expansion of new coal, oil, and gas projects; gradual phase-out aligned with Paris Agreement targets.
Integration with Conservation Policy	Urges nations to include fossil-fuel impact metrics in national biodiversity strategies (NBSAPs).

Global Fossil Fuel Production and Impacts

Fuel Type	Top Producers (2024)	Environmental Impact
Oil	U.S. (17%), Saudi Arabia (13%), Russia (12%)	Air pollution, oil spills, etc
Coal	China (51%), India (10%), Indonesia (8%)	Major CO ₂ emitter;
Natural Gas	U.S. (23%), Russia (17%), Iran (6%)	Methane leaks; acidification.



UPSC Relevance: **GS Paper III:** Biodiversity, Climate Change, Environmental Governance. **GS Paper II:** International Institutions – IUCN, UNFCCC, CBD. **Prelims Facts:** IUCN HQ – Gland, Switzerland. UNFCCC HQ – Bonn, Germany. Motion 042 (2025)



HOT Question: “IUCN Motion 042 reflects a paradigm shift in linking climate policy with biodiversity conservation. Discuss its implications for India’s energy transition and environmental diplomacy.”

15. Ceasefire Raises Hopes for Revival of Red Sea Trade Corridor



The **Israel– Hamas ceasefire** has revived hopes for reopening the **Red Sea trade corridor**, which has been disrupted for nearly two years due to **Houthi rebel attacks**. While the truce may stabilise maritime routes and reduce freight rates, India's trade revival depends on sustained **regional security and shipping reforms**.

Background

The **Red Sea** is a key maritime artery connecting the **Indian Ocean to the Mediterranean via the Suez Canal**, handling **~12% of global trade**.

Since **late 2023**, **Houthi attacks** on vessels near the **Bab-el-Mandeb Strait** have diverted shipping via the **Cape of Good Hope**, adding over **3,500–4,000 nautical miles** to each voyage.

The **ceasefire** between **Israel and Hamas (2025)** is expected to reduce regional tensions and facilitate **secure navigation** across the Red Sea.

Geopolitical and Strategic Dimensions

Project / Area	Relevance
India–Middle East–Europe Economic Corridor (IMEC)	Announced at G20 Summit 2023, IMEC aims to provide a 40% faster alternative to the Suez route through multimodal transport (ports, rail, energy pipelines).
Regional Stability	The ceasefire may restore investor confidence in IMEC and other Gulf–Europe trade infrastructure projects.
Yemen & Red Sea Security	Long-term success depends on Houthi disarmament and freedom of navigation in the Bab-el-Mandeb region.



UPSC Relevance: GS Paper III: Infrastructure, shipping, Blue Economy, logistics efficiency. **Prelims Facts:** Red Sea connects **Bab-el-Mandeb Strait** to the **Suez Canal**. IMEC – announced at **G20 Summit 2023 (New Delhi)**. Shipbuilding Financial Assistance Scheme extended till 2036



HOT Question: “The Red Sea crisis exposed India’s strategic vulnerability in maritime logistics. Discuss the significance of domestic shipbuilding and regional diplomacy in ensuring supply chain security

16. Peru Declares 30-Day Emergency in Lima and Callao Amid Rising Crime and Unrest



Peruvian President **José Jerí** has declared a **30-day state of emergency** in **Lima and Callao** due to escalating **organised crime and youth-led protests**, suspending certain civil rights to restore order.

Peru has imposed a **state of emergency** across its capital region to tackle rising **criminal violence, gang activity, and public disorder**. The decision follows months of unrest, driven by **"Gen Z" protest movements** and a surge in **organised crime networks**, particularly in urban coastal zones.

Under emergency powers, **police and military** will jointly patrol key districts, with **restrictions on public gatherings and movement**. The measure reflects growing instability in Latin America's urban centres amid economic inequality and drug trafficking

About Peru

Aspect	Details
Location	Western coast of South America
Borders	Ecuador and Colombia (north), Brazil (east), Bolivia and Chile (south), Pacific Ocean (west)
Capital	Lima
Major Regions	1 Costa (Coast) – arid plains along the Pacific 2 Sierra (Highlands) – Andes mountain range 3 Selva (Jungle) – eastern Amazon rainforest
Major Rivers	Amazon River (originates in Andes, drains to Atlantic)
Major Lakes	Lake Titicaca – world's highest navigable lake (shared with Bolivia)
Climate	Varies from dry coastal deserts to humid tropical rainforests, influenced by Humboldt Current (cold) and El Niño (warm) phenomena



UPSC Relevance: **GS Paper I – Geography | GS Paper II – International Relations / Governance** Themes: Latin American Politics, Internal Security Measures, El Niño–Humboldt Climate Influence, Global Youth Movements.

17. U.S. Faces First Government Shutdown Since 2019 Amid Budget Deadlock



The **United States government** entered its **first shutdown since 2019** after Congress failed to pass key budget appropriation bills before the October 1 fiscal deadline, primarily due to partisan conflict over **healthcare spending**.

About the U.S. Government Shutdown

Aspect	Description
Definition	A shutdown occurs when Congress fails to approve annual appropriation bills that fund federal agencies, leading to suspension of non-essential services.
Fiscal Year	U.S.: October 1 – September 30 India: April 1 – March 31
Legal Basis	The Antideficiency Act (1884) prohibits federal expenditure without congressional approval. A 1980 reinterpretation made shutdowns mandatory during funding lapses.
Temporary Avoidance	Congress can pass a Continuing Resolution (CR) – a stopgap measure extending previous funding levels until a full budget is passed.
Historical Record	Since 1976, the U.S. has faced 20 shutdowns. The longest (35 days) occurred in 2018–19 under President Trump over border wall funding.

Reasons for the 2025 Shutdown

Cause	Explanation
Political Gridlock	Divided control of Congress and Presidency delayed appropriation bills.
Partisan Polarisation	Deep divisions between Democrats and Republicans, especially on healthcare, defence, and social spending.
Policy Leverage	Shutdown threats used as negotiation tools to secure political concessions (e.g., healthcare subsidies in 2025).
Constitutional Structure	U.S. separation of powers prevents automatic dissolution; both chambers (House + Senate) must pass the budget.
Comparative Note	In India, only the Lok Sabha votes on appropriation bills – ensuring faster approval.



Consequences of the Shutdown

Area	Impact
Federal Employees	Non-essential staff furloughed (unpaid leave); essential workers (defence, air traffic) work without immediate pay.
Public Services	Closure of national parks, research labs, and administrative offices, disrupting citizen services.
Economic Loss	GDP slowdown, delayed federal contracts, lowered investor confidence.
Continuing Programs	Social Security, Medicare, veterans' benefits remain functional – funded by permanent laws.
Global Impact	Weakens confidence in U.S. fiscal stability and disrupts global financial markets.

Why India Avoids Government Shutdowns

Aspect	India's Safeguard Mechanism
System Type	Parliamentary – Executive is part of Legislature; budget passage tied to government survival.
Vote on Account (Article 116)	Allows temporary appropriation for government expenditure when the full budget isn't passed.
Majority Discipline	Executive's Lok Sabha majority and anti-defection laws prevent legislative paralysis.
Continuity	Ensures uninterrupted governance and fiscal functioning.



UPSC Relevance: **GS Paper III:** Public expenditure, fiscal responsibility, and macroeconomic implications. **Prelims Facts:** U.S. shutdowns based on **Antideficiency Act, 1884**. Longest shutdown: **2018–19 (35 days)**. U.S. fiscal year starts **October 1**, India's on **April 1**.



HOT Question: “Government shutdowns in the United States reveal the structural vulnerabilities of the presidential system. Contrast this with India's constitutional mechanisms that ensure fiscal continuity

18. China–U.S. Trade Clash Over Rare Earths: Global Ripple Effects



China’s **export restrictions on 12 rare earth elements (REEs)** have reignited trade tensions with the U.S. The **U.S. retaliated with 100% tariffs** on Chinese exports effective **November 1, 2025**, heightening global supply-chain and clean-tech risks

About Rare Earth Elements (REEs)

Aspect	Details
Composition	17 elements – 15 lanthanides + scandium + yttrium.
Availability	Geologically abundant but dispersed in low-grade ores; extraction and separation are complex and polluting.
Classification	LREEs (Light) – e.g., Neodymium, Lanthanum; HREEs (Heavy) – e.g., Dysprosium, Yttrium.
Key Uses	EV motors, wind turbines, defence sensors, semiconductors, medical imaging, smartphones.
China’s Dominance	Mines ≈ 61 %
India’s Position	3rd-largest reserves (~6 %) but < 2 % of global production (USGS 2024).

Immediate Context (2025)

China’s Action	U.S. Response
Export curbs on 12 key REEs citing “national security and resource conservation.”	100 % tariffs on Chinese critical-mineral and tech-related exports (effective Nov 1 2025).
Targets: Neodymium, Dysprosium, Yttrium, Terbium, Gadolinium – vital for clean energy and defence industries.	Aims to cut Chinese dependency and protect domestic green-tech supply chains.

Global Implications

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Dimension	Outcome
Supply Chain	China’s 92 % processing control → worldwide production bottlenecks.
Price Volatility	REE prices ↑ 35–40 % (IEA Market Update Sep 2025).
Strategic Decoupling	U.S., EU, Japan expanding friend-shoring to Australia, Vietnam, Africa via Minerals Security Partnership (MSP).
Environmental Concern	New mining hubs (Congo, Myanmar) risk ecological degradation & labour abuses.
Definition	Friend-shoring = relocating supply chains to geopolitically trusted partners to cut rival dependence.



UPSC Relevance: **GS III:** Critical minerals, industrial policy, resource security, sustainable mining. **Prelims Facts:** Total REEs = 17 elements. India – 6 % reserves, < 2 % output. Quad Critical Minerals Partnership – 2022. China – 92 % processing share (IEA 2024).



HOT Question: “China’s control over rare-earth elements is the new oil weapon of the 21st century. Evaluate its implications for India’s economic and strategic autonomy

19. India Warns Pakistan Over Sir Creek Activities; Recalls Operation Sindoor



India's **Defence Minister cautioned Pakistan** over military manoeuvres near **Sir Creek**, reiterating that any provocation will be met with strong response — recalling **Operation Sindoor** as proof of India's preparedness and dominance in coastal defence.

About Sir Creek

Feature	Description
Location	96 km long tidal estuary in the Rann of Kutch, separating Pakistan's Sindh and India's Gujarat (Kutch) regions.
Origin of Name	Earlier called Ban Ganga; renamed Sir Creek after a British surveyor.
Termination Point	Empties into the Arabian Sea near the India–Pakistan maritime boundary.
Geographical Nature	Marshy, shifting deltaic channel; vulnerable to tidal flooding and mangrove loss.
Strategic Importance	❶ Fishing & livelihood zone for both sides. ❷ Potential hydrocarbon reserves. ❸ Determines Exclusive Economic Zone (EEZ) limits. ❹ Close to Karachi, hence crucial for naval security.

The Sir Creek Dispute

Aspect	India's Position	Pakistan's Position
Legal Basis	Based on Thalweg Principle (mid-channel line in navigable waters).	Based on Bombay Government Resolution, 1914, claiming the eastern bank (Green Line) as the border.
Navigability Argument	Considers parts of Sir Creek navigable → Thalweg applicable.	Claims Sir Creek is non-navigable, hence Thalweg inapplicable.
Treaty Framework	Advocates bilateral resolution under Simla Agreement (1972).	Insists on enforcing 1914 colonial demarcation and extending maritime claims westward.



UPSC Relevance: GS Paper III: Coastal security, maritime boundary law. **Prelims Facts:** Sir Creek: 96 km estuary in Rann of Kutch. Thalweg = deepest channel principle. Simla Agreement, 1972 – Bilateral dispute mechanism.



HOT Question: "Sir Creek dispute exemplifies how geography and history intersect with geopolitics. Analyse its strategic importance and India's approach toward its resolution"

20. Protests Erupt in PoK and Bangladesh's Hill Tracts: India's Diplomatic Balancing Test



Recent **protests in Pakistan-occupied Kashmir (PoK)** over political disenfranchisement and alleged **crackdowns in Bangladesh's Chittagong Hill Tracts (CHT)** have triggered humanitarian concerns. India condemned **rights violations in PoK** while rejecting any **allegations of involvement** in Bangladesh's internal affairs.

Background of the Events

Region	Nature of Crisis	Trigger & Response
PoK (Muzaffarabad, Mirpur)	Civil unrest and protests against economic hardship, taxation, and denial of political autonomy.	Pakistan security forces responded with detentions and curfews; multiple injuries reported.
Chittagong Hill Tracts (Bangladesh)	Violence against indigenous Jumma tribes over land and resource rights.	Bangladesh authorities accused of using force to suppress protests; India denies any cross-border interference.

About the Regions

Region	Description & Significance
PoK (Pakistan-occupied Kashmir)	Administered by Pakistan since 1947; includes "Azad Jammu & Kashmir" (AJK) and "Gilgit-Baltistan." Strategically located along the Karakoram Highway and CPEC corridor.
Chittagong Hill Tracts (CHT)	Hilly region in southeastern Bangladesh, bordering India's Tripura, Mizoram, and Myanmar. Home to 11 ethnic groups (Jumma communities). Site of a 1997 Peace Accord, often violated.

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UPSC Relevance: GS Paper III: Internal security implications of cross-border unrest. **Prelims Pointers:** PoK: Includes *Gilgit-Baltistan* + "AJK" under Pakistan's control. **CHT Peace Accord:** Signed 1997 between Bangladesh Govt & PCJSS. **BBIN MVA:** Facilitates regional vehicle movement



HOT Question: "Instability in India's neighbourhood poses both humanitarian and strategic challenges. Discuss with reference to recent unrest in Pakistan-occupied Kashmir and Bangladesh's Chittagong Hill Tracts."

21. India Hosts World's Largest Maritime Gathering – India Maritime Week 2025 in Mumbai



The Ministry of Ports, Shipping and Waterways (MoPSW) is hosting **India Maritime Week 2025** at **NESCO Grounds, Mumbai**, themed “*Uniting Oceans, One Maritime Vision*”, to promote investment and sustainable growth in India’s Blue Economy.

Key Highlights

Aspect	Details
Organiser	Ministry of Ports, Shipping and Waterways (MoPSW)
Venue	NESCO Grounds, Mumbai
Duration	Five days
Theme	“Uniting Oceans, One Maritime Vision”
Participants	Ministers from 11 countries, over 100,000 delegates from 85 nations, including global policymakers and industry leaders
Major Events	- 4th Global Maritime India Summit (GMIS) - QUAD Ports of the Future Conference - UNESCAP Asia-Pacific Maritime Dialogue - Sagarmathan Forum
Objective	Showcase India’s maritime progress, enhance foreign investment, and promote sustainable ocean-based industries.

About Blue Economy (World Bank Definition)

The **Blue Economy** refers to the *sustainable use of ocean resources for economic growth, improved livelihoods, and jobs while preserving the health of ocean ecosystems.*



UPSC Relevance: GS Paper II – International Relations | GS Paper III – Infrastructure & Economy / Environment
Themes: Blue Economy, Maritime India Vision 2030, Port-led Development, Indo-Pacific Strategy, Sustainable Development.

22. India and Mongolia Celebrate 70 Years of Diplomatic Ties with Renewed Strategic and Cultural Cooperation



On 14th October 2025, President **Droupadi Murmu** hosted **Mongolian President Khurelsukh Ukhnaa** at **Rashtrapati Bhavan**, marking 70 years of India-Mongolia diplomatic relations and reaffirming their **strategic, cultural, and spiritual partnership**.

Key Highlights

Area	Details
Bilateral Engagement	India reaffirmed Mongolia's status as a Strategic Partner and Spiritual Neighbour, underlining deep civilizational links and mutual trust.
Cultural Cooperation	A new MoU on Cultural Exchange Programmes was signed; India continues to support restoration of Buddhist monasteries and reprinting ancient manuscripts in Mongolia.
Cybersecurity & Defence	Mongolia thanked India for assistance in cybersecurity capacity-building and modernising its Armed Forces through training and equipment support.
Infrastructure Projects	Discussions revisited progress on Mongolia's Oil Refinery Project, financed by India's \$1.2 billion Line of Credit, with an invitation to Indian leaders for the project's inauguration.
Strategic Vision	Both nations agreed to expand cooperation into new areas such as digital transformation, renewable energy, and climate resilience.

Background

Diplomatic Relations Established: 1955

Strategic Partnership Established: 2015

Shared Heritage: Rooted in **Buddhism**, with India's Bodh Gaya and Mongolia's Gandantegchinlen Monastery symbolising civilizational bonds.

Geopolitical Context: India and Mongolia cooperate under the **India-Mongolia-Japan trilateral** and share mutual interest in **Central Asian connectivity** and **energy diversification**.



UPSC Relevance: GS Paper II – International Relations

Themes: India-Mongolia Relations, Soft Power Diplomacy, Act East Policy, Strategic Partnerships, Buddhist Cultural Diplomacy.



23. India has proposed creating a new International Governance Index (IGI)



As President of the International Institute of Administrative Sciences (IIAS), India has proposed creating a new International Governance Index (IGI) to promote fairness, transparency, and inclusivity in global administrative assessments — challenging Western-centric biases in existing indices.

About the International Institute of Administrative Sciences (IIAS)

Aspect	Details
Founded	1930
Headquarters	Brussels, Belgium
Nature	Global non-profit research organisation focused on administrative science, governance, and capacity-building.
Membership	100+ countries; India currently holds the Presidency (2025–2027).
Activities	Conducts training, publishes research, and hosts annual governance conferences.

About the Proposed International Governance Index (IGI)

Feature	Description
Objective	Develop a transparent and inclusive global framework to assess administrative efficiency and governance performance.
Methodology	To integrate models used by World Bank, OECD, and regional governance systems (Asia, Africa, Latin America).
Process	A Research Advisory Committee and expert working group will draft the index; to be tabled at the IIAS Annual Conference 2026.
Indicators (tentative)	Administrative responsiveness, citizen participation, fiscal prudence, ethical governance, and service-delivery outcomes.
Significance	Seeks to rebalance global narratives, bridge North-South divides, and align with India’s philosophy of “Maximum Governance, Minimum Government.”

India’s Performance in Major Governance Indices

Index	Institution/ Country	India’s Status (Latest)	Key Observation
V-Dem Index (2025)	Varieties of Democracy Institute, Sweden	Rank 100 / 179	Categorised as “Electoral Autocracy.”
Freedom in the World (2024)	Freedom House, USA	Partly Free	Downgraded on civil & political freedoms.
Worldwide Governance Indicators (2023)	World Bank	Moderate effectiveness; low political stability	Perception-based governance evaluation.



UPSC Relevance: GS Paper II: International organisations, governance reforms, diplomacy. **Prelims Facts:** IIAS HQ: Brussels, Belgium. **Founded:** 1930.



HOT Question: “India’s proposal for an International Governance Index reflects a demand for decolonising global evaluation systems. Examine its potential and challenges



24. India to Host First APAC-AIG Regional Aviation Investigation Meet



For the **first time**, India will host the **APAC-AIG Meeting**, organised by the **Aircraft Accident Investigation Bureau (AAIB)** to strengthen aviation safety cooperation under **ICAO**.

About APAC-AIG

Aspect	Details
Full Form	Asia-Pacific Accident Investigation Group
Nature	Regional cooperative mechanism under ICAO
Purpose	Strengthens regional collaboration in aircraft accident investigation, data sharing, and safety training
Framework	Operates under Annex 13 of the Chicago Convention, which governs aircraft accident and incident investigation standards
Meeting Format	Annual meeting hosted by one ICAO member nation from the Asia-Pacific region

About International Civil Aviation Organisation (ICAO)

Established	1944 (Chicago Convention); became a UN agency in 1947
Headquarters	Montreal, Canada
Members	193 countries (India is a founding member)
Core Organs	Assembly, Council (36 members), Secretariat, and Regional Offices
Mandate	Formulates **global aviation standards**, ensures **safety, security, and environmental sustainability**, and promotes international cooperation in civil aviation

About Aircraft Accident Investigation Bureau (AAIB)

Established	2012
Parent Body	Ministry of Civil Aviation
Headquarters	New Delhi
Mandate	Investigate civil aviation accidents and serious incidents in India under **Annexe 13** obligations
Predecessor	Directorate General of Civil Aviation (DGCA) handled investigations before AAIB's formation
Significance	Strengthens India's compliance with **global air safety standards** and enhances **independent accident investigation** capacity



UPSC Relevance: GS Paper II - Governance / International Organisations / Transport Infrastructure *Themes:* ICAO, Aviation Safety, AAIB, India's Global Leadership in Civil Aviation.

25. India Elected Co-Chair of UN-GGIM Asia-Pacific Committee till 2028



India has been elected **Co-Chair of the UN-GGIM-AP Committee** for a three-year term (2025–2028), reinforcing its leadership in **global geospatial governance and data standardisation**.

About UN-GGIM (Global Body)

- | **Established By** | United Nations Economic and Social Council (ECOSOC), 2011
- | **Objective** | Manage and coordinate the global geospatial information ecosystem through **standards, frameworks, and policy cooperation** |
- | **Structure** | Global Committee of Experts supported by five regional committees – Africa, Americas, Arab States, Asia-Pacific, and Europe |
- | **Key Frameworks** | - **Integrated Geospatial Information Framework (IGIF)** – guides national geospatial strategy
- **Global Geodetic Reference Frame (GGRF)** – ensures accuracy in mapping, navigation, and SDG monitoring |
- | **Parent Organ** | ECOSOC, a principal UN organ for economic, social, and environmental policy coordination (est. 1945 under the UN Charter). |



UPSC Relevance: **GS Paper II – International Institutions** | **GS Paper III – Science & Tech / Governance**
Themes: UN-GGIM, ECOSOC, Geospatial Data Policy, SDG Monitoring, India's Global Leadership in Digital Governance.

26. India–Egypt Strategic Dialogue

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Strategic Dialogue: India and Egypt launched the **inaugural Strategic Dialogue** in New Delhi, covering politics, economy, defence, and counterterrorism.

- **Historical Ties:** Diplomatic relations since **1947**, Friendship Treaty in **1955**, upgraded to **Strategic Partnership in 2023**.
- **Trade Goal:** Aim to raise bilateral trade from **\$5 bn (2023–24)** to **\$12 bn by 2028**; India contributes **75%** of total trade.
- **Defence Cooperation:** Regular joint exercises – **Bright Star, Cyclone, Desert Warrior**; Egypt interested in **LCA Tejas** and **Akash** missiles.
- **Cultural Links:** Cairo's **Maulana Azad Centre** promotes Indian culture through '**India by the Nile**' and **Hindi** courses.
- **Strategic Significance:** **Suez Canal** vital for India's maritime trade; joint work on **Red Sea anti-piracy** and **counterterrorism**.
- **Global Platforms:** Cooperation through **UN, G20, BRICS**; shared legacy as **Non-Aligned Movement** founders.
- **Common Challenges:** Regional instability, **Suez disruptions**, **supply chain risks**, and **China's growing influence**.

27. India–Nepal Power Transmission Agreements

- **India–Nepal Power Pact:** Both nations signed agreements to build new **high-capacity cross-border power corridors**.
- **Implementing Agencies:** **POWERGRID (India)** and **NEA (Nepal)** to form **two joint ventures** — one in each country.
- **Projects:** Construction of **two 400 kV double-circuit lines** — **Inaruwa–New Purnea** and **Lamki (Dododhara)–Bareilly**.
- **Objective:** Strengthen **regional energy trade, grid connectivity, and clean energy exchange**.
- **Alignment:** Supports the **India–Nepal Joint Vision Statement on Power Sector Cooperation (2022)** and shared **energy security goals**.

28. Resumption of India–China Direct Flights

India–China Flights Resume: Direct flights to restart by **October 2025** under the **IATA winter schedule**.

- **Purpose:** Restore **people-to-people exchanges** and **normal bilateral engagement**.
- **Background:** Flights suspended since **March 2020** due to **COVID-19**; continued halt after **Galwan clashes**.
- **IATA Seasons:**
 - **Summer:** March–October — peak travel period.
 - **Winter:** October–March — lower demand, reduced flight frequency.

29. India–UK Navies Begin Exercise KONKAN-2025

- **Exercise KONKAN-2025** began on **5th October 2025** between the **Indian Navy** and **Royal Navy** off India's west coast to boost maritime cooperation.
- It reinforces the **India–UK Comprehensive Strategic Partnership** under **Vision 2035**.
- The **harbour phase** includes professional exchanges, sports, and cultural interactions to build synergy.
- The **sea phase** features advanced **anti-air, anti-surface, and anti-submarine drills** with major naval assets.

30. India Elected to UN Human Rights Council

India elected unopposed to the UN Human Rights Council (2026–2028) with 177 of 188 votes, marking its **seventh tenure**.

- Emphasized the ethos of **Vasudhaiva Kutumbakam** – promoting global unity and inclusivity.
- Cited **constitutional values** of justice, liberty, and equality aligning with international human rights.
- Will represent the **Asia-Pacific region** alongside **Pakistan, Vietnam, and Mauritius** after a mandatory one-term break.

31. India's Re-Election to the ICAO Council

India re-elected (2025–2028) to **Part II of the ICAO Council** at the **42nd Assembly in Montreal**, with a stronger global mandate.

Part II members are major contributors to **international civil air navigation facilities**.

Founding member since 1944, India has served **continuously for 81 years** on the ICAO Council.

India pledged to enhance **aviation safety, security, sustainability**, and promote **equitable global connectivity** under the **No Country Left Behind** initiative.

32. Over 120 Nations Attend 8th ISA Assembly

8th ISA Assembly inaugurated on **28th October 2025** in **New Delhi** by **President Droupadi Murmu**, with **120+ countries** participating.

Highlights **global commitment** to clean energy and solar cooperation under the **International Solar Alliance**.

Member nations represent **40% of global solar capacity**, showcasing ISA's growing global impact.

Aims to accelerate the **transition to a sustainable, solar-powered future**.

33. Small Island Developing States

GCA 2025 Report: Warns **Small Island Developing States (SIDS)** may face **\$476 billion losses by 2050** due to climate impacts.

Profile: 39 UN member states + 18 associates across **Caribbean, Atlantic, Indian, and Pacific** regions.

Vulnerabilities: Small populations, resource scarcity, reliance on **tourism and fisheries**, and extreme **climate exposure**.

Disparity: Contribute **<1% of global emissions** but get only **\$2 billion/year** (0.2% of global climate finance), mostly as **loans**.

34. Gaza Peace Summit 2025

Peace Summit on Gaza held in **Sharm el-Sheikh**, co-hosted by the **US and Egypt** to end the Gaza war and restore stability.

Based on the **US President's 20-point peace plan** outlining ceasefire and post-war governance.

Aimed to **disarm Hamas** and form a **new governing body** in Gaza.

Attended by **20+ countries including India; Israel, Hamas, and the Palestinian Authority** did not participate.

35. Nobel Peace Prize 2025

2025 Nobel Peace Prize awarded to **María Corina Machado**, Venezuelan opposition leader.

Honoured for championing **democracy, human rights**, and a **peaceful transition** from dictatorship.

As head of **Vente Venezuela**, she led civic campaigns for **judicial independence** and **electoral transparency**.

36. Global Satcom Summit at IMC 2025

Satcom Summit 2025 inaugurated on **8th October 2025** during **India Mobile Congress** in **New Delhi**.

Aims to advance **universal digital inclusion** through **satellite communication** for last-mile connectivity.

India has installed **4.8 lakh 5G towers**, covering **99.9% of the population**.

Over **29,000 villages** now connected to **high-speed digital networks**, moving toward **100% connectivity**.

37. South Korea, US, Japan to Hold Trilateral Diplomatic Talks at APEC

Trilateral Talks: South Korea, the US, and Japan to meet during the **APEC Summit 2025** in South Korea.

APEC Overview: Founded in **1989** as a **regional economic forum** to enhance Asia-Pacific economic cooperation.

Headquarters: Singapore; includes **21 member economies** — India is **not a member**.

Significance: Represents **2.9 billion people** and over **60% of global GDP**; decisions are **consensus-based and non-binding**.

38. US President Signs Gaza Declaration to Cement Ceasefire

Gaza Declaration signed on **13th October 2025** in **Sharm el-Sheikh**, marking a major **Israel-Hamas ceasefire** milestone.

Hostage exchange: Hamas freed **20 hostages**, Israel released **1,968 prisoners** including **250 security detainees**.

Part of **phase two** of the **US 20-point Gaza peace plan**, focusing on **reconstruction and stability**.

Egypt's President played a key role in brokering the deal; challenges remain over **Israel's actions** and **Hamas's response**.

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39. E-Passports for Indian Nationals in the UAE

E-passports for Indians in UAE: The **Indian Embassy in Abu Dhabi** will issue **chip-embedded e-passports** to all residents.

Implemented under the **Global Passport Seva Programme (GPSP 2.0)** of the **Ministry of External Affairs**.

The **embedded chip** stores **biometric and personal data**, ensuring **enhanced security** and **faster immigration clearance**.

40. Henley Passport Index 2025

India's 2025 Rank: Fell to **85th** in the **Henley Passport Index**, offering **visa-free access to 57 countries** (down from 59).

Top Ranks: **Singapore (193 destinations)** leads, followed by **South Korea & Japan (192)**.

Regional Comparison: **Bangladesh – 100th (38); Pakistan – 103rd (31)**.

About the Index: Started in **2005**, ranks **199 passports** and **227 destinations** using **IATA data**, updated **quarterly**.

41. M.F.Hussain

A **museum honoring M.F. Husain** will open in **Doha, Qatar**, celebrating his artistic legacy.

Known as the **“Picasso of India,”** he **co-founded the Bombay Progressive Artists’ Group**.

His work blended **global avant-garde styles** with **modern Indian art**, shaping India’s contemporary art movement.

42. Yunus Declares a ‘New Bangladesh’ Through National Charter

‘July National Charter’ signed by **Muhammad Yunus**, marking the **“birth of a new Bangladesh.”**

Features **80+ reform proposals** on **governance and electoral restructuring**, backed by **25 political parties**.

Symbolizes a **political transition** after the **2024 student-led uprising** that ousted **Sheikh Hasina’s government**.

43. India–Qatar Joint Meetings 2025

India–Qatar Trade Boost: Both nations aim to double bilateral trade (**USD 14 billion in FY25**) by **2030**.

CEPA Talks: Reaffirmed commitment to a **Comprehensive Economic Partnership Agreement** to deepen trade and investment.

Energy Deal: Qatar to supply **7.5 million tonnes of LNG** annually to India from **2028**.

Digital Expansion: India’s **UPI** launched in **Doha**, making Qatar the **8th country** to adopt the payment system.

OCTOBER 2025

DEFENCE & INTERNAL SECURITY

1. DAC Clears ₹79,000 Crore Defence Proposals
2. India Tests Indigenous Combat Parachute System
3. From Operation Sindoor to India's Maritime Focus
4. Internet Shutdowns in India: 2024 Legal Overview
5. Digital India's Growth and Rising Cyber Frauds
6. Maoist Insurgency Declines, Final Phase Nears
7. 210 Maoist Cadres Surrender in Bastar
8. NCRB Report 2023: Cybercrime Cases Surge
9. Renewed Clashes Along Afghanistan–Pakistan Border
10. India Releases Defence Procurement Manual 2025
11. India Aims ₹3 Lakh Crore Defence Output by 2029
12. DRDO Launches IRSA 1.0 Communication Network
13. Defence Minister Inaugurates HAL Tejas, HTT-40 Lines
14. Cochin Shipyard Delivers INS Mahe, ASW Craft
15. Army Inducts 'Saksham' AI Counter-Drone System
16. Exercise Konkan 2025: India–UK Joint Carrier Drills
17. Exercise Trishul: Major Tri-Service War Games
18. INS Sahyadri Joins India–Korea Naval Exercise
19. IAF Participates in Ocean Sky 2025, Spain
20. India Hosts UN Peacekeeping Chiefs' Conclave 2025
21. ICG Launches Indigenous Fast Patrol Vessels
22. Russia Tests 14,000 km Burevestnik Missile
23. Ukraine Hits Bryansk Plant with UK Missiles
24. US Limits AMRAAM Supply to Pakistan
25. NCB–RRU MoU to Combat Cyber Drug Crimes
26. CBI Targets Online Financial Crimes Under Operation HAECHI-VI
27. India Eyes ₹50,000 Crore Defence Exports by 2029



1. DAC Clears Capital Acquisition Proposals of ~₹79,000 Crore for Armed Forces



On 23 October 2025, the Defence Acquisition Council (DAC), chaired by the Rajnath Singh-led Ministry of Defence, approved capital procurement proposals worth approximately ₹79,000 crore to bolster the operational capabilities of the Indian Army, Indian Navy and Indian Air Force.

What is DAC & AoN: The Defence Acquisition Council is the highest decision-making body under the Ministry of Defence for capital acquisitions. Its approval to grant "Acceptance of Necessity" (AoN) marks the first key milestone in the acquisition process

Significance:

- Strengthens operational readiness of all three services in the face of regional security challenges.
- Emphasis on indigenisation ("Make in India") and self-reliance in defence manufacturing – many of the systems are domestically developed or built.
- Addresses logistic mobility, modern warfare domains (electronic intelligence, amphibious operations, autonomous systems) and joint-force integration.

Keywords / Places / Concepts: Defence procurement process, Acceptance of Necessity (AoN), amphibious operations, anti-tank guided missiles, ELINT systems, Make-in-India, joint operations, tri-service integration.

Pros and Cons:

- **Pros:** Modernisation boost, indigenous capability build-up, enhanced deterrence & readiness, logistic & intelligence upgrades.
- **Cons / Challenges:** Large capital outlay (₹79,000 crore) requires efficient utilisation; procurement ecosystems historically subject to delays/cost overruns; indigenous production must meet timelines & quality to avoid operational gaps.



UPSC Relevance: GS Paper II (Polity & Governance): Defence procurement policy, role of DAC, Defence Acquisition Process. GS Paper III (Security & Technology): Modernisation of Indian armed forces, indigenous defence production.



HOT Question "Critically evaluate how the recent ₹79,000 crore acquisition by the Defence Acquisition Council contributes to India's defence preparedness and the goal of technological self-reliance. What challenges remain?"



2. India's Indigenous Military Combat Parachute System (MCPS) Tested at 32,000 ft



On 15 October 2025, the Ministry of Defence announced that the MCPS — developed by DRDO's Aerial Delivery Research and Development Establishment (ADRDE), Agra and Defence Bioengineering and Electromedical Laboratory (DEBEL), Bengaluru — was successfully tested by the Indian Air Force via a combat free-fall jump from 32,000 feet, making it the only parachute system in Indian Armed Forces currently capable of deployment above 25,000 ft.

What is MCPS: The Military Combat Parachute System (MCPS) is an indigenously developed parachute system tailored for high-altitude airborne operations (High Altitude High Opening (HAHO)/High Altitude Low Opening (HALO) etc).

Development & Agencies: Developed by DRDO labs ADRDE (Agra) and DEBEL (Bengaluru).

Key Features: Able to deploy from 32,000 ft (test altitude) and operationally capable above 25,000 ft.

Slower descent rate, better stability and steering control — enabling paratroopers to exit safely, deploy at pre-determined altitudes and land in designated zones.

Integrated with India's satellite navigation system NavIC, making it resistant to external interference or denial-of-service.

Significance:

Marks step toward self-reliance ("Aatmanirbhar Bharat") in aerial delivery / parachute systems.

Reduces dependence on foreign parachute systems, lowers turnaround time for maintenance and repair, enhances operational availability especially in conflict/high-altitude terrains.

Enhances capability of Indian armed forces (especially special forces, airborne operations, high-altitude ingress) by enabling precise and safe parachute insertions at high altitude.

Keywords / Concepts: High altitude parachute operations, HAHO/HALO, aerial delivery systems, self-reliance in defence, NavIC integration, DRDO labs.



HOT Question: "Analyse the strategic significance of India's indigenously developed Military Combat Parachute System (MCPS) in the context of high-altitude/airborne operations and self-reliant defence manufacturing. What are the major operational and logistic challenges in its deployment and induction into the armed forces?"



3. From Operation Sindoor to the Sea: India's Emerging Maritime Focus

Following Operation Sindoor, India has signalled a shift in strategic emphasis toward the maritime domain — expanding infrastructure, enhancing naval capabilities and redefining its maritime footprint via the MAHASAGAR Doctrine and other initiatives.

- **Operation Sindoor:** Launched on 7 May 2025 (in response to the 22 April 2025 Pahalgam attack) India targeted nine terrorist-infrastructure sites across Pakistan and Pakistan-occupied Jammu & Kashmir. Multi-agency intelligence, tri-services involvement and a calibrated approach marked the operation. The operation underscored India's readiness for conventional cross-border military action while maintaining the nuclear threshold.
- **Maritime Domain Significance for India:**
 - The Indian Ocean and its adjoining seas are vital trade routes: e.g., around 90 % of India's trade by volume moves via sea.
 - India's 7,500 km+ coastline (mainland + islands) gives both opportunity and vulnerability in maritime security.
 - Control/monitoring of maritime routes has direct bearing on India's strategic deterrence and economic security.
- **MAHASAGAR Doctrine:** Announced ~2025, the doctrine extends the earlier SAGAR Doctrine (Security and Growth for All in the Region) into a broader "Mutual And Holistic Advancement for Security And Growth Across Regions" vision. It emphasises:
 - Maritime security cooperation with IOR and Global South nations.
 - Blue economy, port and infrastructure development.
 - Capacity building, sustainable development and expanding India's maritime footprint.



UPSC Relevance: GS Paper II (International Relations: India's maritime strategy, regional security, IORA, Indo-Pacific) and GS Paper III (Security: maritime security, naval modernisation)



HOT Question "Assess the shift in India's defence and foreign policy emphasis from land-based counter-terror operations (as seen in Operation Sindoor) to maritime domain engagement. What are the opportunities and constraints for India in operationalising its MAHASAGAR doctrine?"



4. Internet Shutdowns in India: Legal Regime and 2024 Overview



The Bareilly (Uttar Pradesh) government ordered a 48-hour internet suspension during the Dussehra festival, highlighting the broader framework and practice of internet shutdowns in India.

Legal Framework & Process

Provision	Key points
Telecommunications Act, 2023 (Act No. 44 of 2023)	Replaces the Indian Telegraph Act, 1885; under Section 20, both Central & State governments may suspend telecom services.
Telecommunication (Temporary Suspension of Services) Rules, 2024 (“2024 Rules”)	Sets out procedure: written order specifying reasons, area, duration; maximum 15 days, but renewals allowed.
Oversight & safeguards	Orders must specify geographic area; state/central review committee meets within five days.

Statistics & Trends (2024)

- 84 shutdowns recorded in India in 2024 – second-highest globally after Myanmar.
- Leading states: Manipur (21), Haryana (12), Jammu & Kashmir (12).
- Primary causes: protests (41 cases), communal violence (23 cases), exam-related disruptions (5 cases).

Significance & Issues

- Importance of Internet:* Essential for education, commerce, governance, freedom of expression.
- Concerns:* Frequent shutdowns affect constitutional rights (Article 19 & 21), hinder digital economy, erode transparency.
- Challenges:* Renewal loopholes allow indefinite de-facto shutdowns; independent oversight remains weak.



UPSC Relevance: GS Paper II – e-Governance & digital rights; GS Paper III – infrastructure, economy; Prelims – Facts on Act, Rules, statistics of shutdowns.



HOT Question: “Discuss the implications of India’s frequent internet shutdowns on democratic governance and digital economy. Evaluate how the legal framework under the Telecommunications Act, 2023 addresses (or fails to address) the concerns of necessity, proportionality and transparency



5. Digital India's Rise and the Rising Threat of Cyber Frauds



India's digital economy has scaled rapidly – boosting financial inclusion, payments and governance – but cyber frauds and trust-deficits are emerging as major risks.

Key Achievements

- Internet/5G: Over 96.96 crore users connected.
- Payments: India handles 46% of global digital payments; majority via Unified Payments Interface (UPI).
- Aadhaar & e-governance: ~142 crore IDs, platforms like UMANG, Digi Locker enabling services.

Challenges / Threats

- Rise in cyber incidents: From ~10.29 lakh in 2022 to ~22.68 lakh in 2024.
- Large financial losses: ₹22,845 crore lost in 2024 (≈206 % jump from 2023).
- Fraud tactics: Social engineering dominates (phishing, impersonation, UPI/OTP scams).

Significance:

- The digital backbone aids inclusion, transparency, governance efficiency.
- But trust underpins the digital economy – fraud-risks erode usage, investment and financial stability.

Keywords / Concepts: Digital economy, financial inclusion, UPI, e-governance, cyberfraud, social engineering, trust deficit, mule accounts.



UPSC Relevance: Relevant for GS Paper III (Infrastructure, Digital Economy, Cyber Security) and GS Paper II (Governance, Digital India).



HOT Question “Examine how India's rapid digitalisation has enhanced financial inclusion and governance. At the same time analyse why cyber frauds are rising in the digital economy and what measures can help restore citizen trust.”

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6. Maoist Insurgency in India: Significant Decline, Final Phase in Sight



The insurgency has markedly weakened, with fewer strongholds, lowered incident counts and a policy aim to eradicate Left-Wing Extremism by 31 March 2026.

Decline Indicators

Indicator	2010 / Peak	2024 / Latest
Violent incidents of LWE	~1,936 (in 2010)	~374 incident count in 2024
Number of Maoist-affected districts	126 (in 2010)	11 districts (as of Oct 2025)
Active cadre strength	~10,000+ estimated (2010)	Under ~2,000 (2025 estimate)

Key Drivers of Decline

Joint security operations and special forces campaigns (e.g., “Operation Black Forest/Kagar”)

Infrastructure rollout (roads, telecom) improving state reach & denying insurgent control.

Financial/funding network disruption by agencies.

Surrender & rehabilitation schemes encouraging cadres to rejoin mainstream society.

Loss of leadership (e.g., captured/killed senior insurgents)

Changing socio-economic context: reduced grievance space, improved connectivity, jobs.



UPSC Relevance: GS Paper III (Internal Security: insurgency, left-wing extremism, counter-insurgency strategy) and GS Paper II (Governance: development in left-wing extremism-affected areas, rehabilitation policies)



HOT Question “Evaluate the reasons behind the decline of the Maoist insurgency in India. What steps should the government take in the ‘last mile’ to ensure that the movement does not regenerate in new forms or locations?”



7. Historic Mass Surrender of 210 Maoist Cadres in Bastar



On 17 October 2025, as many as 210 cadres of the Communist Party of India (Maoist) (including 110 women) surrendered in Jagdalpur (Bastar district, Chhattisgarh), under the state's 'Puna Margem' initiative. This marks one of the largest single-day mass surrenders in India's counter-insurgency history.

Event details:

- Location: Jagdalpur, Bastar division, Chhattisgarh.
- Weapons handed over: 153 weapons including AK-47s, SLRs, etc.
- Total bounty on surrendering cadres: ~₹9.18 crore.
- Symbolic gesture: Each cadre was given a red rose and a copy of the Constitution of India.

Policy / initiative context:

- Chhattisgarh's Naxal Surrender/ Victim Relief & Rehabilitation Policy-2025 replaces the 2023 policy, offering financial support, education, employment and land/housing for surrendered Maoists and relief to victims.
- Implementation mechanism: District-level committees headed by District Collectors to oversee rehabilitation.

Significance:

- Underscores the weakening of Maoist organisational strength and morale, especially in Bastar.
- Demonstrates success of combining security operations, outreach & rehabilitation (development-led governance) in extremism-affected regions.



UPSC Relevance: GS Paper III (Internal Security: Insurgency and Counter-Insurgency Strategy, Left-Wing Extremism) and GS Paper II (Governance: Rehabilitation Programs, Rural & Tribal Development).



HOT Question "Analyse the factors that enabled the mass surrender of 210 Maoist cadres in Bastar under the Puna Margem initiative. What are the key challenges in ensuring that this surrender translates into durable peace and development in the region?"

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8. National Crime Records Bureau Releases Crime in India 2023 Report: Cybercrime Surges



On 29 September 2025, the NCRB released its Crime in India 2023 report, presenting key data on offences across India including declines in murder and sharp rises in cybercrime.

Key Statistics:

- Total cognisable crimes: 6.24 million cases – 7.2% rise over 2022.
- Crime rate: 448.3 per lakh population (2023) up from 422.2 in 2022.
- Murders: 27,721 cases in 2023 – a 2.8% decline from 2022.
- Cyber-crimes: 86,420 cases – up 31.2% from 2022.
- Crimes against children: 177,335 cases in 2023 (↑9.2%).
- Crimes against Scheduled Tribes (STs): 12,960 cases in 2023 (↑28.8%).
- Crimes against Scheduled Castes (SCs): 57,789 cases in 2023.
- Crimes by foreign nationals: 2,546 cases in 2023 (↑21.2%).

Role of NCRB:

- Established in 1986 under the Ministry of Home Affairs; collects, compiles and disseminates national crime statistics.
- Data submitted by 36 States/UTs, validated at district & state levels.

Significance & Emerging Trends:

- Traditional with violent crimes like murder are showing modest decline, but digital/urban offences (cyber-fraud, child online exploitation) are rising sharply.
- Data helps law-makers, police forces and policy planners to spot vulnerabilities (e.g., cybercrime surge) and deploy targeted responses.

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UPSC Relevance: GS Paper II (Governance: data-driven policy-making, crime data, vulnerable groups) and GS Paper III (Internal Security: crime trends, cyber security, policing).



HOT Question: “Examine the significance of the *Crime in India 2023* report in understanding India’s evolving crime profile. What do the trends in cyber-crime and crimes against children and tribals imply for law-enforcement and policy responses?”

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9. Renewed Clashes Along the Durand Line Between Afghanistan & Pakistan Disrupt Border Crossings



In early October 2025 intense border skirmishes erupted along the 2,600 km Durand Line, leading to major crossing closures, heavy casualties and a cease-fire mediated by third parties.

- **Key Facts & Context:**
 - The Durand Line was drawn in 1893 by British India and Afghanistan; Kabul does not formally recognise it as the international border.
 - The 2025 clashes were triggered by a Pakistani air-strike in Kabul on 9 October targeting the Tehrik-e-Taliban Pakistan (TTP). Afghanistan retaliated with attacks on Pakistani posts on 11–12 October.
 - Cross-border trade and movement were disrupted as major crossings--such as Torkham and Chaman--were closed.
- **Underlying Causes:**
 - Boundary dispute over the Durand Line.
 - Pakistan accuses Afghan territory of harbouring TTP militants; Afghanistan disputes Pakistan's push for strategic depth.
 - Refugee pressures and deportations (over one million Afghan refugees expelled by Pakistan since 2023) further strain ties.
- **Strategic Implications for India:**
 - Instability in the region affects India's western frontier and Kashmir dynamics.
 - Disruption of Afghanistan-Pakistan trade routes has implications for India's access to Central Asia.
 - Opportunity for India to deepen engagement with Iran, Afghanistan and Central Asian republics via alternate corridors.



UPSC Relevance: GS Paper II (International Relations: India-Afghanistan-Pakistan triangle, regional security) and GS Paper III (Security: insurgency, cross-border terrorism)



HOT Question "Analyse the causes and consequences of the renewed Afghanistan-Pakistan border clashes along the Durand Line in 2025. What strategic options does India have in the evolving security dynamics of this region?"



10. India Unveils Defence Procurement Manual 2025 to Streamline Revenue Acquisitions

On 14 September 2025, the Ministry of Defence approved DPM 2025, replacing the 2009 version. It comes into force from 1 November 2025 and governs annual revenue procurements worth about ₹1 lakh crore by the three services and MoD establishments.

Scope & Distinction:

- DPM governs *revenue* procurements (operational support, maintenance, spares etc.).
- It is distinct from the Defence Acquisition Procedure 2020 (DAP) which covers *capital* acquisitions.

Key Features:

- Effective date: 1 November 2025.
- Annual procurement value covered ~ ₹1 lakh crore.
- Promotes indigenisation: assured orders up to five years for domestically developed items.
- Level playing field: removal of requirement for No Objection Certificate (NOC) from DPSUs before private sector tendering.
- Ease of Doing Business: delegation to Competent Financial Authorities (CFAs) in the field; relaxed liquidated damages (LD) for indigenised supplies.

Significance:

- Aligns revenue procurement with the “Make in India” & “Atmanirbhar Bharat Abhiyan” goals.
- Speeds up availability of operational supplies thus enhancing readiness of the armed forces.
- Opens the defence manufacturing ecosystem for MSMEs/start-ups and private sector.

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Challenges:

- India remains among the largest arms importers; indigenisation still has head-room.
- Lower R&D investment and manufacturing capacity constraints may slow down the intended benefits.



UPSC Relevance: GS Paper III (Defence & Security: procurement reforms, indigenisation) and GS Paper II (Governance: defence manufacturing policy, ease of doing business).



HOT Question: “Analyse the key changes introduced by India’s Defence Procurement Manual 2025. How will these reforms impact the armed forces’ operational readiness and India’s ambition of self-reliance in the defence sector? What obstacles remain to full realisation of its goals?”

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11. India Targets ₹3 Lakh Crore in Defence Manufacturing and ₹50,000 Crore in Exports by 2029



India has set an ambitious goal to achieve ₹3 lakh crore in annual defence manufacturing and ₹50,000 crore in exports by 2029, building on a record performance in FY 2024-25.

Rising Domestic Defence Production

Parameter	2024-25 Figures	Trend / Target
Domestic Output	₹1.5 lakh crore	↑ from ₹46,000 crore (2014)
Procurement to Domestic Industry	92% of total contracts	Reflects “Aatmanirbhar Bharat” in defence
MSME Share	25% of annual procurement	350+ items reserved exclusively
Policy Benchmark (DPEPP 2020)	₹1.75 lakh crore production & ₹35,000 crore exports by 2025	Precursor to 2029 goals

Defence Startups & Innovation

Programme / Policy	Key Outcomes
iDEX (Innovations for Defence Excellence, 2018)	Supported 650+ innovators; ₹3,000 crore worth of prototype procurements completed.
Defence Procurement Manual (DPM 2025)	Guarantees 5-year assured contracts for startups (extendable to 10 years).
Defence Unicorn Vision	Aim to establish India’s first \$1-billion defence startup to symbolise ecosystem maturity.

Government Initiatives Driving Indigenisation

Initiative	Purpose / Key Feature
Positive Indigenisation Lists (PILs)	Ban import of specified items; mandate domestic procurement by MoD.
FDI Policy Reform	Allows up to 74% automatic route, higher with approval – boosting foreign technology tie-ups.
DPEPP 2020	Defence Production & Export Promotion Policy for self-reliance in critical systems.
Localisation Drive	64% of Tejas LCA parts now indigenously produced; growing local supply chains for shipbuilding, munitions, and avionics.



UPSC Relevance: **GS Paper III:** Defence Production, Indigenisation, Industrial Policy, Technology Missions. **Prelims Facts:** Target: ₹3 lakh crore manufacturing; ₹50,000 crore exports (by 2029).



HOT Question “Discuss the role of policy reforms such as DPEPP 2020 and iDEX in achieving India’s defence manufacturing and export self-reliance targets.”



12. DRDO Unveils IRSA 1.0 for Unified Defence Communication



Launched on 6 October 2025, IRSA 1.0 is India's first standardized software architecture for Software Defined Radios (SDRs), ensuring interoperability among the Army, Navy, and Air Force.

The Defence Research and Development Organisation (DRDO), with the Integrated Defence Staff (IDS) and Tri-Services, launched the Indian Radio Software Architecture (IRSA) Standard 1.0 in New Delhi.

It provides a unified framework defining interfaces, APIs, execution environments, and waveform portability for SDRs.

The standard enhances interoperability, certification, and seamless communication across armed forces, strengthening joint operational efficiency.

13. Defence Minister Inaugurates New HAL Production Lines for Tejas Mk1A and HTT-40

HAL opened its 3rd LCA Tejas Mk1A and 2nd HTT-40 trainer production lines at Nashik, enhancing India's indigenous aircraft manufacturing capacity.

The Union Defence Minister inaugurated Hindustan Aeronautics Limited's (HAL) new LCA Tejas Mk1A and HTT-40 production lines at Nashik, Maharashtra, and flagged off the maiden flight of the first Tejas Mk1A from the facility.

LCA Tejas Mk1A: A 4.5-generation, single-engine, delta-wing, multi-role light combat aircraft, designed by ADA and built by HAL.

HTT-40 Trainer: An indigenous tandem-seat turboprop trainer for primary flight training of IAF cadets.

HAL: A Maharatna PSU headquartered in Bengaluru, engaged in the design, development, and manufacture of aircraft, helicopters, engines, and avionics for India's defence and aerospace sectors.



14. Cochin Shipyard Delivers INS Mahe — India's First Indigenous ASW Shallow Water Craft

On 24 October 2025, Cochin Shipyard Limited (CSL) delivered INS Mahe, the first of eight indigenously designed and built Anti-Submarine Warfare Shallow Water Crafts (ASW-SWC), to the Indian Navy.

In a formal ceremony, CSL's Director (Operations) handed over INS Mahe to Commander Amit Chandra Choubey, Commanding Officer-Designate, in the presence of senior naval officials.

Named after the historic port town of Mahe in Puducherry, the 78-metre-long vessel is the largest Indian naval ship powered by a diesel engine–waterjet propulsion system, offering high speed, agility, and efficiency in shallow waters.

INS Mahe is designed for underwater surveillance, anti-submarine warfare, mine-laying, search and rescue, and low-intensity maritime operations, enhancing India's coastal defence and operational versatility.

With over 80% indigenous content, the ship embodies Aatmanirbhar Bharat in naval shipbuilding. It has been built under the Classification Rules of Det Norske Veritas (DNV), a Norwegian global agency ensuring international standards in ship design, safety, and quality.

15. Indian Army Inducts 'Saksham' AI-Based Counter-UAS Grid for Tactical Battlefield Security

The Indian Army, with BEL, has developed and begun inducting 'Saksham', an AI-powered Counter-Unmanned Aerial System (UAS) Grid to secure the Tactical Battlefield Space (TBS).

Saksham (*Situational Awareness for Kinetic Soft and Hard Kill Assets Management*) is an **indigenous AI-driven command and control system** that detects, tracks, and neutralizes **hostile drones**.

Developed by: Indian Army & Bharat Electronics Limited (BEL)

Features: Integrates **radar, electro-optical, and signal intelligence data** for real-time situational awareness.

Threat Response: Coordinates **soft-kill (jamming/spoofing)** and **hard-kill** methods for aerial threat neutralization.

Network: Operates via the **Army Data Network (ADN)**; compatible with the **Akashteer Air Defence System**.

Visualisation: Offers **3D battlefield visualization** for quick tactical responses.

Tactical Battlefield Space (TBS):

A **multi-dimensional combat zone** combining land and **low-altitude aerial operations (up to 3,000 m)** — a shift from the older ground-centric **Tactical Battle Area (TBA)** — reflecting the rising threat of **hostile drones** in the **Air Littoral** domain.



16. Exercise Konkan 2025: India–UK Conduct First Joint Carrier Strike Group Drills

For the first time, **INS Vikrant** and the **UK's HMS Prince of Wales** jointly led **Exercise Konkan 2025**, marking a milestone in **India–UK maritime cooperation**.

Exercise Konkan 2025 marked the **first-ever combined maritime exercise** between the **Indian and British Carrier Strike Groups**. The UK's 65,000-tonne aircraft carrier **HMS Prince of Wales** joined India's **INS Vikrant**, showcasing **joint air-sea combat capabilities** and interoperability.

Held **biennially** since 2004, **Exercise Konkan** remains a key pillar in **India–UK defence ties**, strengthening **strategic cooperation**, **operational coordination**, and **maritime partnership** in the Indo-Pacific region.

17. Exercise Trishul: India's Major Tri-Service War Game Along Western Border

India launched **Exercise Trishul**, a **12-day tri-service war game** across **Rajasthan and Gujarat**, focusing on the **Sir Creek region** to test joint combat readiness and indigenous capabilities.

Exercise Trishul is a large-scale **tri-service military drill** involving the **Army, Navy, and Air Force** along India's **western border with Pakistan**.

Objective: Test joint coordination and validate **indigenous technology and weapon systems**.

Scale: Over 20,000 **Army personnel**, supported by **T-90 tanks**, **BrahMos missiles**, **Prachand helicopters**, and **naval frigates and destroyers** for amphibious and maritime operations.

Air Power: The **IAF** leads '**Mahagujrat**' operations, deploying **Rafale**, **Sukhoi-30MKI fighters**, and **UAVs**.

18. INS Sahyadri Joins Inaugural India–South Korea Naval Exercise at Busan

INS Sahyadri, a **Shivalik-class stealth frigate**, arrived at **Busan Naval Harbour** for the **first India–Republic of Korea Navy (IN–RoKN) Bilateral Exercise**.

The **Indian Naval Ship (INS) Sahyadri** reached **Busan** to participate in the **inaugural India–South Korea naval exercise**, aimed at boosting **interoperability, coordination, and mutual understanding** between the two navies.

The drill aligns with India's **Act East Policy** and **Indo-Pacific Oceans Initiative (IPOI)**, reinforcing maritime security cooperation.

INS Sahyadri, an **indigenously designed Shivalik-class guided missile stealth frigate**, was **commissioned in 2012** and represents India's growing **blue-water naval capability**.



19. IAF Joins Multinational Exercise Ocean Sky 2025 in Spain

On 20 October 2025, the Indian Air Force began participating in Exercise Ocean Sky 2025 at Gando Air Base, Spain, hosted by the Spanish Air Force.

Exercise Ocean Sky 2025 is a multinational air combat drill held from October 20–31, 2025, to strengthen defence cooperation, interoperability, and combat readiness among participating nations.

The exercise focuses on mutual learning and air combat skill enhancement, aligning with India's expanding defence engagements.

The participation follows the IAF's induction of 16 Airbus C-295 transport aircraft, a major boost to tactical airlift and mission versatility.

The C-295 supports troop and cargo transport, maritime patrol, surveillance, reconnaissance, SIGINT, close air support, medical evacuation, VIP transport, and firefighting operations.

20. India Hosts UN Troop Contributing Countries' Chiefs' Conclave 2025 in New Delhi

From 14–16 October 2025, India hosted the UN Troop Contributing Countries' Chiefs' Conclave in New Delhi, uniting 32 nations to strengthen global peacekeeping cooperation.

For the first time, the Indian Army hosted the UN Chiefs' Conclave, reinforcing India's leadership in peacekeeping strategy and international collaboration.

Key discussions centered on modernizing UN operations – using technology for troop safety, ensuring mandates reflect ground realities, and balancing sovereignty with human security.

India highlighted its legacy of over 3,00,000 troops deployed in 50 UN missions, the first all-female police contingent in Liberia, and a “no national caveat” policy prioritizing global duty.

A major theme was leveraging technology – including drones, AI-enabled logistics, and indigenous defence innovations under Aatmanirbharta (self-reliance).



21. ICG Launches Two Indigenous Fast Patrol Vessels — ICGS Ajit and ICGS Aparajit

The Indian Coast Guard launched ICGS Ajit and ICGS Aparajit, the 7th and 8th indigenously built Fast Patrol Vessels (FPVs), at Goa Shipyard Limited (GSL).

The Indian Coast Guard (ICG) launched two new Fast Patrol Vessels — ICGS Ajit and ICGS Aparajit — built by Goa Shipyard Limited (GSL).

These are the final vessels in a series of eight indigenous FPVs and the first in India to feature Controllable Pitch Propellers (CPP) for superior agility and fuel efficiency.

Each 52-metre, 320-tonne vessel is over 65% indigenous in equipment and design.

The induction enhances blue-water surveillance, maritime readiness, and advances Atmanirbhar Bharat in naval defence, supporting the ICG's goal of safe, secure, and clean seas.

22. Russia Tests Nuclear-Powered Burevestnik Cruise Missile with 14,000 km Range

Russia successfully tested its nuclear-powered Burevestnik cruise missile, which reportedly flew 14,000 km and remained airborne for nearly 15 hours.

The Burevestnik ("storm petrel") is a ground-launched, nuclear-powered, nuclear-armed cruise missile with an almost unlimited range.

Propulsion: Initially boosted by a solid-fuel rocket, then powered mid-flight by a compact nuclear reactor for sustained long-distance travel.

Range & Flight Profile: Capable of low-altitude, extended-duration flight along unpredictable routes.

Evasion: Its low-flying, manoeuvrable design enables it to evade radar detection and bypass missile defence systems, posing a strategic deterrent capability.



23. Ukraine Strikes Bryansk Chemical Plant Using UK-Supplied Storm Shadow Missiles

In October 2025, Ukrainian forces used **British-supplied Storm Shadow** long-range cruise missiles to strike a **chemical/munitions plant in Bryansk, Russia**.

Strike: Ukraine reported a strike on a **Bryansk** chemical plant that produces **gunpowder, explosives and rocket-fuel components**; results were being assessed and Russian sources reported extensive air-defence activity.

Weapon: **Storm Shadow (SCALP-EG)** is an Anglo-French, long-range, air-launched, **fire-and-forget** cruise missile used for precision strikes.

Range & Flight: The missile's operational range **exceeds 250 km** and it flies at **low altitude** using **terrain-following** to reduce detectability.

Guidance: Navigation combines **INS + GPS** with **Terrain Reference Navigation (TRN)** and infrared terminal imaging for accurate target identification.

Warhead: The **BROACH** multi-stage warhead uses an initial penetrator charge followed by a main charge for deep penetration of hardened targets.

24. US Confirms No New AMRAAM Deliveries to Pakistan — Contract Limited to Sustainment

The **US** clarified the amended contract for **AIM-120 AMRAAM** with **Pakistan** covers **sustainment and spare parts only**; no new missiles will be supplied.

The **AIM-120 AMRAAM** is an advanced **beyond-visual-range, fire-and-forget** air-to-air missile (with some surface-to-air capability), typically launched from fighters like the **F-16**.

Range & Speed: Effective beyond **160 km** and capable of **speeds > Mach 4**.

Guidance & Targeting: Employs an **advanced guidance suite** (GPS inputs) with a **two-way datalink** for mid-course updates and **autonomous terminal guidance**.

Contract Note: The recent US clarification restricts the deal to **sustainment, spares, and logistics support**, not new AMRAAM airframes.

Keywords: AIM-120 AMRAAM, beyond-visual-range, fire-and-forget, two-way datalink, GPS guidance, F-16, sustainment, spare parts.



25. NCB–RRU MoU to Strengthen Fight Against Cyber-Enabled Drug Crimes

On 8 October 2025, the Narcotics Control Bureau (NCB) and Rashtriya Raksha University (RRU) signed an MoU in New Delhi to enhance cooperation in research, training, and technology development for tackling cyber-enabled drug crimes.

The MoU integrates academic expertise with enforcement operations, aiming to counter emerging digital narcotics threats.

The collaboration focuses on joint research and innovation in areas such as darknet drug markets, cryptocurrency tracing, and cyber threat intelligence. Both institutions will develop specialized training programmes on cyber forensics, blockchain forensics, OSINT, and behavioural profiling to boost NCB's technical skills.

The partnership also envisions a Centre of Excellence in Cybercrime Investigation and Drug Intelligence, serving as a hub for advanced research, innovation, and inter-agency coordination under India's Aatmanirbhar Bharat initiative.

26. CBI Cracks Down on Cyber Financial Crimes Under Interpol's Operation HAECHI-VI

On 8 October 2025, the CBI arrested 8 accused and identified 45 suspects under Interpol's Operation HAECHI-VI, targeting transnational cyber-enabled financial crimes.

Operation HAECHI-VI is an Interpol-led global crackdown on cyber-enabled financial crimes, including voice phishing, romance scams, sextortion, investment fraud, illegal online gambling, business email compromise, and e-commerce fraud.

The CBI, in collaboration with the FBI, U.S. Department of Justice, and German authorities, identified and apprehended offenders engaged in financial and sexual cyber offences.

The operation exposed and dismantled illegal call centre networks operating from Delhi and Amritsar, which had been defrauding U.S. nationals under the guise of technical support services, marking a major step in cross-border cybercrime enforcement.



27. India Targets ₹50,000 Crore Defence Exports by 2029

India's defence exports, currently valued at ₹24,000 crore, are projected to double to ₹50,000 crore by 2029, driven by self-reliance and policy reforms.

Export Growth:

Defence exports grew **12.04% in FY 2024-25**, reaching nearly **80 countries** with items such as **arms, ammunition, and sub-systems**.

Export authorisations rose **16.9%**, while the number of **defence exporters** increased by **17%**. **DPSUs** recorded a **42.85% rise** in exports in FY 2024-25.

Make in India & Self-Reliance:

Indigenous manufacturing is driving expansion – **64% of Tejas LCA components** are locally sourced.

92% of defence contracts in FY 2024-25 were awarded to the **domestic industry**.

Institutional Support:

FDI up to 74% is permitted through the **automatic route**, with higher limits through government approval.

iDEX (Innovations for Defence Excellence) provides grants up to **₹1.5 crore** to **MSMEs, startups, and R&D institutions**.

Policy Reforms: www.educasiumiasacademy.com

Parts and components removed from the **industrial licensing regime**.

Licence validity extended to **15 years**.

Export authorisation streamlined through a **digital SOP system**, improving transparency and efficiency.



OCTOBER 2025

ECONOMY

1. RBI Brings Cooperative Banks Under Ombudsman Scheme
2. RBI Expands Bank Funding for Mergers, Lending
3. RBI Establishes Payments Regulatory Board for Digital Sector
4. RBI Reports Sixfold Growth in Digital Payments
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38. Cabinet Approves ₹37,952 Crore Rabi Fertilizer Subsidy
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40. Deep-Sea Fishing Vessels Distributed Under Matsya Yojana
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47. Centre Launches ₹1,500 Crore Mineral Recycling Scheme
48. India's Urban Planning Needs Economic, Climate Overhaul



1. RBI Brings State and Central Cooperative Banks Under Integrated Ombudsman Scheme (RB-IOS), 2021



The Reserve Bank of India (RBI) announced the inclusion of **State Cooperative Banks (StCBs)** and **Central Cooperative Banks (CCBs)** under the **Reserve Bank – Integrated Ombudsman Scheme (RB-IOS), 2021**, effective **November 2025**.

About RBI's Integrated Ombudsman Scheme (RB-IOS), 2021

Aspect	Details
Launched	12 November 2021
Objective	To establish a free, single-window system for customers to lodge complaints against any RBI-regulated entity under the Alternate Grievance Redressal (AGR) Framework.
Tagline / Motto	"One Nation – One Ombudsman"
Merged Schemes	1 Banking Ombudsman Scheme (2006) 2 NBFC Ombudsman Scheme (2018) 3 Digital Transactions Ombudsman Scheme (2019)
Key Features	Unified complaint filing portal, simplified process, centralised database, and time-bound redressal.
Coverage (Now Extended)	- Commercial Banks (Public, Private, Foreign) - Regional Rural Banks (RRBs) - Scheduled and Non-scheduled Urban Cooperative Banks - NBFCs (≥₹100 crore assets) - Credit Information Companies (CICs) - Now includes: State & Central Cooperative Banks (from Nov 2025)

Alternate Grievance Redressal (AGR) Framework

- Developed by **RBI** as a comprehensive system for **internal and external dispute resolution** in the financial sector.
- Integrates **internal complaint handling** at institution level and **external escalation** through RB-IOS portal.



UPSC Relevance: GS Paper III: Banking reforms, financial consumer protection, inclusive growth. **Prelims Facts:** RB-IOS launched in 2021, merges 3 ombudsman schemes. Tagline: "One Nation – One Ombudsman."



HOT Question: "Discuss the significance of the Reserve Bank – Integrated Ombudsman Scheme (RB-IOS) in improving financial consumer protection and accountability in India's banking system"

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2. RBI Opens Bank Funding for M&As, Expands Rupee Lending, and Strengthens Market Benchmarks



The Reserve Bank of India (RBI) announced major reforms to **deepen financial markets**, **support corporate growth**, and **advance rupee internationalisation**, signalling a shift toward a more globally integrated financial system.

Key Measures Announced

Area	Reform	Objective / Impact
Corporate Financing	Banks allowed to finance mergers & acquisitions (M&As) — earlier limited to NBFCs and bond markets.	Boost corporate expansion; provide low-cost structured funding; align with global banking norms.
Rupee Lending to Neighbours	Indian banks (domestic & overseas) may lend in INR to Nepal, Bhutan, Sri Lanka, and select regional partners.	Step toward rupee internationalisation and reduced dollar dependency in South Asia.
IPO & Share Financing	IPO financing limit raised to ₹25 lakh (from ₹10 lakh); loan against shares limit raised to ₹1 crore (from ₹20 lakh, last revised 1998).	Deepen capital markets and retail participation.
Lending Against Debt Securities	Cap on loans against listed corporate bonds proposed to be removed.	Strengthen corporate bond liquidity and investor confidence.
Currency Benchmarking	Financial Benchmarks India Ltd (FBIL) to expand benchmarks beyond USD, EUR & JPY.	Lower transaction costs, diversify forex exposure, enhance rupee's regional role.
Special Rupee Vostro Accounts (SRVA)	Surplus SRVA balances can now be invested in corporate bonds & commercial papers, not just G-Secs.	Provide liquidity options for trade partners; deepen domestic debt markets.

Institutional Background

FBIL: Independent body setting official financial benchmarks across money, bond, and forex markets.

SRVA: Mechanism (since 2022) allowing foreign entities to settle trade directly in INR via Indian banks.



UPSC Relevance: GS Paper III: Indian Economy – Banking, Monetary Policy, Rupee Internationalisation. **Prelims Facts:** IPO loan limit → ₹25 lakh; Loan against shares → ₹1 crore. Rupee lending allowed to Nepal, Bhutan, Sri Lanka. SRVA balances investible in corporate bonds & CPs.



HOT Question: “RBI’s 2025 reforms mark a paradigm shift from prudential control to proactive market development. Discuss their implications for rupee internationalisation and corporate finance.”



3. RBI Establishes Payments Regulatory Board to Oversee India's Expanding Digital Payments Ecosystem



The Reserve Bank of India (RBI) has set up a **six-member Payments Regulatory Board (PRB)** to supervise and regulate payment systems across India, replacing the earlier BPSS (Board for Regulation and Supervision of Payment and Settlement Systems).

About the Payments Regulatory Board (PRB)

Aspect	Details
Composition	6 members – Chaired by RBI Governor; includes the Deputy Governor, an Executive Director of RBI, and three government-nominated representatives.
Predecessor	Replaces BPSS, which had 5 members (all from RBI, no government nominees).
Legal Authority	Established under the Payment and Settlement Systems Act, 2007.
Mandate	To regulate, authorise, and supervise entities operating India's payment systems (e.g., UPI, NEFT, RTGS, RuPay).
Objective	Strengthen governance, enhance oversight, and ensure security, efficiency, and innovation in digital payments.

Regulatory Framework for Payment Systems

Law / Body	Role / Function
Payments and Settlement Systems Act, 2007	Empowers RBI as the apex regulator to authorise and supervise all payment system operators.
National Payments Corporation of India (NPCI)	Umbrella organisation for retail payment systems; manages UPI, IMPS, RuPay, and Bharat BillPay.
RBI's Role	Issues licences, sets interoperability norms, regulates prepaid instruments, and ensures systemic stability.
International Benchmark	The PRB aligns India with global norms such as the Financial Stability Board's (FSB) principles for payment system oversight.



UPSC Relevance: GS Paper III: Indian Economy – Money & Banking, Digital Payments, Financial Inclusion. **Prelims Facts:** PRB = 6 members, chaired by RBI Governor. Replaces BPSS (5-member internal RBI body). Statutory basis – Payment and Settlement Systems Act, 2007. NPCI = umbrella body managing UPI and RuPay.



HOT Question: "Discuss the significance of the Payments Regulatory Board in strengthening India's digital payment ecosystem. How does it improve upon the earlier BPSS framework?"



4. RBI Report Highlights 6× Growth in India's Digital Payments between 2019 and 2025



The Reserve Bank of India (RBI) released its **Payment Systems Report (2025)**, showcasing India's transformation into one of the world's largest and fastest-growing digital payment ecosystems.

Indicator	2019	2024	% / Multiple Growth
Total Transactions (Volume)	3,248 crore	20,849 crore	↑ 6.4×
Total Value (₹ lakh crore)	1,775	2,830	↑ 60%
UPI Transactions (Volume)	1,079 crore	17,221 crore	↑ 16×
UPI Value (₹ lakh crore)	18.4	246.8	↑ 13×
Debit Card Volume	495 crore	173 crore	↓ 65%
Credit Card Volume	225 crore	447 crore	↑ 2×
RTGS Value (₹ lakh crore)	1,388.7	1,938.2	↑ 40%
NEFT Volume	302 crore	926.8 crore	↑ 3×
IMPS Volume	294 crore	593.8 crore	↑ 2×
BBPS Volume	12.6 crore	217.5 crore	↑ 17× (Value ↑ 41×)
NACH Volume	338 crore	677 crore	↑ 2×
FASTag (issued)	—	11.11 crore	↑ rapid expansion

System-wise Highlights

System	Operator	Function
RTGS	RBI	Real-time settlement of high-value interbank funds.
NEFT	RBI	One-to-one electronic bank transfer system.
IMPS	NPCI	24×7 instant interbank fund transfer.
BBPS	NPCI	Integrated bill-payment platform for recurring payments.
NACH	NPCI	Bulk credit/debit system for subsidies, pensions, EMI.
FASTag	NPCI / NHAI	Electronic toll collection via RFID tags.

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UPSC Relevance: GS Paper III: Economy – Money & Banking, Digital Infrastructure, Fintech. **Prelims Facts:** RTGS & NEFT: operated by RBI. IMPS, BBPS, NACH: operated by NPCI. FASTag adoption: 1,782 toll plazas; 11.11 crore tags



HOT Question: "India's digital payments revolution demonstrates the synergy of regulation, innovation, and inclusion. Analyse this statement with reference to RBI's Payment Systems Report 2025"

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5. India's Forex Reserves Cross USD 700 Billion for the First Time — 5th Largest Globally

According to the Reserve Bank of India (RBI), India's foreign exchange reserves surged by USD 4.496 billion, reaching a record USD 702.28 billion, placing India among the top five forex holders globally after China, Japan, Switzerland, and Russia.

Composition of India's Forex Reserves (as of Oct 2025)

Component	Amount (USD Billion)	Change	Description
Foreign Currency Assets (FCA)	570.41	↓ 1.692	Major share held in foreign securities, deposits, and treasuries.
Gold Reserves	108.55	↑ 6.181	Includes physical gold & gold deposit accounts; valued at global prices.
Special Drawing Rights (SDRs)	18.72	↑ 0.038	IMF-created reserve asset representing claim on freely usable currencies.
IMF Reserve Position	4.60	↓ 0.030	India's portion of its IMF quota available for BoP needs.
Total Reserves	702.28	↑ 4.496	All-time high — reflects robust external balance and confidence.

About Forex Reserves

Definition: External assets held by the RBI in foreign currencies, gold, and IMF assets to ensure **exchange rate stability**, **external payment capacity**, and **investor confidence**.

Legal Basis: Managed under the **Foreign Exchange Management Act (FEMA), 1999**.

Custodian: Reserve Bank of India (RBI).

Global Standing : India ranks **5th globally** in forex holdings (after China, Japan, Switzerland, Russia).



UPSC Relevance: GS Paper III: Indian Economy – External Sector, Balance of Payments, RBI's Monetary Management. **Prelims Facts:** Forex Reserves components: **FCA, Gold, SDR, IMF Position**



HOT Question: "Discuss the significance of maintaining adequate foreign exchange reserves for macroeconomic stability in India. What challenges arise from excessive reserve accumulation?"

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6. Ministry of Mines Reclassifies Limestone Entirely as a Major Mineral to Streamline Regulation



The Ministry of Mines (MoM) has reclassified **limestone** as a **major mineral**, ending its dual classification and aligning with recommendations of a NITI Aayog-led inter-ministerial committee.

About the Reclassification

Aspect	Before	After (2025)
Classification	Major mineral when used in cement, steel, fertiliser; minor mineral when used in lime kilns.	Fully classified as a major mineral for all uses.
Regulation	Split authority – Central (major uses), State (minor uses).	Fully regulated by Central Govt. under the MMDR Act, 1957.
Rationale	Industrial use has expanded far beyond local lime manufacture; dual regulation caused confusion.	Simplifies governance and improves ease of doing business.

About Limestone

Parameter	Details
Type	Sedimentary rock composed mainly of Calcium Carbonate (CaCO ₃).
Main Forms	Calcite, Aragonite, Dolomite.
Industrial Uses	Cement, steel, glass, fertilisers, chemicals, and construction.
Agricultural Use	Soil conditioner for reducing acidity.
Major Reserves	Karnataka (25-28%), followed by Andhra Pradesh, Gujarat, and Madhya Pradesh.
Top Producers	Rajasthan, Madhya Pradesh, Andhra – together ~50% of national output.



UPSC Relevance: GS Paper III: Economy – Industries, Mineral Policy, Infrastructure. **Prelims Facts:** Reclassified under **MMDR Act, 1957**. Regulation shifted entirely to **Central Government**.



HOT Question: “Discuss the significance of reclassifying limestone as a major mineral for India’s industrial growth and regulatory efficiency



7. Despite Resource Wealth, India Imports ~50% of its Natural Needs; Policy Shift Aims for Self-Reliance



India continues to depend heavily on **imported natural resources** such as oil, gold, copper, bauxite, and coal – a structural weakness in its economic resilience and *Viksit Bharat 2047* roadmap.

India’s Import Dependence Snapshot (2025)

Resource	Import Share (%)	Observation
Crude Oil	~90%	Major driver of current-account deficit.
Copper	~95%	Domestic mines under-utilised.
Gold	~99%	Accounts for ~40% of India’s import bill.
Coal	~20–25%	Despite large reserves, imported for quality and logistics reasons.
Bauxite	Moderate	Export duty raised to encourage domestic refining.
Overall Import Share	~50% of resource needs	~60% of resource-import bill from oil, gold, and copper.

Key Policy Measures Suggested

Focus Area	Reform Action	Expected Impact
Exploration Reform	Encourage start-up style exploration firms; emulate global high-risk-high-reward model.	More discoveries; diversified explorers’ base.
Private Participation	Shift from state-driven baseline surveys to open, entrepreneurial exploration.	Faster discovery and extraction cycles.
Ease of Doing Business	Replace multi-layered clearances with self-certification + post-audit.	Quicker project starts; compliance accountability retained.
Revive Dormant Assets	Reopen Kolar Gold Fields, Hutti Mines, Hindustan Copper units, and ageing oil wells via private investment.	Boost output without new fiscal burden.
Level Playing Field	Remove preferential treatment for PSUs in allocation/fiscal aid.	Fair competition; innovation and efficiency gains.



UPSC Relevance: GS Paper III: Economy – Energy Security, Infrastructure, Industrial Policy. **Prelims Facts:** Oil import ~90%, gold ~99%, copper ~95%. Key policies: **HELP, SATAT, Critical Minerals Mission, Green Hydrogen Mission.**



HOT Question: “India’s import dependency on natural resources undermines its energy and economic security. Discuss the structural reforms required to achieve mineral self-reliance



8. Union Agriculture Ministry revokes approval for 11 animal-origin biostimulants citing religious, ethical, and dietary sensitivities.

The Ministry of Agriculture and Farmers Welfare has **cancelled the registration of 11 animal-derived biostimulants** under the **Fertiliser Control Order (FCO)**. The decision follows representations highlighting cultural and religious concerns regarding the use of animal-based agricultural inputs.

About Biostimulants

Parameter	Details
Definition	Substances or microorganisms applied to plants, seeds, or soil to enhance natural physiological processes, improving growth, quality, and stress resistance.
Key Distinction	Unlike fertilisers (nutrient providers) or pesticides (pest controllers), they enhance nutrient use efficiency and stress tolerance.
Typical Sources	Microbes, seaweed/algal extracts, humic & fulvic acids, protein hydrolysates, compost extracts, and bioactive compounds.
Regulatory Basis	Included under FCO 1985 (amended 2021) – Schedule VI lists 9 recognised biostimulant categories with standards & claims.

Types & Functions of Biostimulants

Category	Source / Example	Function / Benefit
Humic & Fulvic Acids	Decomposed organic matter	Improve soil porosity, water retention, nutrient uptake.
Seaweed Extracts	Algal sources (Ascophyllum, Kappaphycus)	Contain natural hormones; enhance growth & stress tolerance.
Protein Hydrolysates / Amino Acids	Plant or animal proteins	Boost metabolism; help recovery from drought & heat stress.
Beneficial Microbes	Rhizobium, Mycorrhiza	Fix nitrogen, mobilise phosphorus, promote root growth.
Bioactive Compounds	Vitamins, antioxidants	Trigger plant defence & improve produce quality.



UPSC Relevance: GS Paper III: Agriculture – Input Management, Biotechnology, Sustainable Farming. **Prelims Facts:** Biostimulants under Schedule VI, FCO 1985 (amended 2021). **Central Biostimulant Committee (2021).** Residue limit: **1.0 ppm (2024).**



HOT Question: "Biostimulants represent a green alternative for crop productivity enhancement. Examine the regulatory and ethical challenges in their large-scale adoption in India"

9. World Diamond Council reports declining demand for Lab-Grown Diamonds (LGDs) as global markets rebalance toward natural diamonds

According to the **World Diamond Council (WDC)**, a **global oversupply** of LGDs and renewed consumer preference for **authentic, naturally sourced diamonds** have led to a downturn in synthetic diamond sales.

About the World Diamond Council (WDC)

Aspect	Details
Nature	Not-for-profit trade organisation representing the global diamond industry.
Founded	2000 (in response to rising conflict-diamond concerns).
Objective	Maintain integrity of the natural diamond supply chain and consumer confidence.
Institutional Role	Provides technical, financial, and policy support to Kimberley Process KP
Function within KP	Ensures that diamond trade complies with certification norms verifying legitimate, conflict-free origins.

The Kimberley Process (KP)

Parameter	Details
Establishment	2003 as a tripartite initiative among governments, civil society, and industry.
Goal	Prevent trade in conflict diamonds — rough diamonds used to fund rebel movements.
Membership	60 participants (59 nations + EU); India is a founding member.
Legal Mechanism	The Kimberley Process Certification Scheme (KPCS) requires national laws and verification systems for diamond import/export control.
Significance	99% of global diamond trade now certified as conflict-free under KP norms.

About Lab-Grown Diamonds (LGDs)

Aspect	Details
Definition	Man-made, synthetic diamonds identical to natural diamonds in chemical, physical, and optical properties.
Production Methods	- HPHT (High-Pressure High-Temperature) – replicates Earth's mantle conditions using graphite + seed. - CVD (Chemical Vapour Deposition) – deposits carbon atoms onto a seed in a vacuum chamber using carbon-rich gas.
Advantages	Ethical sourcing, lower environmental impact, affordability, precision quality.
Market Trend (2025)	Oversupply has reduced margins; consumers returning to natural stones for perceived rarity and long-term value.



UPSC Relevance: GS Paper III: Economy – Industries, MSME, Trade Policy. GS Paper IV: Ethics – Responsible consumption, sustainability.
Prelims Facts: WDC → Kimberley Process partner. KP launched 2003; India founding member. CVD & HPHT → LGD methods.

10. Punjab bans hybrid non-Basmati paddy citing poor milling yield and high input costs — but faces legal pushback under the Seed Act, 1966.

In 2025, the Punjab government banned cultivation and procurement of hybrid non-Basmati paddy after complaints of low Out-Turn Ratio (OTR) and high operational losses to FCI. Farmers, however, continued sowing using seeds sourced from Haryana and Himachal Pradesh, leading to tension between state regulation and farmers' preference.

Term	Definition / Significance
Out-Turn Ratio (OTR)	Percentage of rice obtained from paddy after milling. FCI requires ≥ 67% OTR for procurement.
Seed Act, 1966	Central law regulating seed quality and certification; states cannot impose unilateral crop bans inconsistent with this Act.

Why Farmers Prefer Hybrid Non-Basmati Paddy

Factor	Benefit to Farmers
Higher Yield	+5–6 quintals/acre (avg 35–40 q/acre) over traditional varieties.
Short Duration	Matures in 125–130 days, enabling quick turnaround and reduced stubble burning.
Weather Resilience	Performs better under erratic monsoon and heat stress conditions.

Issues with Hybrid Varieties

Concern	Impact
Low Milling Efficiency (OTR)	Causes ₹300–400 crore loss annually to FCI during procurement.
Input Dependency	Requires higher fertiliser, pesticide, and water use; raises sustainability concerns.
Climate Pressure	Encourages monocropping, affecting soil health and groundwater recharge.
Legal Conflict	Ban violates Seed Act 1966 and National Seed Policy 2002, leading to federal friction.



UPSC Relevance: GS Paper III: Agriculture – Cropping patterns, Technology, Food security. **Prelims Facts:** OTR ≥ 67% for FCI procurement. Seed Act 1966 governs national seed standards



HOT Question: “The hybrid paddy controversy in Punjab highlights the tension between yield maximisation, milling standards, and legal consistency. Discuss with reference to the Seed Act 1966.



11. Madhya Pradesh, India’s top soybean producer, reports a 10% decline in soybean acreage .



Madhya Pradesh, India’s top soybean producer, reports a **10% decline in soybean acreage (2023–24)** as young farmers shift to alternate crops amid rising input costs, poor MSP support, and climate stress.

About Soybean (Golden Bean)

Feature	Details
Crop Type	Kharif oilseed crop – native to East Asia.
Ideal Conditions	Temperature: 26–30°C; Rainfall: ~90 cm; Soil: Fertile loamy with good drainage.
Nutritional Value	High in protein, omega-3 & 6 fatty acids, and antioxidants.
Global Position	Brazil – largest producer; India – 5th globally.
Major States (India)	Madhya Pradesh, Maharashtra, Rajasthan.

Key Challenges Faced by Soybean Farmers

Issue	Description & Impact
MSP Ineffectiveness	Farmers forced to sell 35–40% below MSP; Bhavantar Yojana fails to offset losses.
Low Profitability	Sharp rise in diesel, fertiliser, and labour costs without proportional price rise.
Import Uncertainty	Cheap U.S. soy & soymeal imports threaten domestic prices and competitiveness.
Poor Infrastructure	Lack of drying, grading, and cold storage → higher post-harvest losses and distress sales.
Yield Decline	Irregular monsoon and low-quality seeds cut yields by up to 50% vs. earlier levels.
Debt Trap	~70% of farmers depend on seasonal credit, selling produce early to clear debts.



UPSC Relevance: GS Paper III: Agriculture – Cropping pattern, Food processing, MSP system, Import dependence. **Prelims Facts:** Soybean → *Kharif* crop; Ideal rainfall ~90 cm. India – 5th largest global producer.



HOT Question: “Discuss the factors behind declining soybean acreage in Madhya Pradesh. How can India’s oilseed policy ensure both price stability and crop sustainability?”



12. VOPPA Amendment Order, 2025



The Ministry of Consumer Affairs, Food & Public Distribution has notified the VOPPA (Vegetable Oil Products (Regulation)) Amendment Order, 2025, modernising edible-oil regulation to ensure real-time data, curb hoarding, and enhance consumer protection.

The VOPPA Order (2011) was framed under the Essential Commodities Act, 1955, to regulate edible-oil production, storage, and distribution.

Amendment Aim (2025):

- Prevent hoarding and black-marketing.
- Strengthen digital market surveillance.
- Align definitions and penalties with the Essential Commodities Act, 1955.
- Protect consumers from artificial price shocks.

Key Provisions of VOPPA 2025

Provision	Purpose
Online Registration	Mandatory for all oil manufacturers, refiners, and traders.
Monthly Digital Reporting	Entities must upload production, import, and inventory data to a central portal.
Data Transparency	Enables real-time monitoring by the Ministry for early policy intervention.
Stronger Penalties	Stricter fines and suspension clauses for non-reporting or stock manipulation.
Legal Alignment	Harmonised with Essential Commodities Act (1955) definitions and enforcement structure.

India’s Edible-Oil Landscape

Parameter	Current Status (2024–25)
Consumption	India = 2nd largest consumer (after China); intake exceeds ICMR recommendations.
Import Dependence	~55–60% of demand imported → world’s largest importer.
Import Composition	Palm oil (56%), Soybean oil, Sunflower oil.
Domestic Output Share	Soybean (34%), Rapeseed–Mustard (31%), Groundnut (27%).
Core Issue	Low yield in rainfed zones; poor technology access; high post-harvest losses.



UPSC Relevance: GS Paper III: Agriculture – Cropping pattern, Food processing, E-governance in markets. **Prelims Facts:** VOPPA 2011 → under Essential Commodities Act, 1955.



13. Nationally interoperable LPG delivery system

The **Petroleum and Natural Gas Regulatory Board (PNGRB)** has proposed a **nationally interoperable LPG delivery system** allowing customers to receive refills from any nearby distributor, irrespective of their oil marketing company (OMC).

Key Features of the Proposed Framework

Provision	Description
Automatic Re-routing	If delivery fails within 24 hours, the order is auto-transferred to the nearest distributor, even across OMCs.
Cross-OMC Delivery	Customers of IOC may receive refills from BPCL or HPCL dealers, breaking silo operations.
Unified System	Creates a national LPG service grid, ensuring coverage parity between urban and rural zones.
Pilot Launch	To begin in select districts to test logistics, data integration, and OMC coordination.

Rationale for Reform

Challenge	Impact
Delivery Delays	Over 8 lakh households face delayed refills annually, especially in Tier-2 & rural areas.
Service Complaints	Growing consumer dissatisfaction despite 100% coverage under PM Ujjwala Yojana.
Inefficient Resource Use	Parallel OMC networks lead to duplication, higher costs, and longer turnaround time.
Public Service Mandate	As state-owned firms, all OMCs share a universal service obligation for fuel accessibility.

About PNGRB

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Aspect	Details
Full Form	Petroleum and Natural Gas Regulatory Board
Established	PNGRB Act, 2006
Nodal Ministry	Ministry of Petroleum and Natural Gas (MoPNG)
Headquarters	New Delhi
Functions	Regulates refining, storage, transportation, marketing, and sale of petroleum products and natural gas (excluding crude oil & exploration).
Appellate Body	Appellate Tribunal for Electricity (APTEL)



UPSC Relevance: **GS Paper II:** Governance – Service delivery, Transparency reforms. **GS Paper III:** Energy security, Infrastructure, Public sector efficiency. **Prelims Facts:** PNGRB → *Statutory body under PNGRB Act, 2006. Appeals → Appellate Tribunal for Electricity (APTEL).*

14. ICCVAI Scheme Significantly Reduces Post-Harvest Losses, Expands India’s Cold Chain Network

The Ministry of Food Processing Industries (MoFPI) reported that the **Integrated Cold Chain and Value Addition Infrastructure (ICCVAI) Scheme** has substantially reduced post-harvest losses in perishables by building modern storage, processing, and transport facilities across India.

India’s Cold Storage Landscape

Aspect	Data / Observation
Total Units	8,815 cold storages with 40.2 million tonnes capacity
Deficit	~35 million tonnes short of estimated demand
Utilisation	70-75% operational efficiency
Top States	Uttar Pradesh (15 MT), West Bengal, Gujarat
Sectoral Use	Horticulture & agri-produce: 83% • Processed foods: 9% • Animal husbandry: 7%
Dominant Crop	Potatoes occupy nearly 70% of total cold storage space

About the ICCVAI Scheme

Feature	Details
Type	Central Sector Scheme under Pradhan Mantri Kisan Sampada Yojana (PMKSY)
Implementing Ministry	Ministry of Food Processing Industries (MoFPI)
Objective	To establish an integrated cold chain from farm to consumer, minimise post-harvest losses, and improve farmer income.
Financial Assistance	Up to ₹10 crore per project as grant/subsidy.
Subsidy Pattern	35% in general areas; 50% in difficult areas (NE, Himalayas, Islands, SC/ST, FPOs, SHGs).
Eligible Sectors	Horticulture, dairy, meat, poultry, fisheries, and marine products. (Fruits, vegetables, and shrimp covered under Operation Greens).
Eligible Applicants	Individuals, private firms, FPOs/FPCs, cooperatives, PSUs, NGOs, SHGs.
Implementation Condition	Must link Farm-Level Infrastructure → Distribution Hubs/Refrigerated Transport.



HOT Question: “Discuss how the Integrated Cold Chain and Value Addition Infrastructure (ICCVAI) Scheme supports India’s agricultural value chain and contributes to reducing post-harvest losses



15. Union Cabinet Launches ₹11,440 Crore Mission to Achieve Self-Sufficiency in Pulses by 2030



On 1st October 2025, the **Union Cabinet** approved a **six-year Central Sector Scheme** titled “*Mission for Aatmanirbharta in Pulses*” (2025-26 to 2030-31) with a **financial outlay of ₹11,440 crore**. The mission aims to make India fully self-reliant in **tur, urad, and masur**, the key imported pulses.

Mission Overview

Parameter	Details
Objective	Achieve self-sufficiency in pulses by increasing production from 242 LMT (2023-24) to 350 LMT by 2030-32.
Duration	2025-26 to 2030-31 (6 years)
Financial Outlay	₹11,440 crore
Implementing Agencies	Ministry of Agriculture & Farmers Welfare, with NAFED and NCCF as procurement agencies.

Strategic Components

Component	Key Details/ Targets
1. Expansion of Area	Pulses cultivation to expand from 242 lakh ha → 310 lakh ha.
2. Productivity Boost	Yield target raised from 881 kg/ha → 1,130 kg/ha.
3. Assured Procurement	100% procurement of tur, urad, and masur at MSP by NAFED & NCCF under PM-AASHA’s Price Support Scheme (PSS) for 4 years.
4. Cluster-Based Approach	Implementation in 416 focus districts for area optimization, intercropping, and seed-chain development.
5. Seed Distribution Drive	126 lakh quintals of certified seeds + 88 lakh seed kits (free) to farmers across 370 lakh ha.
6. Farmer Capacity Building	Training on climate-resilient & modern production techniques, with focus on water efficiency, pest control, and post-harvest management.



UPSC Relevance: GS Paper III: Agriculture, Food Security, Government Schemes, Inclusive Growth. **Prelims Facts:** Approved: **Oct 2025** | Duration: **2025-31** | Outlay: **₹11,440 crore**. Implemented in **416 districts**. Agencies: **NAFED, NCCF** under **PM-AASHA (PSS)**.



HOT Question: “India’s pulses self-sufficiency depends on both productivity enhancement and assured procurement. Analyse the design and significance of the Mission for Aatmanirbharta in Pulses (2025–31)”



16. UAE to Introduce Sugar Tax on Sweetened Beverages from January 2026



The **United Arab Emirates (UAE)** will impose a **sugar tax on sweetened beverages** from **January 1, 2026**, aligning with the **GCC’s regional excise framework** to curb sugar consumption and promote public health.

The UAE announced a new **tiered sugar tax** on sweetened beverages under the **Gulf Cooperation Council (GCC)’s harmonised excise system**. The measure targets rising sugar intake and associated health issues like obesity and diabetes. Revenues will support **public health initiatives**, while aligning with global best practices on sin taxes. India already levies one of the world’s highest combined taxes on sugary drinks.

Key Highlights

- **Effective Date:** January 1, 2026
- **Coverage:** All **sugar-sweetened beverages (SSBs)** – both carbonated and non-carbonated.
- **Tax Model:** Tiered volumetric excise based on sugar content.
- **Objective:** Reduce excessive sugar consumption, promote healthy diets, and fund public health programmes.
- **Alignment:** Part of the **GCC’s regional excise tax framework** for harmonised health taxation.

About Sugar Tax

Aspect	Details
Definition	Fiscal measure imposing excise on sweetened beverages to discourage consumption.
Public Health Goal	Combat obesity, diabetes, and cardiovascular diseases.
Economic Role	Generates health-linked tax revenue for welfare initiatives.
India’s Tax Regime	Combined burden of 40% sin tax + 28% GST + 12% cess, one of the highest globally.



UPSC Relevance: GS Paper II / III – International Relations | Economy | Public Health Themes: Sin Tax Policy, GCC–India Relations, Public Health Economics, Sustainable Consumption.



17. youth protests have surged in 2025 amid rising joblessness, corruption, and inequality

From **Indonesia to China and India**, youth protests have surged in 2025 amid rising **joblessness, corruption, and inequality**, exposing the region’s structural employment crisis in the age of **AI and automation**

Root Causes of Asia’s Youth Employment Crisis

Factor	Explanation
Jobless Growth	Economic growth (India – 6–7%, Indonesia – 5%) isn’t translating into proportional job creation.
Skill Mismatch	Only <5% of India’s workforce has formal skill training, vs 75% in Germany and 96% in South Korea (NSDC).
Automation & AI	Technological shifts replacing repetitive, low-skill jobs in manufacturing and services.
Corruption & Nepotism	Nearly 46% of youth in India and Indonesia see corruption as the top barrier to job access (UNDP Youth Survey, 2024).
Education Disconnect	Overemphasis on degrees rather than employability – weak link between universities and industry needs.

Consequences

- **Political Unrest:** Youth-led protests expanding across major Asian economies.
- **Social Frustration:** Growing alienation, social media activism, and calls for transparency.

Economic Risk: Reduced demographic dividend; risk of “**Demographic Disaster**” if youth remain unemployed.



UPSC Relevance: GS Paper II: Government policies, Social sector development, Role of NGOs and civil society. **GS Paper III:** Inclusive growth, Employment generation, Technology disruption.



HOT Question: “Rising youth unemployment is not just an economic challenge but a governance test across Asia.” Discuss with reference to recent protests and policy failures in India and its neighbours.



18. Government Approves ₹5,532 Crore Projects Under ECMS to Boost Core Electronics Manufacturing

On 27th October 2025, the Government of India approved the first batch of seven projects worth ₹5,532 crore under the Electronics Components Manufacturing Scheme (ECMS) – a key initiative to strengthen domestic component production and reduce dependence on imports in India’s electronics value chain.

Scheme Overview

Feature	Details
Objective	Shift India from assembly-based production to core component and materials manufacturing; strengthen supply chain resilience.
Implementing Ministry	Ministry of Electronics and Information Technology (MeitY)
Total Outlay (Phase I)	₹5,532 crore (approved projects)
Expected Output	₹36,559 crore in total production & 5,100+ direct jobs
States Covered	Tamil Nadu (5 units), Andhra Pradesh (1 unit), Madhya Pradesh (1 unit)

Key Components to be Manufactured

Component	Usage/ Relevance
Camera Modules	Smartphones, drones, laptops, automobiles, and medical imaging devices.
HDI & Multi-Layer PCBs	High-density interconnect boards used in automotive electronics, telecom equipment, and industrial systems.
Copper Clad Laminates (CCL)	Base material for PCBs – to be manufactured domestically for the first time.
Polypropylene Films	Capacitor materials essential for EVs, consumer electronics, and telecom networks.

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Strategic Importance

- **Import Substitution:** India currently imports ~85% of electronic components; ECMS aims to reverse this trend.
- **Ecosystem Integration:** Complements PLI for Large-Scale Electronics Manufacturing and Semicon India Programme.
- **Global Value Chain Linkage:** Strengthens India’s position as a trusted electronics manufacturing hub amid global supply diversification away from China.



UPSC Relevance: GS Paper III: Industrial Policy, Make in India, Supply Chain Resilience, Employment Generation. **Prelims Facts:** Scheme: Electronics Components Manufacturing Scheme (ECMS). Launched by MeitY. Copper Clad Laminates — first-time domestic production.



HOT Question: “Discuss how the Electronics Components Manufacturing Scheme (ECMS) strengthens India’s electronics value chain and complements initiatives like the PLI and Semicon India Programme



19. RBI Expands Rupee Trade Framework to Boost Regional Currency Use

On 1st October 2025, the Reserve Bank of India (RBI) announced new measures to promote the use of the Indian Rupee (INR) and local currencies in international trade, lending, and settlement, especially with neighbouring countries.

Key Highlights:

- **Legal Framework:** Amendments to relevant regulations will be issued soon to provide legal backing for INR-based credit facilities to neighbouring countries.
- **Trade Facilitation:** Enables smoother settlement of exports, imports, and lending operations in Indian Rupees, lowering forex risks and transaction costs.
- **FBIL Expansion:** The Financial Benchmarks India Limited (FBIL) will expand the publication of INR reference rates to include currencies of India's major trading partners beyond USD, EUR, GBP, and JPY.
- **Efficiency Gain:** Direct quoting of new currency pairs against INR will reduce multiple forex conversions, improving pricing transparency and settlement efficiency in global trade.

20. RBI Proposes Major Credit Risk Reforms to Align with Global Banking Norms

The Reserve Bank of India (RBI) has proposed transitioning to the **Expected Credit Loss (ECL)** model by April 1, 2027, bringing India's loan provisioning framework in line with Basel III international standards.

The move replaces the current **INCURRED-LOSS MODEL** with the **EXPECTED CREDIT LOSS (ECL)** framework — requiring banks to provision in advance for potential loan losses based on assessed credit risk, instead of waiting for defaults.

Key Highlights:

Implementation Timeline: ECL model rollout from April 1, 2027, while existing Non-Performing Asset (NPA) norms continue.

Differentiated Risk Weights: New rules propose lower capital requirements for MSME and real estate loans, reflecting their improved credit profiles.

Comparative Advantage:

- *Incurred-Loss Model:* Provisioning only after default occurs.
- *ECL Model:* Forward-looking provisioning, improving resilience and transparency.

Alignment with Basel III: Enhances global credibility by improving capital adequacy, risk management, and loss-absorption capacity.

Stakeholder Impact: Expected to benefit MSMEs, real estate borrowers, and credit card users, while ensuring sound balance sheets for banks.



21. RBI Warns States Against Fiscal Slippage and Pre-Election Populism



The Reserve Bank of India (RBI) has cautioned state governments over fiscal slippage, rising debt, and pre-election populist spending, urging them to uphold fiscal discipline and transparency.

Key Concerns of RBI:

- **Rising Yields:** Increased interest rates on SDLs have raised borrowing costs for states.
- **Escalating Borrowing:** ₹5.23 trillion borrowed till Oct 2025 vs ₹4.37 trillion last year.
- **Populist Spending:** Around ₹68,000 crore spent on pre-poll welfare schemes during 2023–25 elections; Bihar allocated 32.48% of its tax revenue for such measures.
- **Fiscal Deficit Risk:** Higher expenditure may push state deficits beyond the FRBM threshold.

Recommendations of RBI:

- **Promote Productive Spending:** Redirect funds from short-term subsidies to capital investments that boost growth and infrastructure.
- **Maintain Fiscal Prudence:** Adhere to FRBM Act targets to safeguard macroeconomic stability.
- **Improve Borrowing Strategy:** Diversify debt maturities and enhance investor communication to reduce borrowing costs.
- **Ensure Fiscal Transparency:** Disclose off-budget borrowings and contingent liabilities to strengthen fiscal credibility.



22. 6th Global Fintech Fest Showcases AI-Powered Innovations in Digital Finance

The **6th Global Fintech Fest (GFF)** is being held at the **Jio World Centre, Mumbai**, under the theme *"Empowering Finance for a Better World Powered by AI."*

Key Highlights

- **Organisers:** NPCI, PCI, and FCC (under IAMAI).
- **Theme:** *"Empowering Finance for a Better World Powered by AI."*
- **Showcase:** Bharat AI Experience Zone featuring real-time AI payment solutions.
- **Participation:** 1 lakh+ global delegates, regulators, and fintech leaders.
- **Institutional Roles:**
 - **NPCI:** Umbrella organisation for UPI, RuPay, FASTag.
 - **PCI:** Advocates secure, inclusive payment infrastructure under IAMAI.
 - **FCC:** Focuses on fintech growth, innovation, and global collaboration.

23. RBI Proposes Reforms for Faster Credit of Inward Foreign Remittances

The Reserve Bank of India (RBI) has released a **draft circular** proposing a framework for **same-day credit** of inward foreign remittances through automated, real-time processing systems.

Key Proposals by RBI:

- **Same-Day Credit Rule:** Inward remittances received during forex market hours must be credited **on the same day**, and those after-hours by the **next working day**.
- **Straight-Through Processing (STP):** End-to-end **automated processing** of remittances after risk checks to eliminate manual interventions.
- **Real-Time Reconciliation:** Banks must reconcile **nostro account** credits **every 30 minutes**, replacing end-of-day updates.
- **Customer Notification:** Beneficiaries should receive **instant alerts** on credited remittances; post-closing receipts should be notified at the start of the next business day.
- **Digital Integration:** Banks are directed to build **online platforms** for uploading documents, tracking transactions, and facilitating real-time communication.

Concept Box – Nostro vs. Vostro Accounts:

- **Nostro Account:** An account a domestic bank holds **in a foreign bank** – "ours" in another country.
- **Vostro Account:** An account a **foreign bank** holds in a domestic bank – "yours" in our country.

24. RBI Bats for CBDCs Over Stablecoins at IMF–World Bank Meet



At the IMF–World Bank Annual Meeting, RBI Governor Sanjay Malhotra urged central banks to prioritise **Central Bank Digital Currencies (CBDCs)** over **stablecoins** for secure, transparent, and sovereign cross-border payments.

During the 2025 IMF–World Bank Annual Meetings, the **RBI** highlighted the need for **central bank-issued digital currencies (CBDCs)** as a safer and more sovereign alternative to privately issued **stablecoins**.

While **stablecoins** such as **USDT** and **USDC** dominate the \$285 billion crypto market, the RBI warned that their increasing global use could undermine **monetary sovereignty**, accelerate **rupee dollarisation**, and create **regulatory blind spots**.

CBDCs, being **state-backed digital legal tender**, offer the same technological benefits – instant settlements, programmability, and low transaction costs – but with **legal legitimacy and reduced risk exposure**.

Why CBDCs Over Stablecoins:

- **Monetary Sovereignty:** Prevents dependence on dollar-pegged stablecoins; safeguards control over domestic money supply.
- **Cross-Border Efficiency:** CBDCs can reduce remittance costs by **50%** compared to **SWIFT** transfers (BIS 2025).
- **Regulatory Transparency:** Ensures **KYC/AML compliance**, unlike unregulated stablecoin networks.
- **Technological Edge:** Tokenised CBDCs offer **programmable, instant, and traceable** payments with state-backed credibility.

Way Forward for India:

- **Join Global CBDC Corridors:** Collaborate via **BIS mBridge** (UAE–China–Thailand–Hong Kong) for seamless digital settlements.
- **Adopt IMF XC Platform:** Ensure interoperability and regulatory convergence among digital currencies.
- **Cyber Resilience:** Implement **FSB 2025 Framework** with AI-driven fraud detection and encryption.
- **Public Awareness:** Expand **RBI Digital Rupee Mission** – only **26%** of Indians currently understand CBDCs (FIS 2024).

A **Tokenised CBDC** is a **blockchain-based digital token** representing central bank money, enabling **secure, programmable, and instant** transactions across platforms while retaining **legal tender status**.



25. India and Brazil to Expand Preferential Trade Agreement with MERCOSUR

On 16th October 2025, India and Brazil agreed to expand the **Preferential Trade Agreement (PTA)** between India and MERCOSUR to enhance trade, investment, and economic cooperation.

India and Brazil have announced plans to **upgrade and expand the India-MERCOSUR PTA**, originally signed in **June 2003**, to promote broader **market access**, reduce **tariff and non-tariff barriers**, and deepen **South-South trade cooperation**.

The upgraded agreement will feature **wider tariff concessions**, **simplified trade procedures**, and **private sector consultations** to ensure inclusive and mutually beneficial negotiations. A **technical dialogue** and a meeting of the **Joint Administration Committee (Article 23)** will soon outline the framework for expansion.

Both sides aim to **conclude negotiations within a year**, with Brazil coordinating closely with other MERCOSUR members — **Argentina, Paraguay, Uruguay, Venezuela, and Bolivia** — to ensure a unified regional approach.

Key Highlights:

- **Expanded Scope:** Enhanced tariff preferences and removal of non-tariff barriers.
- **Private Sector Role:** Industry consultations to ensure practical trade facilitation.
- **Timeline:** Negotiations targeted for completion within **12 months** of the formal launch.
- **Institutional Mechanism:** Early meeting of the **Joint Administration Committee** under Article 23 to finalize modalities.
- **Brazil's Role:** To coordinate with other MERCOSUR partners for faster implementation.

About MERCOSUR:

- **Full Form:** *Mercado Común del Sur* (Southern Common Market).
- **Founding Members:** Argentina, Brazil, Paraguay, Uruguay.
- **Later Members:** Venezuela and Bolivia.
- **Objective:** Promote regional integration, free trade, and the movement of goods, people, and currency among member states.



26. UN and Spain Launch Sevilla Forum on Debt to Tackle Global Debt Crisis



On 20th October 2025, during UNCTAD16 in Geneva, the United Nations and Spain launched the **Sevilla Forum on Debt** — a global platform to promote debt sustainability and strengthen development financing.

The **Sevilla Forum on Debt** was introduced as a major outcome of the **Fourth International Conference on Financing for Development (FfD4)**, under the **Sevilla Platform for Action**, complementing the **Sevilla Commitment** — a global roadmap for equitable development financing.

Co-led by **Spain**, in partnership with **UNCTAD** and **UN DESA**, the Forum will function as an **inclusive and transparent platform** for global dialogue on **debt governance, sustainability, and reform**.

This initiative represents one of the **first institutional outcomes of FfD4**, transforming political commitments on debt relief into an actionable mechanism to support **developing nations** facing debt distress.

Key Highlights

- **Launch Venue:** 16th United Nations Conference on Trade and Development (UNCTAD16), Geneva.
- **Lead Partners:** Spain, UNCTAD, and UN DESA.
- **Framework Linkage:** Part of the **Sevilla Platform for Action** and the **Sevilla Commitment**.
- **Objective:** Promote **fair, transparent, and predictable** debt governance mechanisms.
- **Focus Areas:** Debt sustainability, development finance reform, and global policy coordination.

About the Sevilla Commitment (FfD4 Outcome):

- A global action roadmap adopted under **Financing for Development (FfD4)**.
- Focuses on **mobilising international resources, reforming debt architecture, and supporting developing economies** in achieving the **2030 Sustainable Development Goals (SDGs)**.



27. US Imposes 100% Additional Tariff on Chinese Imports Amid Rare Earth Trade Clash

On 1st November 2025, the **United States** will impose a **100% additional tariff** on Chinese imports, escalating the **US-China trade war** following Beijing's export restrictions on rare earth minerals.

In a retaliatory move against China's tightened **rare earth export controls**, **US President Donald Trump** announced sweeping tariffs that double existing duties on several Chinese goods – pushing cumulative tariffs on some products to nearly **130%**.

China, citing **national security and strategic resource protection**, recently expanded export restrictions to **five additional rare earth elements** and banned the export of **advanced refining and separation technologies**, key to global electronics, defence, and renewable energy industries.

The confrontation marks a new phase in the **US-China trade tensions**, raising concerns over **supply chain disruptions**, **inflated critical mineral prices**, and **geopolitical risks** in global manufacturing and clean energy transitions.

Key Highlights:

- **New Tariff:** 100% additional duty, effective **November 1, 2025**.
- **Targeted Goods:** A wide range of Chinese industrial and electronic products.
- **Cumulative Impact:** Tariffs now total **up to 130%** on some imports.
- **China's Response:** Expanded export bans on rare earths and refining technology.
- **Strategic Impact:** Threatens global access to minerals vital for EVs, semiconductors, and defence systems.



28. WTO Applauds India's AEO Programme for Boosting MSME Global Trade Participation



The WTO Secretariat's 2025 Compendium on MSME Trade Facilitation recognised India's **Authorised Economic Operator (AEO) Programme** for enhancing MSME integration into global supply chains.

Key Features of the AEO Programme:

- **Objective:** Enhance international supply chain security and expedite legitimate trade.
- **Framework:** Based on the **WCO SAFE Framework of Standards (SAFE FoS)**.
- **Administered By:** CBIC through DGICCE.
- **Launch:** Pilot initiated in 2011; now fully institutionalised.
- **Global Alignment:** Complies with WTO TFA obligations (Article 7.7).

Key Achievements:

- **MSME Inclusion:** MSMEs make up **45% of all AEO-certified entities**, among the highest globally.
- **Ease of Certification:**
 - Document requirements reduced from **25 to 10 customs documents/year**.
 - Operational history threshold lowered from **3 years to 2 years**.
- **Speed of Approval:**
 - **Tier-I:** From 1 month → **15 working days**.
 - **Tier-II:** From 6 months → **3 months**.
- **Financial Relief:**

Bank guarantee requirements reduced — **25% (Tier-I)**, **10% (Tier-II)**, vs 50% for non-certified traders.



29. Government Extends RoDTEP Export Incentive Scheme Till March 2026

The Government of India has extended the **Remission of Duties and Taxes on Exported Products (RoDTEP)** scheme till **March 31, 2026**, continuing fiscal support for exporters to enhance global competitiveness.

Key Features:

- **Objective:** Eliminate unrebated central, state, and local taxes on exported products.
- **Implementation:**
 - **DGFT (MoCI):** Notifies eligible items, rebate rates, and guidelines.
 - **Department of Revenue (MoF):** Manages rebate disbursements.
- **Mechanism:** Refunds issued via **digital e-scrips** in an **automated ledger system** to promote transparency.
- **Tax Coverage:** Reimburses hidden levies like **VAT on fuel, electricity duty, mandi tax, municipal fees, and stamp duty**.
- **Beneficiaries:** Covers all sectors, especially **labour-intensive industries**, including **EOUs, SEZ units, and Advance Authorization holders**.
- **Rate Formula:** Rebates calculated as a **percentage of FOB value** or **fixed per-unit rate**, product-wise.
- **Fund Allocation:** Disbursements exceed **₹57,976 crore (FY 2024–25)**.

WTO Context:

The **MEIS** was ruled a **prohibited export subsidy** under WTO rules, leading India to adopt RoDTEP — a **reimbursement-based, non-incentivised** mechanism aligned with global trade standards.

The extension of **RoDTEP till March 2026** reflects India's long-term strategy to sustain export momentum, foster **manufacturing competitiveness**, and strengthen **compliance with WTO norms** while supporting domestic exporters through transparent digital facilitation.



30. India Exports GI-Tagged Indi and Puliyanakudi Limes to the UK for the First Time

 The **Agricultural and Processed Food Products Export Development Authority (APEDA)** has facilitated the **first-ever export of GI-tagged Indi and Puliyanakudi limes** to the **United Kingdom**, marking a boost for India’s agri-exports.

About APEDA:

- **Full Form:** Agricultural and Processed Food Products Export Development Authority.
- **Established:** Under the **APEDA Act, 1985**.
- **Function:** Promotes agricultural and processed food exports.
- **Parent Ministry:** **Ministry of Commerce and Industry**, Government of India.

Feature	Indi Lime (Karnataka)	Puliyanakudi Lime (Tamil Nadu)
Region	Vijayapura district, Karnataka	Tenkasi district – known as the “Lemon City of Tamil Nadu”
Climate & Soil	Semi-arid climate; black cotton soil	Tropical climate; fertile loamy soil (suitable for citrus cultivation)
Variety / Type	Indigenous regional lime	Especially the <i>Kadayam</i> type
Traits	Superior quality, zesty aroma, high juice yield, balanced acidity	Thin peel, strong acidity, ~55% juice yield, high ascorbic acid content
Nutritional Value	-	Rich in Vitamin C and antioxidants; supports immunity and digestion
Uses	Culinary, traditional medicine, and rituals	Culinary, medicinal, and beverage industry
GI Tag Year	2023 – protects regional identity and enhances export potential	2025 – recognised for unique agro-climatic and nutritional traits

Significance:

- Marks India’s **first UK export** of GI-certified citrus varieties.
- Promotes **rural farmer income, regional branding**, and **global recognition** of Indian GI products.
- Strengthens India’s positioning as a **trusted supplier of high-quality agricultural produce** under APEDA’s export diversification strategy.



31. China Files WTO Complaint Against India's EV Subsidy Policy

China has lodged a formal **WTO complaint** alleging that **India's EV and battery subsidies** violate global trade rules by favouring domestic manufacturers and discriminating against foreign firms

China has initiated a **dispute complaint** against India at the **World Trade Organization (WTO)**, alleging that India's **electric vehicle (EV) and battery subsidy policies** breach the **Agreement on Subsidies and Countervailing Measures (ASCM)**.

The complaint claims that India's production-linked incentives (PLIs), import tariffs, and local sourcing norms unfairly benefit domestic companies like **Tata Motors** and **Ola Electric**, violating **WTO non-discrimination principles** such as **National Treatment (Article III)** and **Most-Favoured-Nation (Article I)**.

Key Allegations by China:

- **National Treatment Violation:** Local-content rules and incentives allegedly discriminate against foreign EV makers.
- **Import-Substitution Subsidy:** Claimed as a **prohibited subsidy** under **ASCM Article 3** since benefits depend on domestic inputs.
- **Market Access Barrier:** Import duties of **70–100%** on fully built EVs restrict entry for Chinese automakers.

WTO Framework Cited:

- **ASCM Prohibitions:** Subsidies linked to **exports or domestic input use** are not permitted.
- **National Treatment (NT):** Imported goods must be treated the same as domestic ones post-import.
- **Most-Favoured-Nation (MFN):** Equal access to all WTO members.
- **Dispute Mechanism:** Three-stage process — **Consultation** → **Panel** → **Appellate Body** (Articles 4–17, DSU).



32. Global Investors Pour Billions into India's Banking and Financial Sector



Global financial institutions have made multi-billion-dollar investments in **Indian banks, insurers, and NBFCs**, reflecting renewed confidence in the country's robust and reformed financial system.

Why Global Giants Are Investing in Indian Banks:

- High Growth Potential:**
 - India's **31% YoY growth in 2024** and strong profitability outperform global peers.
 - Rising penetration of digital banking and fintech partnerships is driving scalability.
- Sustained Credit Expansion:**
 - Credit growth exceeding 16%** outpaces most Asian economies.
 - Broad-based expansion in retail, MSME, and infrastructure lending.
- Large Untapped Market:**
 - Over **400 million underbanked citizens**, offering long-term retail credit potential.
 - Rapid financial inclusion via **Jan Dhan-Aadhaar-Mobile (JAM)** ecosystem.
- Policy Liberalisation:**
 - FDI limits raised:**
 - Up to **74% in private banks**.
 - Up to **100% in insurance**.
 - Encourages strategic partnerships and cross-border capital flows.
- Strong Macroeconomic Fundamentals:**
 - GDP projected at 6.8% (RBI, 2025)** with stable inflation.
 - Cleaned-up balance sheets** post-NPA resolution cycles and capital recapitalisation.
 - Strengthened prudential norms, RBI oversight, and capital adequacy compliance.



33. Coal India, IRCON Ink MoU to Boost Rail Infrastructure for Coal Transport



Coal India Limited (CIL) and IRCON International Limited have signed a **non-binding MoU** to develop dedicated **rail infrastructure** for efficient coal evacuation and transport to power and industrial sectors.

About the Stakeholders:

Coal India Limited (CIL)

- A **Maharatna PSU** under the **Ministry of Coal**.
- Produces nearly **76% of India's coal output** (as of August 2025).
- Target: **1.5 billion tonnes of coal by 2030**.
- Generated over **1 billion tonnes** in FY 2024–25.

IRCON International Limited

- A **Miniratna railway PSU** under the **Ministry of Railways**.

Specialises in **railway infrastructure, electrification, and project execution** domestically and abroad.

Coal Sector Snapshot (India 2025):

- **Energy Dependence:** Coal supplies **55% of India's total energy** and **74% of electricity generation** (PIB, April 2025).
- **Import Trends:** Coal imports declined **7.9% YoY** to **243.62 million tonnes** (FY 2024–25), reflecting growing self-reliance.
- **Railway Freight:** Coal contributes **49% of Indian Railways' freight earnings** (₹82,275 crore in FY 2022–23), accounting for **one-third of total revenue**.



34. India Launches 14th Round of Commercial Coal Mine Auctions with Focus on Underground Coal Gasification



The Ministry of Coal launched the **14th Round of Commercial Coal Mine Auctions** on **29th October 2025**, offering **41 coal blocks**, including **21 earmarked for Underground Coal Gasification (UCG)** – a first in India's mining framework.

Key Details:

- **Total Mines Offered:** 41
 - Fully explored: 20
 - Partially explored: 21
- **UCG Projects:** 21 mines identified for **Underground Coal Gasification**, enabling clean coal technology adoption.
- **Legal Framework:**
 - **5 mines** under the *Coal Mines (Special Provisions) Act, 2015*
 - **36 mines** under the *Mines and Minerals (Development and Regulation) Act, 1957*
- **Launch Mode:** Virtual event led by the **Union Minister for Coal and Mines** with industry participation.

Significance

- Advances India's **energy self-reliance** and **sustainable industrial growth**.
- Encourages **private sector participation** and **technology innovation** in clean coal usage.
- Promotes **transparent allocation** through a reformed auction process under dual legislative backing.



35. Adani's Godda Power Plant Cleared to Connect with Indian Grid for Domestic Linkage

The Ministry of Power has approved Adani Power Limited's Godda Ultra Super Critical Thermal Power Plant (Jharkhand) to connect with India's Inter-State Transmission System (ISTS), enabling its integration into the national power grid.

Key Details:

- **Plant Background:**
 - Declared a **Special Economic Zone (SEZ)** in **March 2019**.
 - Initially supplied **100% power to Bangladesh** under a long-term bilateral PPA.
- **Grid Connectivity:**
 - Linked via **LILO connection** on the **Kahalgaon A-Maithon B 400 kV transmission line**.
 - Transmission line passes through **56 villages** in **Godda and Poreyahat tehsils**, requiring multi-agency clearances.
- **Legal Basis:**
 - Approval granted under **Section 164 of the Electricity Act, 2003**, conferring APL rights equivalent to a **telegraph authority** (Indian Telegraph Act, 1885) for laying transmission infrastructure.

Regulatory Reforms Enabling the Linkage:

- **2018 Guidelines Amendment:** Ministry of Power modified *Import/Export of Electricity Guidelines* to allow **domestic grid linkage** for cross-border projects.
- **CEA Procedures Updated:** The Central Electricity Authority (CEA) revised protocols for **cross-border power flows**.
- **CERC Regulations Revised:** The Central Electricity Regulatory Commission (CERC) amended *General Network Access (GNA)* and *Cross-Border Trade* rules to permit **standby grid connectivity**.



36. Arunachal Pradesh Opens First Commercial Coal Mine at Namchik Namphuk



The Ministry of Coal and Mines inaugurated Arunachal Pradesh's first commercial coal mine at Namchik Namphuk (Changlang district), marking the state's entry into India's commercial coal production network.

Key Highlights:

- **Mine Operator:** Coal Projects Private Limited (CPPL).
- **Location:** Namchik Namphuk, Changlang district, Arunachal Pradesh.
- **Reserves:** ~1.5 crore tonnes of coal.
- **Revenue Potential:** ₹100+ crore per year.
- **Employment Impact:** Creation of large-scale direct and indirect jobs in mining, logistics, and allied sectors.
- **Policy Alignment:**
 - Supports the **National Coal Gasification Mission (2020)**.
 - Advances **Make in India** by promoting domestic coal-based industries.

About the National Coal Gasification Mission:

- **Launched:** 2020 by the **Ministry of Coal**.
- **Goal:** Achieve **100 million tonnes (MT)** of coal gasification by 2030.

Objective: Promote sustainable coal use through gasification for energy, chemicals, and fertilizers — reducing imports of synthetic gas and methanol.

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37. Ministry of Mines Releases State Mining Readiness Index 2025 to Rank States on Mining Efficiency and Reform Implementation



On 16th October 2025, the **Ministry of Mines** launched the **State Mining Readiness Index (SMRI)** and **State Rankings**, providing a performance-based framework to evaluate States' mining sector readiness and governance.

Key Highlights:

- **Objective:**
To evaluate and benchmark State performance in the **non-coal mining sector**, promoting evidence-based policy actions and inter-State competition.
- **Parameters of Evaluation:**
 - **Auction Performance:** Efficiency in conducting and concluding mineral block auctions.
 - **Early Mine Operationalisation:** Time taken to operationalise auctioned mines.
 - **Exploration Focus:** Investment and policy initiatives for mineral exploration.
 - **Sustainable Mining Practices:** Use of environmentally and socially responsible mining methods.
- **Categorisation of States:**
 - **Category A (Mineral-Rich States):**
 1. Madhya Pradesh – Rank 1
 2. Rajasthan – Rank 2
 3. Gujarat – Rank 3
 - **Category B:**
 1. Goa – Rank 1
 2. Uttar Pradesh – Rank 2
 3. Assam – Rank 3
 - **Category C:**
 1. Punjab – Rank 1
 2. Uttarakhand – Rank 2
 3. Tripura – Rank 3

Purpose:

The SMRI acts as a **benchmarking and monitoring tool** to identify high-performing States, guide resource allocation, and encourage lagging regions to adopt best practices.



38. Cabinet Approves ₹37,952 Crore Nutrient-Based Subsidy for Rabi 2025–26



The Union Cabinet approved revised **Nutrient-Based Subsidy (NBS) rates** for **phosphatic and potassic (P&K) fertilizers** for **Rabi 2025–26**, increasing total allocation to ₹37,952 crore — a **55% rise** from ₹24,000 crore in 2024–25.

Key Highlights:

- **Total Subsidy Allocation:** ₹37,952 crore for **Rabi 2025–26**, up **55%** year-on-year.
- **Subsidy Revision:**
 - **Increased:** Phosphorus (P) and Sulphur (S)
 - **Unchanged:** Nitrogen (N) and Potash (K)
- **Purpose:** Maintain affordability, encourage balanced nutrient application, and reduce urea dependence.

Beneficiaries: Over **12 crore farmers** through reduced market prices of P&K fertilizers.

About the Nutrient-Based Subsidy (NBS) Scheme

Aspect	Details
Type	Central Sector Scheme
Nodal Ministry	Department of Fertilizers, Ministry of Chemicals & Fertilizers
Launch Year	2010
Coverage	Applies to phosphatic and potassic fertilizers; urea excluded
Subsidy Basis	Fixed per-kg subsidy on N, P, K, and S nutrient content
Pricing System	Decontrolled — Manufacturers/importers set MRPs; govt pays per-nutrient subsidy
Micronutrient Support	Additional subsidies for fortified fertilizers (zinc, boron, etc.)
Subsidy Payment Mode	Direct Benefit Transfer (DBT) to fertilizer firms via PoS retail data
Review Mechanism	Inter-ministerial committee reviews rates annually/biannually



39. 8th Session of Codex Committee on Spices and Culinary Herbs (CCSCH) Inaugurated in Guwahati

The 8th Session of the Codex Committee on Spices and Culinary Herbs (CCSCH) was inaugurated in **Guwahati, Assam**, to deliberate on global standards for key spices like large cardamom, cinnamon, sweet marjoram, and dried coriander.

Key Highlights:

- **Organiser:** Spices Board of India, Ministry of Commerce & Industry
- **Venue:** Guwahati, Assam
- **Agenda Focus:**
 - Development of global standards for **large cardamom, cinnamon, sweet marjoram, and dried coriander seeds**.
 - Strengthening Codex processes for harmonisation of **spice safety and quality standards**.
- **Participation:** Member countries of the Codex Alimentarius Commission (CAC), international spice experts, and food safety regulators.

About the Codex Committee on Spices and Culinary Herbs (CCSCH)

Aspect	Details
Established	2013
Parent Body	Codex Alimentarius Commission (CAC) – jointly managed by FAO and WHO
Objective	To develop and recommend internationally accepted quality and safety standards for spices and culinary herbs (mainly in dried or dehydrated form).
Secretariat	Spices Board of India, under the Ministry of Commerce & Industry
Host Country	India (Permanent Host Nation)
Key Role	Protect consumer health, promote fair trade, and enhance export competitiveness in the global spice sector.

40. Deep-Sea Fishing Vessels Distributed Under PM Matsya Sampada Yojana to Boost Blue Economy



The Union Home Minister launched the **distribution of Deep-Sea Fishing Vessels** under the **Pradhan Mantri Matsya Sampada Yojana (PMMSY)** at **Mazagon Dock, Mumbai**, to enhance India's sustainable fisheries and Blue Economy initiatives.

Key Highlights:

- **Event:** Launch of Deep-Sea Fishing Vessel distribution.
- **Venue:** Mazagon Dock, Mumbai.
- **Implementation Plan:** 200 vessels to be distributed **nationwide over five years**.
- **Funding Support:** Department of Fisheries + National Cooperative Development Corporation (NCDC) + State Governments (like Maharashtra).
- **Beneficiaries:** Fisheries Cooperatives, FFPOs, and women-led cooperatives.
- **Core Objective:**
 - Boost **deep-sea fishing capacity**.
 - Tap marine resources within India's **Exclusive Economic Zone (EEZ)** and beyond.
 - Shift from **nearshore overfishing** to **sustainable offshore operations**.

About Pradhan Mantri Matsya Sampada Yojana (PMMSY)

Aspect	Details
Launch Year	2020
Nodal Ministry	Department of Fisheries, Ministry of Fisheries, Animal Husbandry & Dairying
Objective	Promote Blue Revolution through sustainable fisheries and doubling fishers' income.
Funding Pattern	Centrally sponsored scheme – shared between Centre and States/UTs.
Coverage	Marine, Inland, Aquaculture, and Deep-Sea Fisheries.
Components	Infrastructure development, post-harvest management, value-chain improvement, and fishers' welfare.
Budget Outlay	₹20,050 crore (2020–25).



41. Ministry Releases Draft National Labour and Employment Policy — Shram Shakti Niti 2025

 On 8th October 2025, the **Ministry of Labour and Employment** unveiled **Shram Shakti Niti 2025**, India’s first comprehensive **National Labour and Employment Policy**, aimed at building a fair, inclusive, and future-ready workforce for *Viksit Bharat 2047*.

Key Highlights

Focus Area	Policy Provisions
Universal Social Security	Creation of a unified social security account integrating EPFO, ESIC, PMJAY, e-SHRAM, and State Welfare Boards.
Social Security Portability	Universal worker registration with portable benefits across regions and sectors.
Workplace Safety	Enforcement of the Occupational Safety and Health Code through risk-based, gender-sensitive inspections.
Women & Youth Empowerment	Goal to raise female labour-force participation to 35% by 2030; promotion of entrepreneurship and career guidance for youth.
Digital Labour Compliance	Single-window digital platform for compliance, self-certification, and simplified returns — especially for MSMEs.
Green & AI-Driven Employment	Focus on sustainable, technology-enabled jobs and just transitions for workers impacted by automation or climate policy.
Unified Labour Data System (ULDS)	Development of a real-time national labour data architecture to enhance inter-ministerial coordination and policy analytics.

42. MoSPI to Launch India’s First National Household Income Survey (NHIS) in February 2026

 The **Ministry of Statistics and Programme Implementation (MoSPI)** will roll out the **National Household Income Survey (NHIS)** in **February 2026** to produce India’s first reliable nationwide income estimates.

Key Highlights

- **Objective:** Generate reliable estimates on **income levels, sources, and inequality** across states, sectors, and social groups.
- **Implementing Agency:** **National Statistics Office (NSO)**, under MoSPI.
- **Coverage:** Both **rural and urban households**, with digital data collection methods.
- **Income Components:** Wages, self-employment, property, pensions, remittances, and welfare transfers.
- **Expert Oversight:** Technical framework chaired by **Surjit S. Bhalla**, incorporating global best practices in income measurement.



43. FTAs Tightening IP Control Over Seeds, Threatening Farmers’ Rights: Report



A new report warns that **Free Trade Agreements (FTAs)** are being used to impose **strict IP regimes under UPOV-1991**, curbing farmers’ freedom to save and share seeds.

Key Findings

Aspect	Description
Corporate Monopoly	FTAs increasingly align with UPOV-1991, giving private firms exclusive rights over new plant varieties.
Duration of Rights	Corporations gain 20–25 years of seed monopoly, restricting reuse or exchange by farmers.
Impact on Farmers	Traditional seed-saving and exchange systems face erosion, reducing livelihood resilience and local adaptation.
Biodiversity Loss	Seed uniformity reduces genetic diversity critical for climate-resilient agriculture.
Global South Pressure	Developing nations are pushed to harmonize their seed laws with IP-centric trade obligations.

About the Union for the Protection of New Varieties of Plants (UPOV)

Parameter	Details
Establishment	1961, Geneva, Switzerland
Objective	Promote breeding innovation by protecting new plant varieties through IP rights.
Framework	Grants breeders exclusive rights to produce and commercialize seeds for a fixed period.
Membership (2025)	78 countries
India’s Stance	Not a member — follows Protection of Plant Varieties and Farmers’ Rights (PPV&FR) Act, 2001, balancing breeder innovation with farmers’ seed rights.



44. Ministry of Coal Launches KOYLA SHAKTI Dashboard and CLAMP Portal for Digital Transparency



The **Ministry of Coal** has launched two digital initiatives – **KOYLA SHAKTI Dashboard** and **CLAMP Portal** – to enhance transparency, efficiency, and accountability in India’s coal sector operations and land management.

KOYLA SHAKTI Dashboard (Smart Coal Analytics Dashboard - SCAD)

Feature	Description
Purpose	Unified digital interface integrating the entire coal value chain – from mine to market.
Core Functions	Tracks production, logistics, dispatch, and consumption data in real time.
Utility	Facilitates coordination among coal companies, railways, power plants, and ministries.
Outcome	Improves operational efficiency, transparency, and timely decision-making.
Alignment	Supports the government’s Aatmanirbhar Bharat and Digital India goals.

CLAMP Portal (Coal Land Acquisition, Management, and Payment)

Feature	Description
Purpose	To streamline and digitise the land acquisition and compensation process in the coal sector.
Key Benefit	Ensures centralised, transparent records and timely, fair payouts to landowners.
Efficiency Impact	Enhances interoperability among Coal PSUs and reduces bureaucratic delays.
Governance Impact	Promotes accountability and minimizes disputes over land ownership and payments.

45. Golden Quadrilateral 2.0

Golden Quadrilateral 2.0: New **high-speed expressway network** planned under the **Ministry of Road Transport and Highways**.

Scope: Expands the **Golden Quadrilateral** and **North-South & East-West Corridors**, India’s largest highway grid.

Objective: Ease **congestion**, cut **logistics costs**, and enhance **connectivity** across economic hubs.

Goal: Support **Viksit Bharat 2047** by modernizing infrastructure and addressing future **traffic needs**.



46. ANRF, ICMR, and Gates Foundation Launch MAHA-MedTech Mission to Boost Indigenous Medical Technology



On 25th October 2025, the **Anusandhan National Research Foundation (ANRF)**, in partnership with the **Indian Council of Medical Research (ICMR)** and the **Bill & Melinda Gates Foundation**, launched the **Mission for Advancement in High-Impact Areas (MAHA)-MedTech** to accelerate India’s domestic MedTech innovation and reduce import dependence.

Key Features of MAHA-MedTech

Parameter	Description
Objective	To revolutionize India’s medical technology landscape by accelerating R&D, innovation, and manufacturing in critical healthcare areas.
Funding Model	Milestone-linked funding between ₹5 crore and ₹25 crore per project, extendable up to ₹50 crore for high-impact innovations.
Eligible Participants	Academic & R&D institutions, hospitals, startups, MSMEs, and MedTech industries.
Collaborators	Joint initiative by ANRF, ICMR, and the Gates Foundation.
Focus Areas	Affordable diagnostics, medical devices, health monitoring tools, and digital health innovations.
Approach	Encourages cross-sectoral collaboration, translating laboratory research into market-ready healthcare solutions.

Institutional Context

Body	Role
ANRF (Anusandhan National Research Foundation)	Apex national body promoting research, innovation, and knowledge translation across disciplines.
ICMR (Indian Council of Medical Research)	India’s top biomedical research agency, under the Ministry of Health & Family Welfare.
Gates Foundation	Global philanthropic partner focusing on public health innovation, equity, and access.



47. Centre Launches ₹1,500 Crore Critical Mineral Recycling Incentive Scheme to Boost Circular Economy



The **Ministry of Mines** has issued guidelines for implementing the **Critical Mineral Recycling Incentive Scheme (CMRIS)** under the **National Critical Minerals Mission (NCMM)** to promote recycling from secondary sources like e-waste and spent lithium-ion batteries.

Key Features of CMRIS

Parameter	Details
Scheme Type	Central Sector Scheme under the National Critical Minerals Mission (NCMM)
Implementing Body	Ministry of Mines
Objective	Establish a domestic recycling ecosystem for critical minerals through Capex and Opex incentives.
Tenure	FY 2025–26 to FY 2030–31
Total Outlay	₹1,500 crore
Output Target	270 kilotons of recycling capacity and 40 kilotons of recovered critical minerals annually by FY 2031.
Incentive Structure	Reimbursement-based assistance for capital and operational expenses.
Eligible Materials	E-waste, spent lithium-ion batteries, catalytic converters, and other secondary metal waste.
Exclusions	Entities only producing black mass (pre-refined intermediate output) are excluded.
Application Scope	New, expansion, modernisation, or diversification projects.

Beneficiary Classification

Category	Description	Investment Criteria	Capacity Requirement	Incentive Cap
Group A (Large Recyclers)	Entities with annual revenues > ₹200 crore	Minimum ₹100 crore	≥10,000 tonnes/year	₹50 crore
Group B (Startups/SMEs)	Revenues < ₹200 crore	Minimum ₹25 crore	≥5,000 tonnes/year	₹25 crore



48. India’s Urban Planning Needs an Economic, Climate, and Resource–Linked Overhaul



India’s current **urban planning framework**, rooted in colonial-era land-use regulation, fails to integrate **economic vision, climate resilience, and natural resource sustainability**, necessitating a paradigm shift toward future-ready, inclusive cities.

Limitations of the Current Urban Planning Framework

Aspect	Present Limitation
Historical Legacy	Built on colonial-era sanitation laws from 19th-century plague outbreaks — focused on hygiene and land use, not growth or sustainability.
Data Gaps	Relies on retrospective population data instead of dynamic economic and employment projections.
Narrow Focus	Treats cities as zoned physical spaces rather than economic ecosystems driving innovation and productivity.
Fragmented Governance	Lacks coordination between urban, environmental, and economic agencies, leading to inefficiencies.

Elements of a New Planning Paradigm

Focus Area	Key Recommendations
Economic Vision	Define industry clusters, logistics zones, and innovation hubs as the foundation of master plans. Link urban growth with job creation and economic diversification.
Natural Resource Budgeting	Conduct resource audits (water, energy, land) to match supply with future demand. Plan cities within their carrying capacity to prevent overexploitation.
Climate Integration	Develop city-level climate action plans, focusing on emission reduction, heat resilience, and disaster preparedness.
Air Quality Management	Integrate air pollution control measures in master plans, targeting transport and industrial emissions.
Urban Mobility	Adopt Comprehensive Mobility Plans (CMPs) promoting public transport, walking, and cycling. Encourage Transit-Oriented Development (TOD) and mixed-use zoning to reduce commute distances.
Balanced Urbanisation	Promote Tier-2 and Tier-3 cities as regional growth engines to ease metro congestion and expand job access. Create economic corridors connecting smaller towns.



OCTOBER 2025

ENVIRONMENT

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3. Green Sea Turtle Upgraded to Least Concern
4. Snow Leopard Found Least Genetically Diverse
5. Indian Scops Owl Recorded Near Daroji Sanctuary
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24. Study Questions Polar Geoengineering to Tackle Warming
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26. Wildlife Week 2025 Celebrated on Human–Wildlife Coexistence
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29. Spotted Deer Population Declines at Konark Sanctuary
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31. Relocation Plan Stalls at Bhimgad Sanctuary
32. India's Elephant Population Set at 22,446 Under SAIEE
33. 29 Pilot Whales Found Dead in New Zealand
34. Rare Malabar Gliding Frog Spotted Near Belagavi
35. New Wasp Species Discovered in West Bengal
36. Supreme Court Orders Notification of Saranda Sanctuary
37. Kashmir Opens First Chrysanthemum Garden in Srinagar
38. Forest Assessment 2025 Warns of High Deforestation
39. SECL Builds Missile Launcher from Scrap Under Swachhta Hi Seva
40. Delhi Declaration Adopted at ARISE Cities Forum 2025
41. IUCN, IRENA Ink MoU on Renewable–Biodiversity Alignment
42. 8th ISA Assembly Opens in New Delhi for Solar Expansion
43. Net-Zero Banking Alliance Shuts Amid Weak Global Commitments
44. Five Maharashtra Beaches Earn Blue Flag Status
45. IUCN Congress 2025 Concludes with Landmark Global Motions
46. WMO Report 2025 Finds Record CO₂ and Methane Levels
47. NGT Orders Probe into Rising Ozone Pollution
48. Supreme Court Allows Sale of Green Firecrackers
49. Wildfire Smoke Could Kill 70,000 Americans Yearly by 2050
50. Government Opens Monument Conservation to Private Sector
51. New Fossil Species Expands Coelacanth Lineage to Asia
52. AmazonFACE Project Studies Rainforest Response to CO₂ Rise
53. Beetles Identified as Indicators of Soil Microplastics
54. Global Forests Face \$216 Billion Funding Gap
55. New Gecko Species Found in Seshachalam Biosphere Reserve

1. India Launches National Red List Assessment (NRLA) 2025–30 to Assess 11,000 Species

 At the IUCN World Conservation Congress 2025 (Abu Dhabi), India’s Ministry of Environment, Forest & Climate Change launched the National Red List Roadmap and Vision 2025-2030 under the NRLA initiative – a science-based effort to assess and protect the country’s native species.

What is NRLA?

Nationally coordinated, science-based system to assess and monitor flora & fauna in India, aligned with International Union for Conservation of Nature (IUCN) standards : Nodal agencies: Zoological Survey of India (ZSI) & Botanical Survey of India (BSI).

Key Targets & Timeline:

Parameter	Details
Target Species	~11,000 Indian species (≈7,000 flora + 4,000 fauna) by 2030.
Milestone	Publication of National Red Data Books (flora & fauna) by 2030.
Duration	Vision period: 2025-2030.

Significance:

- India is one of the world’s 17 mega-diverse countries (4 biodiversity hotspots); covers ~2.4% of land but hosts ~8% of global flora and ~7.5% of fauna.
- Strengthens India’s commitments under the Convention on Biological Diversity (CBD) and the Kunming–Montreal Global Biodiversity Framework (KM-GBF).
- Improves evidence-based conservation planning, prioritisation of threatened species, and aligns national policy with global standards.



UPSC Relevance: GS Paper III (Environment: biodiversity conservation, species protection frameworks) and GS Paper II (International Relations: global environment governance).



HOT Question “Critically evaluate the National Red List Assessment (NRLA) initiative launched by India. How will such a comprehensive documentation of species by 2030 support biodiversity conservation in India, and what are the major bottlenecks the policy must address?”

2. Tiger Gets First IUCN Green Status Assessment; Classified as “Critically Depleted”



The IUCN's Green Status of Species framework assessed the tiger and labelled it “Critically Depleted”, signalling that despite local recoveries, the species remains far from full recovery globally.

- **What is the IUCN Green Status of Species?**
 - A tool that measures not only risk of extinction but the recovery progress of species.
 - Key metrics include: Conservation Legacy, Conservation Dependence, Conservation Gain and Recovery Potential.
- **Tiger's Assessment:**
 - Listed as Endangered on the IUCN Red List.
 - Under Green Status: Assigned Category “Critically Depleted” with a low species-recovery score (~14 %).
 - Indicates major past range loss, continuing threats, and large gap to full ecological recovery.
- **Key Facts & Recovery Indicators:**
 - Historical range contraction: > 50% over past three generations.
 - Current estimated global mature individuals: approx. 3,140.
- **Significance:**
 - Green Status provides a more optimistic lens: able to track how much a species can still recover and what conservation investment is needed.
 - For India — which hosts ~70% of the world's tigers — this points to the need to focus not just on counting tigers but restoring full ecosystem functioning, connectivity and prey base.
- **Key Terms / Concepts:** Green Status, Critically Depleted, species recovery score, ecological role, IUCN Red List, apex predator.



UPSC Relevance: GS Paper III (Environment: Biodiversity conservation, apex predators, ecosystem functioning) and GS Paper II (Governance: Implementation of national wildlife protection policies).



HOT Question “Discuss the significance of the IUCN Green Status assessment for the tiger species. How does this tool differ from the Red List and what implications does it have for wildlife conservation policy in India?”

3. Green Sea Turtle Global Status Upgraded to Least Concern Amid 28% Population Rise



The International Union for Conservation of Nature (IUCN) has upgraded the global conservation status of the Green Sea Turtle (*Chelonia mydas*) from *Endangered* to *Least Concern*, citing around a 28 % increase in global populations since the 1970s

- **Species profile**

- Largest hard-shelled sea turtle; adults herbivorous (graze on seagrass & algae), hatchlings omnivorous.
- Name derives from greenish fat beneath shell rather than shell colour.
- Global distribution across tropical & subtropical oceans: Atlantic, Indian, Pacific, Mediterranean.
- Key Indian range: mainland coasts & islands (e.g., Saurashtra, Lakshadweep, Andaman-Nicobar).
- Highly migratory; uses Earth's magnetic field for natal nesting site navigation.
- Reproduction involves temperature-dependent sex determination (warmer nests → more females).

- **Status change & reasons**

- Previously (per IUCN Red List) listed as *Endangered*.
- New update: "Least Concern" globally after decades of conservation action and ~28% population increase since 1970s.
- Despite global improvement, some regional sub-populations still threatened.

- **Ecological significance**

- Keystone species: grazing maintains seagrass beds, which are important carbon sinks and biodiversity hubs.
- Indicator species: long-lived marine reptile whose health reflects broader marine ecosystem health.

- **Major threats**

- By-catch in fishing nets, illegal harvesting of adults/eggs, habitat destruction (coastal development, sea-level rise), plastic pollution, climate change impacting nesting success & sex ratios.
- In India: nesting beaches under pressure; seagrass habitats degrading.



UPSC Relevance: GS Paper III (Environment – biodiversity, marine ecology, species conservation) and GS II (Governance – Wildlife protection, international agreements).



HOT Question: "Critically examine the factors that led to the improvement in global conservation status of the Green Sea Turtle (*Chelonia mydas*). What lessons does this success hold for marine biodiversity conservation in India, and what remaining threats must be addressed to sustain recovery?"

4. Stanford Study Finds Snow Leopard Has Lowest Genetic Diversity of All Big Cats



A recent genome-wide study led by Stanford University (published 7 October 2025) reveals that snow leopards have the lowest genetic diversity of any big-cat species, heightening their vulnerability to climate change and habitat disruption.

Species Profile

- Snow leopards inhabit high-altitude mountain ranges (usually 3,000–4,500 m) across 12 Asian countries (including India, China, Nepal, Bhutan, Russia).
- In India the population is estimated at ~718 individuals, largely concentrated in Ladakh, Uttarakhand, Himachal Pradesh, Sikkim, Arunachal Pradesh & J&K.
- They are apex predators in alpine ecosystems, prey on animals such as blue sheep and ibex, and are important indicators of ecosystem health.

Key Findings of the Study

- Researchers sequenced 41 snow leopard genomes (35 wild + 6 captive) and discovered extremely low heterozygosity compared to other big cats.
- This low genetic diversity stems not from recent severe bottlenecks, but from historically small and isolated populations.
- Intriguingly, the “homozygous load” (a measure of harmful recessive mutations) is lower than in many other *Panthera* species – implying past purging of deleterious genes.
- Because the gene pool is narrow, the species may lack adaptive capacity to respond to rapid environmental changes (e.g., climate warming, prey base shifts).

Causes of Low Genetic Diversity

- Small, stable populations in remote alpine zones restricting gene flow.
- Natural geographic isolation: mountain ridges, deserts and glaciers acting as barriers.
- Adaptation to a narrow ecological niche, limiting genetic variation for other environments.
- Recent human-driven fragmentation (infrastructure, mining, roads) further reducing connectivity.



UPSC Relevance: GS Paper III (Environment: biodiversity, wildlife conservation, genetic diversity, high-altitude ecosystems) and GS Paper II (Governance: wildlife protection policies, trans-boundary conservation).



HOT Question: “Analyse the conservation challenge posed by the extremely low genetic diversity of the snow leopard. How should India redesign its strategy for high-altitude predator conservation in view of this genomic research?”

5. First –Ever Record of the Indian Scops Owl near Daroji Sloth Bear Sanctuary, Karnataka



Birdwatchers in October 2025 recorded the Indian Scops Owl (*Indian Scops Owl – *Otus bakkamoena*) for the first time in the region around Daroji Sloth Bear Sanctuary, Vijayanagara/Ballari district, Karnataka.

• Species profile

- Common name: Indian Scops Owl. Scientific name: *Otus bakkamoena*.
- Small nocturnal owl (~20–25 cm in length; wingspan ~45 cm).
- Greyish-brown plumage, ear-tufts, excellent camouflage, pronounced “wuatt” call.
- Habitat: Forests, woodlands, gardens, scrub and agricultural areas across South Asia (India, Nepal, Pakistan, Sri Lanka).
- Conservation status: IUCN – Least Concern.

• New record highlight

- Location: Near Daroji Sloth Bear Sanctuary (Ballari/Vijayanagara district, Karnataka) – first documented sighting in the area.
- Significance: Expands known distribution, underscores the biodiversity value of the area, and suggests potential breeding or resident population that had gone undocumented.

• About Daroji Sloth Bear Sanctuary

- Location: Ballari district, Karnataka. Established in 1994. Area: ~82.72 km².
- Terrain: Rocky hillocks, dry-deciduous scrub forest, southern thorn forests; adjacent to the UNESCO World Heritage Site Hampi.
- Fauna: Flagship species – Indian sloth bear; also leopards, hyenas, pangolins, rich avifauna.

• Significance

- Highlights how protected areas aimed at one focal species (sloth bear) can deliver collateral conservation gains for other taxa (birds).
- Provides impetus for detailed bird-survey and habitat-monitoring efforts in dry-scrub protected areas.
- Reminds planners and conservationists that under-surveyed habitats can harbour cryptic species whose presence has been overlooked.



UPSC Relevance: GS Paper III (Environment): Bird conservation, avian diversity, protected area networks, dry-scrub ecosystems.
GS Paper II (Governance): Role of wildlife sanctuaries, habitat protection, multi-taxa conservation.



HOT Question: “Discuss the conservation significance of documenting previously unrecorded species like the Indian Scops Owl in lesser-studied protected areas such as Daroji Sloth Bear Sanctuary. What measures should be adopted to ensure such habitats are monitored for cryptic biodiversity and integrated into management plans?”

6. Indian Wolf May Be Elevated to Full Species Status by the International Union for Conservation of Nature



The IUCN has for the first time evaluated the Indian wolf separately, suggesting it could be classified as a **distinct species**, which would make it the eighth recognised species in the genus *Canis*.

Species Profile

- Name: Indian wolf (also called Peninsular wolf). Scientific name: *Canis lupus pallipes*.
- Unique lineage: Genetic studies indicate divergence about 110,000 years ago from other grey wolf lineages.
- Physical & behavioural traits: Smaller, leaner, lacks thick winter coat, hunts in small packs (~6-8), less vocal.
- Habitat & range: Semi-arid scrub, open grasslands, agro-pastoral ecosystems in India and Pakistan. Indian populations: roughly ~3,000 individuals.
- Conservation status: Evaluated as separate by IUCN; currently under subspecies classification.

Why the potential species-split matters

- Taxonomic recognition elevates global conservation priority and resource focus.
- If recognised as distinct species, will increase focus on its unique conservation needs.
- Only ~12.4% of its distribution lies in protected areas — majority exists outside formal protection.

Threats

- Habitat loss/fragmentation (industrial, agricultural expansion)
- Hybridisation with feral/stray dogs diluting genetics
- Human-wolf conflict (livestock predation)
- Small, isolated populations make long-term viability fragile



UPSC Relevance: GS Paper III: Environment — Grassland ecosystems, predator ecology, human-wildlife conflict, wildlife taxonomy and conservation. GS Paper II: Governance — Wildlife Protection Act, policy implications of taxonomic re-classification.



HOT Question: “Critically evaluate the implications of recognising the Indian wolf as a distinct species. How should India’s conservation strategy evolve for the grassland and scrubland ecosystems where this wolf evolves, given its small population and high threat-levels?”

7. Central Asian Mammals Initiative (CAMI) Adopts 2026–2032 Work Programme to Protect 17 Migratory Mammals



At its 3rd Range States Meeting (24–26 June 2025) in Tashkent, Uzbekistan, CAMI adopted a new six-year work programme (2026–2032) covering 17 migratory mammal species across 14 range states.

2026–2032 Work Programme Key Features:

- Time-frame: 2026–2032.
- Species coverage: 17 migratory mammals (up from earlier 15), with newly included species like Pallas's cat and Eurasian lynx.
- Critical regions: Identification of trans-boundary priority conservation landscapes/corridors (e.g., Ustyurt Plateau) to maintain connectivity.
- Threat mitigation: Focus on poaching, illegal trade, habitat fragmentation due to infrastructure & climate change.
- Institutional decision: Uzbekistan elected as Chair for the period 2026–2032; Turkmenistan as Vice-Chair.

Significance for India and multi-state cooperation:

- India, as one of the range states, must integrate the Work Programme into national wildlife and biodiversity policies, especially for species like the Snow leopard and Argali sheep found in the trans-Himalayan region.
- Emphasises ecosystem connectivity, cross-border cooperation and climate-resilience in mammal conservation.



UPSC Relevance: GS Paper III (Environment): Biodiversity conservation, large-mammal migration, trans-boundary species and landscapes.

GS Paper II (International Relations): Multinational environmental treaties (CMS), regional cooperation in Central Asia, India's role in wildlife diplomacy



HOT Question “Discuss the rationale and expected outcomes of the CAMI Work Programme (2026–2032). In the context of India's wildlife strategy, how should regional cooperation via CAMI be harnessed to protect migratory mammal species?”

8. NBAIR Releases Parasitoid Wasp **Anagyrus lopezi* for Biological Control of Invasive Cassava Mealybug in India



The National Bureau of Agricultural Insect Resources (NBAIR) has imported the host-specific parasitoid wasp *Anagyrus lopezi* to combat the invasive cassava mealybug (*Phenacoccus manihoti*) that has severely affected cassava production in states like Kerala and Tamil Nadu.

Pest & crop context

- Cassava (also called tapioca) is a starchy root crop grown chiefly in Tamil Nadu and Kerala in India; thrives in warm, humid climates and on low-fertility lands.
- The cassava mealybug, native to South America, was first detected in India in 2020. It has infested large areas (~1.4 lakh ha) in Kerala/Tamil Nadu and lowered yields to <10 t/ha.

Biological control intervention

- *Anagyrus lopezi* is a parasitic wasp that lays eggs inside the mealybug's body; larvae consume the pest from within, thereby reducing mealybug populations.
- NBAIR imported the wasp from the International Institute of Tropical Agriculture (Benin, West Africa) and has undertaken field release programmes, e.g., in Kerala (April 2023).

Significance

- This approach offers a sustainable, environment-friendly solution that reduces reliance on chemical pesticides and supports yield recovery for cassava farmers.
- It supports industrial uses of cassava (starch, bioethanol, biodegradable plastics) and safeguards the livelihoods of farmers in cassava-growing states.



UPSC Relevance: GS Paper III: Agriculture (crop pests & their management), Science & Technology (biological control). GS Paper II: Governance (agricultural policies, pest management programmes)



HOT Question: “Discuss how the introduction of the parasitoid wasp *Anagyrus lopezi* by NBAIR addresses the cassava-mealybug menace in India. What are the potential benefits and risks of such a classical biological-control approach for Indian agriculture?”

9. 31st M.S. Swaminathan Award for Environmental Protection Presented in Chennai

The 31st edition of the M.S. Swaminathan Award for Environmental Protection was presented in Chennai, recognising organisations and individuals for outstanding contributions to environmental conservation and sustainable farming.

Award Recipients:

- Sahaja Samrudha (Mysuru) – A people's movement preserving indigenous crop varieties and promoting traditional farming practices.
- Veerappan (Tamil Nadu) – A 60-year-old fisherman honoured for his work propagating mud crabs and fish, enhancing local aquatic biodiversity.

About the Award:

- Instituted in 2004, named after M.S. Swaminathan, recognising lifetime contributions to agriculture, environment and allied fields.
- Given biennially; carries cash prize ₹2 lakh, a medal and citation; open to all nationalities; recipients aged under 65 with ≥20 years of work in India.
- Related awards include: M.S. Swaminathan Memorial Women Award and Global M.S. Swaminathan Award for Food & Peace.

EDUCASIUM IAS Academy
EPIC UPSC Classes



UPSC Relevance: GS Paper III (Environment & Biodiversity: sustainable agriculture, traditional farming, indigenous crop conservation) and GS Paper II (Governance: agricultural awards, role of persons/organisations in environmental protection).



HOT Question “Evaluate the role of awards such as the M.S. Swaminathan Award for Environmental Protection in promoting sustainable agriculture and community-based conservation in India. What features make them effective, and what could be improved to enhance impact at the grassroots level?”

10. FAO's Global Forest Resources Assessment 2025 : Forest Cover 4.14 bn ha, India Moves Up



The FAO's Global Forest Resources Assessment (FRA) 2025 cycle has reported that the world's total forest area is approximately 4.14 billion hectares (around 32 % of land surface) and that India has risen to 9th place globally in forest area. India also retains the 3rd spot in annual net forest area gain.

About FRA

- The Global Forest Resources Assessment is published every five years by the FAO and tracks forest extent, condition, management and use in ~236 countries/territories.
- FRA 2025 country reporting is complete and the results are being consolidated; remote-sensing survey (RSS) work is also underway.

Key global findings

- Global forest area $\approx$ 4.14 billion ha — covering about 32 % of the Earth's land area.
- Five countries hold over 54 % of global forests: Russia, Brazil, Canada, United States and China.
- Annual net forest loss has declined significantly compared to earlier decades. (Media summary)
- Region-wise: Asia is reported to be the only region showing a net gain in forest area from 1990 to 2025.

India's Position

- India has moved to 9th position globally in total forest area (from previous 10th).

India continues to rank 3rd globally in annual net forest area gain.



UPSC Relevance: GS Paper III: Environment – Forest cover trends, forest management, restoration and links to climate change and biodiversity. GS Paper II: Governance – International environmental monitoring institutions (FAO, UN SDGs), India's global environmental commitments.



HOT Question: “Analyse the major global forest cover trends revealed in FAO's Global Forest Resources Assessment 2025. What implications do these trends hold for India in terms of forest policy, climate mitigation and biodiversity conservation? Identify key priorities for India going forward.”

11. UNCCD Releases Global Land Outlook Thematic Report on Ecological Connectivity & Land Restoration at IUCN World Conservation Congress 2025

 The UNCCD, in partnership with the Convention on the Conservation of Migratory Species of Wild Animals (CMS), launched a Thematic Report during the IUCN World Conservation Congress in Abu Dhabi. The report emphasises how degraded landscapes and fragmented habitats threaten biodiversity, ecosystems and human well-being.

About the Report:

The *Global Land Outlook (GLO)* is the flagship publication of the UNCCD, assessing land resources, land-degradation, desertification and drought every few years. The Thematic Report is a deep-dive on *ecological connectivity & land restoration*.

Co-published with CMS and launched at IUCN Congress in October 2025

Finding	Detail
Habitat fragmentation / connectivity loss	Nearly one-third of the world’s land has been transformed by humans, breaking natural links.
River ecosystem disruption	Over 60% of rivers are dammed or diverted, curtailing species migrations & water-flow processes.
Infrastructure threat	Road networks globally may expand by ~60% by 2050, increasing habitat loss & isolation.
Land degradation scale	Roughly 40% of Earth’s land is degraded; nearly half the global population suffers from its impacts.

EPIC UPSC Classes



UPSC Relevance: GS Paper III (Environment: ecosystem restoration, biodiversity, land-degradation) and GS Paper II (International Relations: global environmental governance, conventions).



HOT Question: “Examine the significance of ecological connectivity in land-restoration strategies, with reference to the UNCCD’s *Global Land Outlook* thematic report. How should India incorporate these insights into its national land-use and restoration policies?”

12. India's First Cooperative Multi-Feed CBG Plant Inaugurated in Maharashtra

 The Ministry of Cooperation inaugurated India's first cooperative, multi-feed compressed biogas (CBG) plant at the Maharshi Shankarrao Kolhe Sahakari Sakhar Karkhana, Kopargaon (Ahilyanagar district, Maharashtra). The plant will also produce potash, creating a circular economy model and reducing import dependence

- **What & capacity:**

- The plant uses jaggery, molasses and agricultural residues as feedstock.
- Daily production: ~12 tonnes of CBG, ~75 tonnes of potash granules.
- Investment: ~₹55 crore.

- **Significance:**

- CBG is a purified form of biogas (from organic waste) compressed to CNG standards – cleaner fuel alternative and supports waste-to-wealth.
- Co-production of potash (fertiliser) adds value and reduces dependence on imports.
- Cooperative model strengthens rural economy and aligns with “Make in India” / “circular economy” goals in agri-bioenergy sector.

- **Policy & sector linkages:**

- Supports the cooperative sugar-factory sector in Maharashtra, giving them transition pathways into green energy and by-product valorisation.
- Synergies with bio-fuel, green hydrogen & fertiliser policy drives.

- **Challenges / Considerations:**

- Ensuring feedstock availability year-round (jaggery/molasses) and logistics for collection.
- Scale-up replication across other sugar mill cooperatives to maximise impact.
- Integrating CBG production with local fuel-vehicle infrastructure and monitoring of environmental/waste norms.



UPSC Relevance: GS Paper III: Indian economy, renewable energy (biofuels, CBG), agriculture-industry linkages, sustainable rural development. GS Paper II: Governance & cooperation: role of cooperatives.



HOT Question: “Examine the significance of India's first cooperative multi-feed compressed biogas (CBG) plant inaugurated in Maharashtra in terms of sustainable energy, circular economy and cooperative empowerment. What steps are necessary to scale such models across India's sugar-industry ecosystem?”

13. Study Finds Amazon Trees Growing Larger: Mean Basal Area Up ~3.3% per Decade



A new study titled “Increasing tree size across Amazonia”, published in *Nature Plants* (2025), shows that trees in 188 long-term plots across the Amazon have increased in size over ~30 years — mean basal area rose by ~3.3% per decade

Key Findings:

- Analysis of 188 mature forest plots in the Amazon over ~30 years.
- Mean tree basal area increased at about 3.3% per decade (95% CI: 2.4–4.1%).
- Both large and smaller trees showed relative size gains; the largest trees grew fastest in absolute terms.

Underlying Reasons:

- Rising atmospheric CO₂ levels likely triggering a “carbon fertilisation effect”, boosting photosynthesis and tree growth.
- The intact forest plots studied remain resilient, suggesting that negative effects of drought/heat have not yet overcome the growth boost.

Significance:

- Larger trees = greater carbon storage potential → strengthens Amazon’s role as global carbon sink.

Indicates that tropical forests may be more resilient than previously thought — but the study cautions this may not hold under high disturbance/fragmentation.



UPSC Relevance: GS Paper III: Environment – tropical forests, carbon cycle, climate change impact on ecosystems. GS Paper II: Governance – global environmental research, forest policy, UN/Global mechanisms.



HOT Question: “Analyse the findings of the ‘Increasing tree size across Amazonia’ study in the context of forest ecology and climate change. What implications does this have for global carbon budgets and tropical forest conservation policy?”

14. PM launches 'Jal Sanchay Jan Bhagidari' initiative in Gujarat to scale up rainwater harvesting



On 6 September 2024, Narendra Modi launched the initiative via video-conference from Surat in Gujarat. It builds on Gujarat's earlier water-harvesting efforts and aims to construct approximately 24,800 rainwater-harvesting structures across the state under a strong community-participation model

Key Features:

- Based on the earlier Gujarat state-level "Jal Sanchay" campaign; now scaled nationally via the Ministry of Jal Shakti.
- Target: Around 24,800 rainwater-harvesting structures through community participation and local ownership.
- Emphasis: "Whole-of-Society" and "Whole-of-Government" approach – citizens, local bodies, industries, NGOs, state & central government working together.
- Strategic priorities: Reduce runoff, recharge groundwater, increase infiltration; aligns with campaigns such as Jal Shakti Abhiyan ("Catch the Rain") and urban/ rural water-conservation efforts.

Significance:

- Enhances water-security by involving local communities in water-harvesting infrastructure, especially in drought-prone or groundwater-stress areas.
- Model for other states to replicate – Gujarat's earlier success in rainwater-harvesting cited as precedent.
- Reinforces behavioural change in water usage: mantra of "Reduce, Reuse, Recharge, Recycle" promoted by the Prime Minister.



UPSC Relevance: GS Paper II: Governance – Community-based water-management schemes, cooperative federalism in natural resources. GS Paper III: Environment – Rainwater-harvesting, water-resource management, groundwater recharge, sustainable development.



HOT Question "Evaluate the role of the 'Jal Sanchay Jan Bhagidari' initiative in strengthening India's water-security through community participation and structural measures. What factors will determine its success and replicability across diverse hydro-geological regions of India?"

15. Urban Tree-Plantation Drives Could Worsen Air Quality If High-VOC Species Are Misplaced



Recent evidence shows that planting high volatile organic compound (VOC)-emitting tree species in traffic-heavy urban zones can trigger increased ground-level ozone formation, undermining the intended air-quality benefits of urban greening.

Problem Statement:

- Trees emit biogenic volatile organic compounds (BVOCs) like isoprene and monoterpenes; when these VOCs mix with vehicular NO_x and sunlight they form tropospheric ozone – a respiratory hazard.
- In India alone, around 237,700 deaths in 2021 were attributed to ozone pollution.

Key Issues:

- In traffic-dense urban zones, the NO_x -rich environment + high VOC emissions from certain trees amplify ozone formation.
- Studies show “high-VOC” species (e.g., mango, peepal, banyan) release significantly more isoprenes/monoterpenes under heat/stress.

‘Right Tree, Right Place’ Approach:

- **Tree Selection:** Avoid high-VOC emitters near roads/traffic; favour low-VOC species such as neem, tamarind, golden shower, arjuna, ashoka, silk cotton.
- **Location Planning:** Plant in zones with high dust or particulate matter where pollutant-trapping is needed, rather than along congested roads where ozone formation risk is higher.
- **Maintenance:** Prune trees, manage leaf-litter (decaying biomass also emits VOCs), ensure good air-flow so green cover doesn’t trap pollutants.



UPSC Relevance: GS Paper III: Environment – Urban ecosystem services, air-quality, biogenic emissions, tropospheric ozone. GS Paper II: Governance – Urban planning, green infrastructure, inter-sectoral coordination (health, environment, municipal).



HOT Question: “Critically examine how urban tree-plantation drives in Indian cities, if unplanned, might inadvertently worsen air pollution. Suggest a framework for ‘right tree, right place’ that integrates greening with urban air-quality management.”

16. Rapid Urban Growth & 24×7 Illumination in India Fuels Light-Pollution Crisis



India's urban expansion and "always-on" lighting culture are driving excessive artificial outdoor illumination (light pollution) – a often overlooked environmental hazard with serious health, ecological and energy-waste implications.

Causes of Light Pollution in India:

- Unregulated outdoor lighting: India lacks BIS norms for outdoor luminance, resulting in overuse of high-intensity LEDs, flood-lights, billboards and façade illumination.
- Architectural and urban-beautification lighting: Monument/facade lighting and "smart city" decorative lighting add to unnecessary night-time brightness in dense urban centres.
- Policy blind-spot: Light pollution is not explicitly regulated under the Environment (Protection) Act, 1986.

Low public awareness: Studies show many Indians are unaware of light-pollution as an issue. For example, the 2021 study on Artificial Night Sky Brightness found strong correlation between city-street lighting density and brightness levels

Best-Practice Approach

- Regulatory framework: Inclusion of light-pollution norms under E(P) Act, creation of outdoor lighting codes (e.g., via BIS/urban by-laws).
- Smart urban design: Use warm-colour, downward-directed LEDs, adaptive dimming in low-traffic hours, limit façade and billboard illumination.
- Awareness & monitoring: Launch "Right to Dark Sky" type campaigns; integrate night-sky radiance into urban environment indices.

Ecological zoning: Define Dark-Sky Parks/Reserves (e.g., Hanle, Ladakh) and adopt urban lighting-zoning to protect sensitive habitats



UPSC Relevance: This topic is relevant for GS Paper III (Environment: pollution, urban ecosystems, human-health links) and GS Paper II (Governance: urban policy, by-laws, environment regulation). For Prelims: Know what light pollution is, major urban causes in India



HOT Question "Light pollution is often a silent and un-regulated environmental hazard in urban India. Critically analyse its causes, health and ecological impacts. Suggest a policy and governance framework to integrate lighting management into urban sustainability strategies

17. Post-monsoon Census in Delhi Biodiversity Parks Records 54 % Increase in Dragonfly & Damselfly Populations



A three-day survey (25–27 September 2025) across seven biodiversity parks in Delhi recorded a significant surge — from 8,630 to 13,253 odonates (dragonflies and damselflies) — signalling improved wetland health and ecological restoration in urban habitats.

Survey Scope & Findings: Conducted across seven parks under the Delhi Development Authority (DDA) biodiversity parks programme including: Yamuna Biodiversity Park, Kalindi Biodiversity Park, Kamla Nehru Ridge, Aravalli Biodiversity Park, Tughlaqabad Biodiversity Park, Neela Hauz Biodiversity Park and Tilpath Valley Biodiversity Park.

Why the surge? Heavy monsoon rains created extensive temporary water-bodies and improved breeding conditions for odonates in these parks.

Significance of Odonates as Bio-Indicators:

Dragonflies & damselflies (order Odonata) depend on clean, oxygenated water during larval stage; thus their presence & diversity reflect wetland health.

They are natural predators of mosquito larvae and small insects, helping control vector-borne diseases.

Their life-cycles transfer nutrients from aquatic to terrestrial ecosystems, linking water-health with land biodiversity



UPSC Relevance: GS Paper III: Environment – Wetland ecosystems, urban biodiversity, bio-indicators. GS Paper II: Governance – Urban ecological restoration, role of biodiversity parks, participatory monitoring.



HOT Question “Assess the importance of dragonflies and damselflies as bio-indicators of wetland health in urban landscapes. With the recent surge in odonate populations in Delhi biodiversity parks, what lessons can urban ecosystem managers derive for wider restoration and biodiversity-integration in Indian cities?”

18. UNDP–OPHI Release 2025 Global MPI Report: Nearly 887 Million Poor Face Climate Hazards



On 17 October 2025, the United Nations Development Programme (UNDP) together with the Oxford Poverty and Human Development Initiative (OPHI) published the 2025 *Global Multidimensional Poverty Index (MPI)* titled “*Overlapping Hardships: Poverty and Climate Hazards*”, highlighting how climate shocks compound multidimensional poverty.

Key Findings:

- Of the ~1.1 billion people globally in multidimensional poverty, **887 million** are exposed to at least one climate hazard (heat, floods, droughts, air pollution).
- **651 million** experience two or more concurrent hazards; **309 million** endure three or four simultaneously.
- Hazard-wise: High heat affects ~608 million poor people; air-pollution ~577 million; flooding ~465 million; drought ~207 million.
- Regional hotspots: In South Asia ~380 million poor people exposed, and in Sub-Saharan Africa ~344 million. In South Asia, 99.1 % of poor are exposed to at least one climate shock; 91.6 % face two or more.
- Economic inequality: Lower-middle-income countries bear greatest burden – ~548 million poor exposed to at least one hazard.
- Future trajectory: Countries with higher poverty levels now are expected to suffer greater temperature increases by century’s end, intensifying the risk of poverty-trap reinforcement.

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UPSC Relevance: GS Paper II (Governance: social protection, poverty policies), GS Paper III (Environment: climate change adaptation, vulnerability) and GS Paper I (Social Issues).



HOT Question: “Examine how climate-hazard exposure deepens multidimensional poverty, drawing on the 2025 Global MPI findings. What policy frameworks should India adopt to mitigate this overlap of poverty and climate risk?”

19. India Adds Record 24.5 GW of Solar Capacity in 2024 — But Climate Finance Gap Threatens Momentum



India installed approximately 24.5 GW of solar photovoltaic (PV) capacity in 2024, making it one of the top global contributors. However, analysts warn that without a corresponding expansion in climate financing the clean energy transition may slow down.

What is Climate Finance?

- Defined under Paris Agreement (Article 9) as the financing drawn from multiple public and private sources to support mitigation and adaptation efforts.
- Based on the principle of common but differentiated responsibilities and respective capabilities (CBDR-RC).

India's Clean-Energy Growth Significance:

- The 24.5 GW solar addition in 2024 represents a more-than-two-fold increase over previous years in many metrics.
- This growth supports India's commitments (e.g., net-zero by 2070, achieving large renewable energy targets) and job/industrial opportunities in the clean-energy sector.

Challenges in Climate Finance for India:

- Financing Gap: India requires about **US\$ 2.5 trillion** by 2030 to remain on a 1.5-°C pathway, while current flows are far lower.
- Policy-Project Fit: Domestic frameworks may not always align with the requirements of multilateral climate funds.
- Private Participation: Adaptation projects face low private-sector uptake due to perceived risks, long gestation, uncertain returns.

India's Climate-Finance Initiatives:

- Several mechanisms are in place, including the National Clean Energy Fund (NCEF), National Adaptation Fund on Climate Change (NAFCC), Sovereign Green Bonds, NABARD's 2030 strategy for green finance, access to the Green Climate Fund (GCF).



UPSC Relevance: GS Paper III (Environment & Ecology/Energy): Renewable energy transition, finance for climate action.

GS Paper II (Governance): Climate finance flows, policy instruments, India's role in global climate regime.



HOT Question: “Analyse the significance of India's record solar-capacity addition in 2024 in the context of its clean-energy transition and climate commitments. What role does climate finance play in sustaining this momentum and what policy measures should India adopt to bridge the financing gap?”

20. India's Renewable Strategy Shifts to System Integration & Stability to Achieve 500 GW Target by 2030



India has grown its installed renewable capacity more than five-fold from 2014 to 2025 and is now shifting policy focus from sheer expansion to integration of renewables for grid stability, dispatchability and system resilience, as it pushes toward the 500 GW non-fossil target by 2030.

Current Renewable Landscape:

- Installed renewable capacity (excluding large hydro) has grown from ~35 GW in 2014 to ~197 GW in 2025.
- Project pipeline: Over ~40 GW of renewables are in advanced stages of PPA/PSA/transmission approval.
- Annual additions remain strong (~15-25 GW) with a continuing world-leading growth rate.
- Transmission/evacuation: Green Energy Corridors and large transmission upgrades (₹2.4 lakh crore plan) are enabling inter-regional grid capacity to rise (from about 120 GW to ~143 GW by 2027 and ~168 GW by 2032).
- Renewable mix (excluding large hydro): Solar ~64.6 %, Wind ~26.9 %, Biopower ~5.5 %, Small Hydro ~2.6 %, Waste-to-energy ~0.43%.

Policy & Strategic Shift:

- Tender design now emphasises energy-storage and “round the clock” (RTC) power to make renewables dispatchable.
- General Network Access (GNA) framework (2025) replaces static connectivity with time-segmented transmission allocation (e.g., solar in daytime, wind/storage at night) for smoother integration.
- Manufacturing push: Solar modules (PLI scheme), domestic manufacturing scale-up, reduced import dependence.
- Future focus: Offshore wind, pumped hydro storage, green hydrogen are being built into the strategy of diversification and grid-firming.



UPSC Relevance: GS Paper III: Environment & Ecology (renewable energy, energy transition, grid integration). GS Paper II: Governance (energy policy, manufacturing incentives, infrastructure development)



HOT Question “India’s renewable energy strategy is moving from rapid capacity addition to a focus on integration and system stability. Analyse the drivers and implications of this shift for India’s 2030 renewable targets. What policy and institutional measures are required to ensure the transition is smooth, resilient and investment-ready?”

21. India Notifies GEI Target Rules 2025, First Legally Binding Emission-Intensity Framework for Industry

The Ministry of Environment, Forest and Climate Change (MoEFCC) released the draft GEI Target Rules on 16 April 2025 (open for 60-day feedback) which set legally-binding greenhouse-gas emission-intensity targets for major industrial units in sectors like cement, aluminium, pulp & paper and chlor-alkali, as part of the compliance framework of the Carbon Credit Trading Scheme (CCTS), 2023.

What is GEI?

GEI = Greenhouse-gas Emissions Intensity; i.e., the amount of GHGs emitted per unit of industrial output (measured in tCO₂ equivalent per unit product).

Scope & Coverage:

Sector	No. of units initially covered*	Key details
Cement	186 plants	largest share of obligated units.
Pulp & Paper	53 plants	includes integrated, agro-based, specialty paper units.
Chlor-Alkali	30 plants	highly energy-intensive chemical sector.
Aluminium	13 plants	smelters/refineries covered.

- Draft covers ~282 obligated units in these four sectors.
- **Baseline & Compliance Timeline:**
 - Baseline year: FY 2023-24.
 - Compliance cycles: FY 2025-26 and FY 2026-27.
- **Mechanism & Market Linkage:**
 - Entities that reduce GEI below target earn **carbon credits** (via CCTS) which can be traded.
 - Entities that fail to meet targets must purchase credits or face **environmental compensation** equal to twice the average trading price.
 - Institutional oversight: Bureau of Energy Efficiency (BEE) monitors/allocates credits; Central Pollution Control Board (CPCB) enforcement.



UPSC Relevance: GS Paper III: Environment & Ecology – Industrial emissions, carbon markets, climate-mitigation policies.
GS Paper II: Governance – Regulatory framework, industry-policy interface, compliance mechanisms.



HOT Question: “Examine the draft Greenhouse Gas Emission Intensity (GEI) Target Rules, 2025 in the context of India’s industrial decarbonisation and carbon-market strategy. What are its strengths and what Indian governance/regulatory challenges must be addressed for effective implementation?”

22. India Expands Environmental Surveillance Using Wastewater to Detect Disease Outbreaks Early



Environmental surveillance through wastewater sampling is emerging as a **key tool for early detection of infectious diseases** in India. The Indian Council of Medical Research (ICMR) announced a plan to monitor **10 viruses across 50 cities** under a national environmental surveillance network to enhance **epidemic preparedness**.

Definition & Mechanism

- **Definition:** Environmental surveillance refers to tracking pathogens (bacteria, viruses, parasites) in **sewage, hospital effluents, soil, or public spaces** to detect outbreaks before clinical cases rise.
- **Mechanism:** Pathogens shed by infected individuals enter sewage systems; samples are tested via **genome sequencing and PCR** to monitor infection trends and variants.

Purpose: Detect infections – including **asymptomatic carriers** – and provide a real-time picture of disease spread.

Importance

- Detects **pathogen surges** before clinical spikes occur.
- Captures **true community transmission**, overcoming under-reporting in hospitals.
- Aids **targeted interventions**, vaccination drives, and resource allocation.
- Tracks **vaccine efficacy** and monitors **antimicrobial resistance (AMR)**.
- Strengthens **One Health** and **pandemic preparedness** frameworks.



UPSC Relevance: **GS Paper II:** Health, governance, and policy interventions. **GS Paper III:** Biotechnology, Science & Tech in disease control.



HOT Question: “Discuss the growing role of environmental surveillance in India’s public health management. How can wastewater-based monitoring transform disease preparedness in the post-COVID era?”

23. IUCN Releases World Heritage Outlook 2025 — Climate Change Emerges as the Leading Threat to Natural UNESCO Sites



At the IUCN World Conservation Congress 2025 in Abu Dhabi, the International Union for Conservation of Nature (IUCN) released the **fourth edition** of its *World Heritage Outlook* report, assessing the conservation status of all Natural and Mixed UNESCO World Heritage Sites (WHS).

About World Heritage Sites (WHS)

- **Definition:** WHS are sites of “*Outstanding Universal Value*” inscribed under the **1972 UNESCO World Heritage Convention**.
- **Global Count (2025):** 1,248 sites — 44 in India (36 Cultural, 7 Natural, 1 Mixed).
- **Governance:** Managed by the **UNESCO World Heritage Committee**, which finalizes inscription after nomination and evaluation.
- **Advisory Role:** The **IUCN** advises on *Natural* and *Mixed* sites, while **ICOMOS** and **ICCROM** advise on cultural and restoration aspects.

Aspect	Details
First Published	2014; issued every 3–5 years.
Purpose	Evaluates the state, threats, and management effectiveness of Natural and Mixed WHS.
Evaluation Criteria	(a) Current condition of values, (b) Severity of threats, (c) Effectiveness of protection & management.
Ratings	Good



UPSC Relevance: **GS Paper III:** Biodiversity conservation, international environmental conventions, climate change impacts.



HOT Question: “Discuss the key findings of the IUCN World Heritage Outlook 2025. How do the emerging threats like climate change and invasive species pose challenges to India’s natural heritage conservation?”

24. Study Raises Concerns Over Polar Geoengineering Proposals to Combat Climate Change



A recent international study evaluating **five proposed polar geoengineering methods** – designed to artificially cool the Earth’s poles and slow ice melt – has warned that these interventions are **technically risky, ecologically disruptive, and economically unviable** compared to rapid decarbonisation.

Proposed Polar Geoengineering Methods

Method	Concept/ Mechanism	Key Concerns
Stratospheric Aerosol Injection (SAI)	Injecting reflective aerosols (e.g. sulphur dioxide) into the stratosphere to block solar radiation.	Ineffective during polar winters (no sunlight); sudden stoppage may trigger termination shock – rapid global temperature surge within 10–20 years.
Sea Curtains/ Sea Walls	Floating barriers preventing warm ocean water from reaching polar ice shelves.	Extremely high cost (> \$1 billion/km); major engineering & maintenance challenges in harsh seas.
Sea Ice Management (Glass Microbeads)	Spreading microbeads to increase albedo (surface reflectivity).	Requires ~ 360 million tonnes annually – equal to global plastic output; may absorb heat or harm ecosystems.
Basal Water Removal	Pumping out subglacial meltwater to slow glacier sliding into the ocean.	Logistically difficult; uncertain long-term benefit; could destabilise ice structure.
Ocean Fertilisation	Adding iron/nutrients to enhance phytoplankton growth for carbon sequestration.	Alters ocean chemistry and food webs; risk of algal blooms and hypoxia.

Alternative & Sustainable Solutions

- **Rapid Decarbonisation:**
 - Remains the **only proven, scalable approach** to stabilise polar climate systems.
 - Requires reducing greenhouse gas emissions through renewable transition and efficiency.
- **Nature-Based Adaptation:**
 - *Ecosystem-based approaches* like mangrove restoration and wetland protection enhance resilience naturally.
 - Emphasise **community-inclusive conservation**, integrating local knowledge and livelihoods over exclusionary “fortress” models.
- **Challenges:**
 - High upfront transition costs, critical-mineral bottlenecks, and political inertia remain barriers to sustained global decarbonisation.



HOT Question “Discuss the ethical and ecological risks associated with polar geoengineering projects. Why does sustainable decarbonisation remain a more reliable strategy for climate stability?”

25. India Generates 1.75 Million Tonnes of E-Waste (2023–24); Urban Mining Emerges as Key Critical Raw Material Recovery

According to the CPCB (2024) and Circular Economy Report (2023), India generated 1.75 million tonnes of e-waste in 2023–24, a 72.5% increase since 2019–20. Despite a growing recycling rate (43%), massive potential remains untapped for **urban mining** – the recovery of valuable metals from discarded electronics and waste materials.

E-Waste in India (2023–24)

Indicator	Value / Change
Total E-Waste Generated	1.75 million tonnes (↑72.5% since 2019–20)
Recycling Rate	Improved from 22% → 43%
Metals Recovered per Tonne	Gold – 300 g; Silver – 1 kg
Share vs Europe	Equivalent to 16% of Europe’s total generation

Significance of Urban Mining

Dimension	Impact
Economic Value	₹20,000–₹25,000 crore potential annually (CPCB, 2024)
Employment	5 lakh green jobs in recycling & recovery (NITI Aayog)
Resource Security	Reduces 90% import dependence on lithium, cobalt, nickel, and rare earths.
Circular Economy Push	Converts 1.75 MT e-waste + 62 MT solid waste into reusable resources; aligns with SDG-12 & Mission LiFE.

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UPSC Relevance: **GS Paper III:** Environmental pollution, Resource recovery, Circular economy, Urban infrastructure.
GS Paper II: Governance, waste management reforms



HOT Question: “India’s e-waste challenge can be turned into an economic and environmental opportunity through urban mining.” Discuss with reference to recent data and circular economy strategies

26. Wildlife Week 2025 Celebrated in Dehradun under the Theme “Human–Wildlife Coexistence”



On 6 October 2025, Wildlife Week 2025 was celebrated in Dehradun under the theme “Human–Wildlife Coexistence,” organized by the MoEFCC with WII, ICFRE, IGNFA, and FRI.

The event emphasized a **collaborative, community-driven, and technology-enabled approach** to sustainable wildlife conservation, focusing on shifting from **conflict to coexistence** through awareness, innovation, and participation.

Key Launches:

- **Five National Projects:**
 - Project Dolphin (Phase II)
 - Project Sloth Bear
 - Project Gharial
 - Centre of Excellence for Human–Wildlife Conflict Management (CoE–HWC)
 - Tigers Outside Tiger Reserves Initiative — all aimed at species conservation and conflict mitigation.
- **Four Population Estimation Programmes:**
Covering river dolphins & cetaceans, tigers, snow leopards, and the Great Indian Bustard & Lesser Florican, with field guides in regional languages for better field data collection.

27. Rajasthan’s First ‘Namo Biodiversity Park’ Inaugurated in Alwar



On 5 October 2025, the Union Environment Minister inaugurated Rajasthan’s first ‘Namo Biodiversity Park’ (Namo Van) at Pratap Bandh, Alwar, to promote **urban green infrastructure**.

The ‘Namo Biodiversity Park’ — envisioned as a **green lung for Alwar** — aims to **enhance local greenery, improve air quality, and raise environmental awareness** among citizens.

The park encourages **eco-friendly lifestyles, community participation, and sustainable urban living** through public engagement and educational initiatives. Serving as a **model project**, it reflects India’s commitment to **environmental sustainability** and is expected to inspire the creation of **similar biodiversity parks across Rajasthan**.

28. India to Release Its First National Red List at IUCN World Conservation Congress 2025



India will unveil its **first Red List of Endangered Species** at the **IUCN World Conservation Congress 2025** in **Abu Dhabi, UAE**.

The **IUCN World Conservation Congress** – a **quadrennial global summit** on **nature conservation and sustainable development** – brings together **governments, scientists, civil society, and the private sector** to shape global environmental priorities.

Congress 2025 Focus: *Resilient Conservation Action, Climate Overshoot Risks, Equity, Nature-Positive Economies, and Disruptive Innovation for Conservation.*

Previous Congress: Held in **Marseille, France (2021)**, which adopted the **Marseille Manifesto** addressing the **biodiversity and climate crises**.

29. Sharp Decline in Spotted Deer Population at Konark–Balukhand Wildlife Sanctuary, Odisha



The **spotted deer (chital)** population in **Odisha's Konark–Balukhand Wildlife Sanctuary** fell from **5,280 (2012–13)** to **4,315 (2016)** due to **habitat loss, road kills, and ecological damage**.

The **Konark–Balukhand Wildlife Sanctuary** is witnessing a **significant drop in chital numbers**, driven by **vehicle collisions on the Puri–Konark Marine Drive**, **illegal hunting**, **drying water bodies**, and **habitat degradation** – exacerbated by **Cyclone Fani (2019)**.

Located along the **Odisha coast**, the sanctuary's **man-made forest** of **Casuarina, cashew, and mangroves** supports species such as **striped hyenas, jackals, jungle cats, fishing cats, and pangolins**, while **blackbucks** have vanished since 2012.

The area also hosts **migratory birds** (**Whistling Ducks, Black-tailed Godwits, Brown-headed Gulls**) and serves as a **nesting site for Olive Ridley turtles**.

30. Blackbucks Reintroduced in Chhattisgarh's Barnawapara Wildlife Sanctuary After 50 Years



Nearly **five decades** after **local extinction**, **blackbucks** have been **successfully reintroduced** in **Barnawapara Wildlife Sanctuary, Chhattisgarh**, under a **2021–2026 state-led revival programme**.

The **Barnawapara Wildlife Sanctuary**, located in the **Mahanadi River basin**, has restored its **blackbuck population** after almost **50 years**, marking a major conservation success.

The sanctuary features **tropical dry deciduous forests** with **Sal, Teak, Bamboo, Mahua, and Tendu** species, and a landscape of **rolling plains, hillocks, and perennial streams**.

Bounded by the **Balamdehi River (west)** and **Jonk River (northeast)**, it harbours diverse fauna including **gaur, leopard, sloth bear, dhole, chital, sambar, nilgai, and chinkara**.

The **Balar reservoir** within supports **aquatic biodiversity and migratory birds**.



31. Relocation Plan Stalls at Bhimgad Wildlife Sanctuary Amid Villagers' Demands



The forest department's relocation plan at Bhimgad Wildlife Sanctuary, Karnataka, has hit a setback as Amagaon villagers seek assurances before consenting to move.

Located in the Western Ghats, Belagavi district (Karnataka), Bhimgad Wildlife Sanctuary is named after the 17th-century Bhimgad Fort, built by Chhatrapati Shivaji Maharaj to defend against Portuguese expansion from Goa.

It borders Dandeli WLS (north), Bhagwan Mahaveer Sanctuary and Mollem NP (northwest), Netravali WLS (north), and Mhadei WLS (east) – forming a critical transboundary wildlife corridor between Karnataka and Goa.

The sanctuary serves as the headwaters of the Tillari, Malaprabha, and Mhadei rivers and includes the Vajrapoha Waterfalls, part of the Mahadayi catchment.

A noted biodiversity hotspot, it houses the Barapede Caves – the only known breeding site of the critically endangered Wroughton's Free-tailed Bat.

With tropical and subtropical moist broadleaf forests rich in Malabar teak and rosewood, it supports tigers, leopards, elephants, gaur, sloth bears, wild dogs, deer species, and king cobras.

The relocation plan aims to reduce human-wildlife conflict and restore core habitat integrity, but progress is delayed due to local resistance pending livelihood and resettlement assurances.

32. India's Elephant Population at 22,446 – New Baseline Set Under SAIEE 2021–25



The Synchronous All India Elephant Estimation (SAIEE) 2021–25 recorded 22,446 elephants, an 18% decline from the 2017 estimate of 27,312, though officials note this marks a new methodological baseline.

The SAIEE 2021–25 establishes a revised population baseline for elephant conservation in India, using an updated and more accurate methodology.

Regional Distribution:

Western Ghats: 11,934 (highest)
Northeast: 6,559
Shivalik–Gangetic Plains: 2,062
Central–Eastern Ghats: 1,891

Top States:

Karnataka (6,013)
Assam (4,159)
Tamil Nadu (3,136)
Kerala (2,785)
Uttarakhand (1,792)

Major Threats:

Habitat fragmentation due to expanding coffee and tea plantations.

Linear infrastructure – railways, roads, and power lines – cutting across migration corridors.

In Central India, mining and rising human–elephant conflict remain critical challenges to long-term conservation.



33. 29 Pilot Whales Found Dead After Mass Stranding at Twilight Beach, New Zealand



A pod of 29 pilot whales was found dead after stranding at Twilight Beach, North Island (New Zealand), highlighting the recurring phenomenon of mass whale strandings.

Pilot whales, often mistaken for true whales, are large oceanic dolphins known for their strong social bonds and group coordination. They are highly prone to mass strandings, often linked to sonar interference, geomagnetic shifts, or social cohesion during distress.

Species Overview:

Long-finned Pilot Whale — Found in colder deep waters (North Atlantic, Southern Ocean, sub-Antarctic).

IUCN Status: *Least Concern*

Short-finned Pilot Whale — Inhabits warm tropical and subtropical oceans (Indian, Atlantic, Pacific).

IUCN Status: *Least Concern*

34. Rare Sighting of Malabar Gliding Frog Near Belagavi, Karnataka



A Malabar Gliding Frog (*Rhacophorus malabaricus*) was spotted near Belagavi, Karnataka — a rare sighting outside its typical dense forest habitat of the Western Ghats.

The Malabar Gliding Frog, an arboreal amphibian endemic to the Western Ghats, can glide up to 12 metres using the broad webbing between its toes. This sighting near Belagavi highlights its adaptive range expansion and the ecological diversity of northern Karnataka.

Appearance: Bright green back, pale-yellow belly, and orange-red webbed feet.

Size: Up to 10 cm, with females larger than males.

Habitat: Prefers evergreen and semi-evergreen forest canopies near streams and plantations.

Distribution: Found across Kerala, Karnataka, Goa, Maharashtra, and Tamil Nadu.

Breeding: Builds foam nests on overhanging leaves; tadpoles drop into water post-hatching.

Threats: Habitat loss, pesticides, climate change, hunting, superstitions, and illegal pet trade.

Conservation Status: *IUCN – Least Concern.*

Significance: The Belagavi observation underscores the need for habitat connectivity and microhabitat conservation beyond core Western Ghats regions to protect amphibian biodiversity.

35. New Wasp Species *Nesolynx banabitanae* Discovered in West Bengal



Entomologists in West Bengal have discovered a new hyperparasitoid wasp species, *Nesolynx banabitanae*, named after Banabitan Biodiversity Park, Kolkata.

Nesolynx banabitanae belongs to the **Eulophidae** family and is classified as a **hyperparasitoid**, meaning it parasitises other **parasitoid** wasps, particularly species like *Charops aditya*.

Habitat: Found in **semi-natural habitats** such as **urban parks, gardens, and agro-ecosystems** of the **Gangetic plains**, where host wasps thrive.

Feeding: Larvae feed on **pupae of host parasitoids**, while **adults** depend on **nectar and honeydew**.

Ecological Role: Helps **regulate populations of primary parasitoid wasps**, indirectly contributing to **pest control**.

Significance: This is the **seventh species of the genus *Nesolynx*** recorded in **India**, enriching the country's **insect biodiversity inventory**.

36. Supreme Court Directs Notification of Saranda Forest as a Wildlife Sanctuary



The **Supreme Court** has directed the **notification of 856 sq km Saranda Forest** in **Jharkhand's West Singhbhum district** – including **816 sq km of reserved forest** – as a **Wildlife Sanctuary** to safeguard its fragile ecosystem.

The **Saranda Forest**, meaning “**seven hundred hills**” in the **Ho language**, lies within the **Eastern Himalaya Biodiversity Hotspot** and is among **India's densest Sal (*Shorea robusta*) forests**.

The landscape is enriched with **bamboo, mahua, and terminalia** species and is **nourished by the Karo and Koina rivers**, forming a critical ecological zone in eastern India.

Home to **Asian elephants, four-horned antelopes, sloth bears, and civets**, Saranda also connects key **elephant corridors** linking **Keonjhar and Sundargarh (Odisha)** with **Hasdeo-Arand (Chhattisgarh)**.

The notification aims to protect the forest from **mining and habitat degradation**, reinforcing its role as a **vital biodiversity reservoir and elephant landscape** in the region.

37. Kashmir Opens Its First Chrysanthemum Garden — Bagh-e-Gul Dawood in Srinagar



Bagh-e-Gul Dawood, Kashmir's first chrysanthemum garden, has opened to tourists at the **Nehru Memorial Botanical Garden** in Srinagar, featuring **over 1 lakh plants of 60+ varieties**.

Situated along **Dal Lake**, the new **Chrysanthemum Garden** complements the famed **Tulip Garden**, promoting **year-round floral tourism** in Kashmir. It showcases **vibrant autumn blooms** and aims to boost **eco-tourism and horticultural diversity** in the region.

About Chrysanthemum:

Origin: Native to **East Asia and northeastern Europe**.

Nature: **Perennial flowering plants** blooming mainly in **autumn**.

Ideal Conditions: Thrive in **moderate temperatures**, with **short days and cool nights**.

Uses: Valued for **ornamental beauty** and **medicinal properties** — used to treat **fevers, hypertension, and inflammation**.

38. Forest Declaration Assessment 2025 Warns Global Deforestation Remains Alarming High



The **Forest Declaration Assessment 2025** reported **8.1 million hectares of global forest loss in 2024**, warning that nations are **63% off track** to meet the **2030 zero-deforestation goal**.

Despite pledges made at **COP26** to halt forest loss by 2030, **global deforestation** continues at an alarming pace, driven largely by **agricultural expansion** and **weak governance**.

Global Trends:

8.1 million ha of forests lost in 2024; **tropical forests** accounted for **6.73 million ha**.

Permanent agriculture responsible for **86% of deforestation** over the past decade.

Missed Targets:

Countries have **restored only 10.6 million ha**, about **5.4% of global reforestation potential**.

Overall progress is **63% behind** COP26 forest restoration goals.

Finance Imbalance:

Forest finance (2022–24): \$5.7 billion, just **1.4%** of the **\$409 billion** in annual **agricultural subsidies** driving deforestation.

Meeting 2030 goals requires **\$117–\$299 billion annually**.

Institutional Gaps:

Only **40% of financial institutions** with exposure to deforestation risks have **deforestation-related investment policies**.

39. SECL Creates S-400 Missile Launcher and Robotic Soldier from Scrap Under 'Swachhta Hi Seva'



South Eastern Coalfields Limited (SECL) built models of an S-400 missile launcher and a robotic soldier using 800 kg of industrial scrap under its 'Kabad Se Kalakriti' initiative, part of the Swachhta Hi Seva Campaign.

The SECL, a Miniratna PSU and subsidiary of Coal India Limited (CIL), transformed **metal scrap** – including old chassis, steel pipes, and iron parts – into artistic models depicting the **S-400 Triumf missile system** and a **robotic soldier**.

The project promotes the “**Waste to Wealth**” and “**Swachhta Hi Seva**” missions, showcasing the potential of **creative recycling** and **eco-friendly industrial reuse**.

The installations honour **Operation Sindoor** and symbolize **India's defence innovation** and **sustainable waste management** ethos.

The **S-400 Triumf**, known in India as “**Sudarshan Chakra**,” is a **Russian long-range surface-to-air missile system** capable of intercepting aerial threats at multiple ranges and altitudes.

40. Delhi Declaration Adopted at ARISE Cities Forum 2025 to Strengthen Urban Climate Leadership



On 9 October 2025, the **Delhi Declaration on Local Action for Global Climate Goals** was adopted at the **first ARISE Cities Forum**, uniting **Global South cities** to accelerate **urban climate action** ahead of COP30.

The **Delhi Declaration** emphasizes the **critical role of cities and local governments** in meeting **global climate goals**, calling for **multilevel cooperation**, **enhanced local NDCs**, and **direct access to climate finance**.

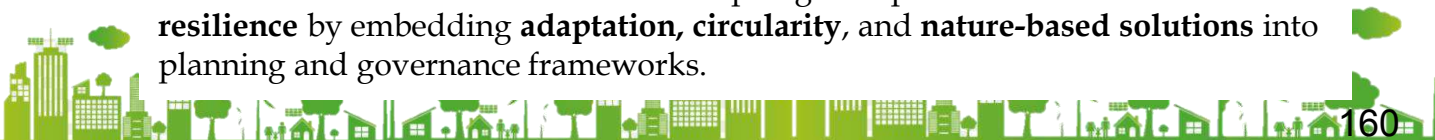
Unified Climate Commitment: Strengthens **city-level participation** in global climate governance and accelerates **urban decarbonization and adaptation** efforts.

Formal Handover to COP30: The Declaration will be presented to the **COP30 Presidency in Belém**, symbolizing **city leadership in global climate ambition**.

Global South Representation: Amplifies the **voice of Global South cities** within the **UNFCCC framework**, seeking recognition of cities as **partners in implementing the Paris Agreement**.

Climate Finance & NDCs: Calls for **measurable, well-funded local NDCs** and **systemic integration of urban priorities** in international climate policies.

Urban Resilience Commitments: Cities pledged to promote **inclusive urban resilience** by embedding **adaptation, circularity, and nature-based solutions** into planning and governance frameworks.



41. IUCN and IRENA Sign MoU to Align Renewable Energy Growth with Biodiversity Protection



On 9 October 2025, the IUCN and IRENA signed an MoU at the IUCN World Conservation Congress in Abu Dhabi, committing to promote renewable energy transitions that also safeguard ecosystems and communities.

The partnership between the **International Union for Conservation of Nature (IUCN)** and the **International Renewable Energy Agency (IRENA)** establishes a **collaborative framework** to ensure the **global shift from fossil fuels to renewables** aligns with **biodiversity conservation** and **sustainable development goals (SDGs)**.

Sustainable Transition: Aims to accelerate the **renewable energy transition** while minimizing **environmental and social impacts**.

Biodiversity Safeguards: Focus on creating **tools and methodologies** to assess and mitigate the **biodiversity footprint** of solar, wind, and hydro projects.

Conservation-Linked Projects: Promotes **eco-sensitive energy infrastructure** that supports **habitat restoration**, **local resilience**, and **green job creation**.

Global Impact: Aligns renewable growth with **UN SDGs**, ensuring energy progress complements **climate, conservation, and community welfare objectives**.

42. 8th ISA Assembly 2025 Opens in New Delhi to Accelerate Global Solar Transition



On 27 October 2025, the 8th Session of the International Solar Alliance (ISA) Assembly commenced in New Delhi, with participation from **124 countries** to advance **universal solar energy access**.

The **ISA Assembly 2025** serves as a global platform for member nations to **review progress**, **address challenges**, and **align strategies** toward achieving **affordable, sustainable, and equitable solar energy** for all.

As the **host nation and founding member**, **India** reaffirmed its leadership in **renewable energy and climate action**, having achieved **50% of its installed electricity capacity from non-fossil fuel sources**—**five years ahead** of its national target.

With rapid renewable expansion, **India** now ranks as the **world's third-largest solar power producer** and the **second-largest renewable energy market**, underscoring its pivotal role in the **global energy transition** and ISA's mission of promoting **solar cooperation among 124 nations**.

43. UN-Backed Net-Zero Banking Alliance (NZBA) Shuts Down Amid Faltering Global Climate Commitments



On 3 October 2025, the Net-Zero Banking Alliance (NZBA) – a UNEP-backed initiative promoting carbon-neutral banking investments – announced its immediate closure due to declining participation and weakening climate commitments in the US and Europe.

Formed in 2021 under the UN Environment Programme Finance Initiative (UNEP-FI), the NZBA aimed to align global banking with net-zero targets by 2050 by cutting the carbon footprint of loans and investments.

Membership Peak: Reached nearly 150 global banks, representing major institutions across continents.

Political Setback: Withdrawal of key members – JPMorgan Chase, Goldman Sachs, Bank of America, and others – from the US, Canada, and Japan following a pro-fossil fuel US administration weakened the alliance.

Closure Decision: Members voted to transition to a non-member, framework-based model, leading to NZBA's immediate shutdown.

Guidance Continuity: Banks may still reference NZBA's voluntary guidance for individual net-zero transition plans.

Significance: The dissolution of NZBA marks a major setback for global green finance, signaling how political shifts and voluntary frameworks can undermine collective climate finance action.

44. Five Maharashtra Beaches Earn Prestigious International Blue Flag Certification



Five beaches in Maharashtra – Shrivardhan, Nagaon (Raigad), Parnaka (Palghar), and Guhagar & Ladghar (Ratnagiri) – have received the international Blue Flag certification for meeting global eco-tourism and sustainability standards.

The Blue Flag is an international eco-label awarded by the Foundation for Environmental Education (FEE), Denmark, recognizing beaches that meet 33 stringent criteria on cleanliness, water quality, safety, and environmental education.

Launched in France (1985) and globalized in 2001, the certification is decided by an international jury representing UNEP, UNWTO, FEE, and IUCN.

India's Coastal Initiatives:

India adopted the Blue Flag Programme through its BEAMS (Beach Environment and Aesthetics Management Services) initiative in 2018, under the Integrated Coastal Zone Management (ICZM) project.

With Maharashtra's inclusion, India now hosts 15+ Blue Flag-certified beaches, including Shivrajpur (Gujarat), Golden Beach (Odisha), Kappad (Kerala), Rushikonda (Andhra Pradesh), and Radhanagar (Andaman & Nicobar Islands), among others.

45. IUCN World Conservation Congress 2025 Concludes in Abu Dhabi with Landmark Global Motions



On 16 October 2025, the IUCN World Conservation Congress in Abu Dhabi concluded after a week-long summit attended by 10,000+ delegates, adopting key motions on **wildlife trade, synthetic biology, and fossil fuel phaseout**.

The IUCN Congress 2025 set a renewed **global conservation agenda**, emphasizing **biodiversity protection, climate resilience, and sustainable environmental governance**.

Motion 108: Calls for **global guidelines to regulate capture and trade of wild animals in the pet industry**.

Aims to curb the **annual removal of millions of species from the wild**, ensuring ethical and sustainable wildlife management.

Motion 87: Establishes a **framework for responsible use of synthetic biology in conservation**.

Balances **technological innovation** with **ethical and scientific safeguards**, promoting biodiversity-friendly biotechnology practices.

Motion 42: Introduces **fossil fuel supply-side measures** for the first time in IUCN history.

Urges guidance on a **just and equitable phaseout of coal, oil, and gas**, supported by WWF and the Fossil Fuel Non-Proliferation Treaty Initiative.

46. WMO Greenhouse Gas Bulletin 2025 Reports Record CO₂, CH₄, and N₂O Levels — Climate Threshold Crossed



The WMO Greenhouse Gas Bulletin 2025 reported **record-high greenhouse gas concentrations in 2024**, with **global temperatures exceeding 1.5°C above pre-industrial levels** for the first time.

CO₂ Surge: Increased by 3.5 ppm to 423.9 ppm, the **largest annual rise since 1957**.

CO₂ levels now **152% of pre-industrial concentration**, driven by **fossil fuel emissions** and weakened **natural carbon sinks**.

The **2024 El Niño** and **wildfires in the Amazon and Southern Africa** reduced ocean and land CO₂ absorption.

Methane (CH₄): Reached 1,942 ppb, or **266% of pre-industrial levels**, contributing **~16% of total radiative forcing**.

Nitrous Oxide (N₂O): Rose to 338 ppb (**125% of pre-industrial**), mainly from **fertiliser use and biomass burning**.

Radiative Forcing: Combined warming impact from long-lived gases up **54% (1990–2024)**, with CO₂ accounting for **81%** of this increase.

Temperature Threshold: Global mean temperature in 2024 exceeded **1.5°C above pre-industrial levels**, marking an **urgent warning** for climate action.

47. NGT Orders Probe into Rising Ground-Level Ozone Pollution in Indian Cities



The National Green Tribunal (NGT) has taken **suo motu cognisance** of rising **ground-level ozone pollution** across major Indian cities and directed the CPCB to conduct an expert study to frame control measures.

The NGT linked the alarming ozone rise to **vehicular, industrial, and power-sector NOx emissions**, tasking the **Central Pollution Control Board (CPCB)** to identify mitigation strategies.

About Ozone Pollution: **Nature:** Formed when **nitrogen oxides (NOx)** and **volatile organic compounds (VOCs)** react under sunlight — a **secondary pollutant**, not directly emitted.

Forms: **Stratospheric Ozone ("Good"):** Shields Earth from UV radiation.

Tropospheric Ozone ("Bad"): Harmful to health and environment.

Scale of the Problem:

Ozone Exceedance: Highest in **Delhi-NCR** and **Mumbai**, frequently above **CPCB safe limits (2025)**.

Trend: Urban ozone levels up by **>30% since 2018** due to **vehicles and power plants**.

Health Impact: Linked to **~70,000 premature deaths annually (WHO, 2024)** and causes **asthma and respiratory ailments**.

Emission Sources: **Transport (~40%)** and **power generation (~30%)** are major **NOx contributors**.

Environmental Impact: Reduces **crop yields by 5–20%** and contributes to **climate warming**.

48. Supreme Court Allows Sale and Use of Green Firecrackers in Delhi-NCR



The **Supreme Court** eased its earlier **blanket ban on firecrackers**, permitting only **certified green firecrackers** in **Delhi-NCR** to curb the **illegal trade of traditional fireworks**.

They were introduced following the **2018 Supreme Court ruling** in *Arjun Gopal v. Union of India*, which prohibited conventional crackers and allowed only certified green variants.

Types of Green Firecrackers:

SWAS (Safe Water Releaser): Emits **water vapour** to reduce **dust and toxic gases** by **~30%**.

STAR (Safe Thermite Cracker): Made without **potassium nitrate or sulphur**, lowering emissions and **noise pollution**.

SAFAL (Safe Minimal Aluminium): Replaces aluminium with **magnesium-based compounds**, cutting **particulate emissions by ~35%**.

Benefits: Reduce **toxic emissions** and keep **noise levels below 125 dB**, ensuring safer celebrations.

Concerns: Despite being "green," they still release **ultra-fine pollutants**.

Counterfeit versions and **low public awareness** undermine their intended **environmental benefits and regulatory enforcement**.

49. Wildfire Smoke Could Kill 70,000 Americans Annually by 2050, Warn Scientists



A **Nature** (2025) study projects that **wildfire smoke exposure** could cause **70,000 deaths annually in the U.S. by 2050**, up from ~12,000 today, due to worsening **PM2.5 pollution** and **rising global temperatures**.

Researchers from **Stanford and Harvard** warn that unchecked **global warming** and **intensifying wildfires** could trigger a **public health crisis** driven by **toxic PM2.5 emissions** from smoke.

The planet has already **warmed by 1.3°C** since the Industrial Revolution, while the **frequency of extreme wildfires** has **doubled in the past two decades**.

Key Findings: Annual Smoke-Related Deaths: Projected to reach 70,000 by 2050; cumulative **2 million deaths** expected by then.

Regional Hotspots:

California: +4,500 deaths/year.

New York, Texas, Washington: 1,800–2,000 additional deaths each.

Eastern U.S.: ~50% of total deaths due to **dense population exposure**.

50. Government Opens Monument Conservation to Private Sector Under PPP Model



For the **first time**, the **Government of India** will allow **private entities** to participate in the **conservation of protected monuments**, ending the **Archaeological Survey of India's (ASI)** exclusive mandate.

The new **Public-Private Partnership (PPP)** framework enables **corporates, PSUs, and private organisations** to fund and execute monument conservation projects under **ASI oversight**, marking a major shift in India's **heritage management strategy**.

Implementation Framework:

Funding Route: Managed through the **National Culture Fund (NCF)**, which provides **100% tax exemption** for donations.

Execution Model:

Donors can **choose empanelled conservation architects** (approved by the **Ministry of Culture**) and hire **external implementing agencies**.

All projects must adhere to the **National Policy for Conservation of Ancient Monuments (2014)** and submit **Detailed Project Reports (DPRs)** for **ASI approval**.

Pilot Phase: Around **250 monuments** will be opened for donor participation.

NCF Background: Established in **1996**, it has mobilised **₹140 crore** through **corporate and PSU contributions** for heritage initiatives.

51. New Fossil Species 'Whiteia anniae' Discovered in China, Expands Coelacanth Lineage to Asia



Chinese palaeontologists have discovered **Whiteia anniae**, a new **coelacanth** fossil species from the **Early Triassic** period (~249 million years ago) – the first **Whiteia** fossil ever found in Asia.

The discovery of **Whiteia anniae** in **Early Triassic** marine strata provides key evidence of **post-extinction marine recovery** after the **Permian-Triassic mass extinction**, and expands the **geographical range** of the ancient **coelacanth** genus **Whiteia**.

About Coelacanths:

Ancient Lineage: Coelacanths are deep-sea, **lobe-finned** fishes once thought **extinct** since the **Cretaceous** (~66 Mya), until rediscovered in 1938 off **South Africa**.

Unique Traits:

Limb-like fins move alternately, resembling **early tetrapod locomotion**.

Intracranial joint in skull allows them to **open mouths wider** to swallow large prey.

Rostral organ detects faint electric signals for **nocturnal hunting**.

Habitat: Found in **deep volcanic caves** (90–700 m) near the **Comoros Islands** and **Indonesia**.

Behaviour: **Nocturnal ambush predators** feeding on fish and cephalopods; conserve energy through passive drifting.

52. AmazonFACE Project Studies Amazon Rainforest Response to Rising CO₂ Ahead of COP30



Ahead of **COP30** in **Belém (Brazil)**, the **AmazonFACE** project near **Manaus** is conducting large-scale experiments to assess how the **Amazon rainforest** adapts to **future CO₂-rich atmospheres**.

The **AmazonFACE (Free-Air CO₂ Enrichment)** project, backed by the **Brazilian government** and the **U.K.**, is the world's first tropical forest experiment simulating **mid-21st-century carbon conditions** to study climate resilience in the Amazon.

Project Details:

Objective: Examine how elevated CO₂ levels affect **photosynthesis**, **water vapour release**, and **carbon absorption** in tropical rainforests.

Methodology:

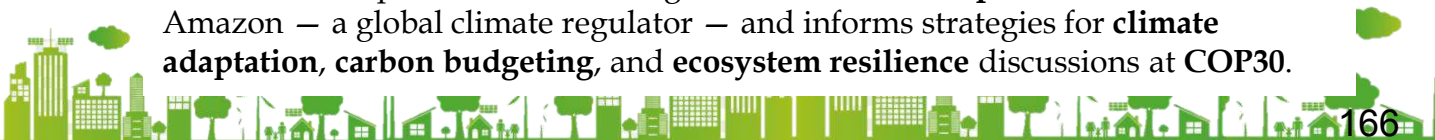
Six steel rings each expose **50–70 trees** to CO₂ concentrations expected by **2050–2060**.

Sensors record data on **gas exchange**, **temperature**, and **microclimate** every **10 minutes**.

Three control rings remain untreated to serve as **baselines** for comparison.

Significance:

AmazonFACE provides crucial insights into the **carbon uptake limits** of the Amazon – a global climate regulator – and informs strategies for **climate adaptation**, **carbon budgeting**, and **ecosystem resilience** discussions at **COP30**.



53. Carabid Beetles Identified as Bioindicators of Microplastic Pollution in Soils

 A new ecological study has revealed that **Carabid beetles** – commonly known as **ground beetles** – can serve as **reliable bioindicators** of **microplastic pollution** in soil ecosystems. Beetles from human-disturbed and tourist-heavy landscapes were found to contain more microplastics, indicating that soil contamination is intensifying even in non-coastal environments.

Carabid Beetles as Bioindicators

Reason for Selection	Explanation
Sensitivity	Quickly respond to pollutants, habitat change, and soil disturbance.
Widespread Presence	Found across diverse terrestrial ecosystems, enabling consistent comparison.
Microplastic Detection	Ingest microplastics through soil and prey, making them indicators of soil contamination intensity.
Human Correlation	Highest microplastic loads found in beetles from areas with heavy tourism and human waste footprint.

54. Global Forest Conservation Faces \$216 Billion Annual Funding Gap: State of Finance for Forests 2025 Report

 The *State of Finance for Forests (SFF) 2025* report reveals that global forest conservation and restoration efforts need an **additional \$216 billion annually** to meet climate, biodiversity, and land goals by **2030**.

Parameter	Details
Global Forest Finance Gap	Current annual investment (2023): \$84 billion → Required by 2030: \$300 billion → By 2050: \$498 billion
Annual Shortfall	~\$216 billion needed yearly by 2030 to meet international targets.
Public vs Private Finance	Over 90% of global forest finance comes from public sources; private investment <10%.
Main Public Contributions	Governments contributed 91% of total funding (~\$75 billion domestic, \$2.9 billion international).
Aid Composition	80% of international funds provided through concessional aid / ODA (Official Development Assistance).

55. New Gecko Species Discovered in Andhra Pradesh's Seshachalam Biosphere Reserve



The Zoological Survey of India (ZSI) has identified a new gecko species, *Hemiphyllodactylus venkatadri*, from the Seshachalam Biosphere Reserve, marking the second slender gecko species known from Andhra Pradesh.

Ecological Significance

Indicator Species: Reflects the **microhabitat integrity** of tropical dry deciduous forests.

Evolutionary Link: Part of an ancient **Asian gecko lineage** showing distinct adaptations to forest canopies.

Conservation Value: Enhances the biodiversity profile of the **Eastern Ghats**, which remain underexplored compared to the Western Ghats



OCTOBER 2025

SCI & TECH

1. Govt Tightens IT Rules on Deepfakes
2. AI for India 2030 Initiative Launched
3. Google's C2S AI Finds Cancer Drug Combo
4. RRI Creates World's First Quantum Random Generator
5. Google's Willow Chip Shows Quantum Advantage
6. Scientists Discover "Time Rondeau" Crystal Phase
7. Scientists Propose Lunar Observatory "LILA"
8. Astronomers Capture Two Orbiting Black Holes
9. Gamma-Ray Glow May Reveal Dark Matter
10. Chang'e-6 Finds Rare Lunar Meteorites
11. Agnikul to Build Reusable Indian Rockets
12. ISRO to Launch Heaviest Military Satellite
13. DRDO Developing 200 km Astra Mk 2 Missile
14. HAL, Russia Partner on SJ-100 Aircraft
15. Gujarat Firm Deploys U.S. Li-Fi Internet
16. TRAI Issues Digital Radio Simulcast Policy
17. PM Opens India Mobile Congress 2025
18. IIL Launches India's First DIVA Vaccine
19. Antibody 'MAM01' Gives Full Malaria Protection
20. Study: Rotavac Vaccine Cuts Severe Diarrhoea
21. FSSAI Bans Misuse of 'ORS' Label
22. ICAR Creates 'CRYODIL' to Boost Buffalo Fertility
23. MeitY Launches 'AgriEnlcs' AI Farming Program
24. Tamil Nadu Rising as Drone Innovation Hub
25. UIDAI Waives Aadhaar Update Fees for Kids
26. Google Opens AI Hub in Visakhapatnam
27. India-AI Impact Summit 2026 Announced
28. Supermoon Lights Up Night Sky
29. Xenobiology: Study of Artificial Lifeforms
30. State of Global Air 2025 Released
31. Siphon-Powered Thermal Desalination Tech Unveiled
32. Navi Mumbai International Airport Inaugurated
33. Veteran Space Scientist Eknath Chitnis Dies
34. Maitri II Antarctic Research Station Launched

1. Government Tightens IT Rules to Curb AI Deepfakes and Enhance Transparency in Online Content Takedowns



The **Ministry of Electronics and Information Technology (MeitY)** notified the **2025 Amendment to the IT Rules 2021**, aiming to prevent the misuse of **Artificial Intelligence** for deepfakes, misinformation, and election manipulation, while ensuring **accountable, legally justified content removal**.

Key Objectives

Provision	Description
Authorised Officers Only	Content-takedown orders may be issued only by officers ≥ Joint Secretary (Ministries) or DIG (Police).
Reasoned Orders	Each order must specify the violated law, legal basis, and precise URL/content identifier.
Monthly Review Mandate	Senior officials must review all orders monthly for procedural compliance & transparency.

Proposed Amendments on Synthetic Content (Deepfakes)

Provision	Requirement
Definition Clause	“Synthetic information” = content artificially or algorithmically created / modified to appear real.
Labelling Mandate	Intermediaries must label AI-generated / synthetic content clearly.
User Declaration	Uploaders must declare whether content is AI-generated or modified.
Verification Duty	Significant Social Media Intermediaries (> 5 million users) must use tools to verify declarations and detect deepfakes.
Safe Harbour Retention	Platforms retain Section 79 IT Act immunity if acting in good faith to remove synthetic content.

Significance

- Deepfake Deterrence: Prevents AI misuse in elections and public discourse.
- Accountability: Fixes responsibility on authorised officers only.
- Transparency: Mandates reasoned orders & periodic reviews.
- Digital Trust: Promotes authentic information ecosystem and responsible AI use



UPSC Relevance: **GS Paper II:** Governance, IT Rules, Accountability Mechanisms. **GS Paper III:** Cybersecurity, AI Ethics, Information Integrity.



HOT Question Discuss how the IT (Intermediary Guidelines and Digital Media Ethics Code) Amendment Rules 2025 seek to balance free speech, innovation, and AI-driven content accountability



2. AI for India 2030 Initiative: PSA Launches Three Key Publications



The **Principal Scientific Adviser (PSA)** to the Government of India released three major publications — *AI Playbook for Agriculture*, *AI Playbook for SMEs*, and *AI Sandbox Ecosystem White Paper* — under the **AI for India 2030** initiative to accelerate responsible and inclusive AI adoption.

Principal Scientific Adviser (PSA)

Aspect	Details
Role	Chief advisor to the Government on science, technology, and innovation policy.
Ex-officio Chairperson	Prime Minister’s Science, Technology and Innovation Advisory Council (PM-STIAC).
Established	1999, by the Cabinet Secretariat under PM Atal Bihari Vajpayee.
First PSA	Dr. A. P. J. Abdul Kalam (1999–2001).
Functions	1 Integrate R&D with national development goals. 2 Advise on S&T missions. 3 Facilitate innovation ecosystem and science diplomacy.

About AI for India 2030

Aspect	Details
Launch Year	2024
Collaborating Bodies	MeitY, Office of PSA, NASSCOM, and WEF Centre for the Fourth Industrial Revolution (C4IR) India.
Objective	To make India a global AI leader by 2030, ensuring ethical, inclusive, and scalable AI ecosystems.
Alignment	Complements the IndiaAI Mission, focusing on public-private collaboration.
Key Pillars	1 AI Playbooks — sectoral best practices. 2 AI Sandbox — regulatory testbed for AI models. 3 Capacity Building — skill development and innovation enablement.



UPSC Relevance: **GS Paper II:** E-Governance, Public Policy & Institutional Frameworks. **GS Paper III:** AI, Emerging Technologies, and Innovation Ecosystem.



HOT Question Discuss how the AI for India 2030 initiative aligns with India’s vision of inclusive and ethical technological governance



3. Google’s AI Model ‘C2S-Scale 27B’ Discovers Novel Drug Combo for Cancer Detection



Google’s **Cell2Sentence-Scale 27B (C2S-Scale)** AI model discovered a **new drug combination** effective in detecting early-stage cancer by identifying **silmitasertib** as a key immune-boosting compound.

Key Highlights

Aspect	Details
Model	C2S-Scale 27B (Cell2Sentence-Scale) – Google’s 27-billion-parameter foundation model for single-cell understanding
Scientific Aim	Detect early tumours by identifying drugs that stimulate immune response when interferon levels are low
Discovery	AI identified silmitasertib, a compound that boosts immune signalling in cancer-prone conditions
Validation	The model’s in silico (computer-based) predictions were confirmed in vitro (laboratory-based), demonstrating biological accuracy
Outcome	Proof-of-concept for AI-generated scientific hypotheses accelerating cancer research and drug discovery

Significance

- **AI-Led Science:** Marks a new phase where **AI autonomously hypothesises** biological mechanisms and drives real-world validation.
- **Medical Breakthrough:** Paves the way for **early cancer detection** and **immune-modulating therapies**.
- **Pharma Revolution:** Demonstrates potential for integrating AI models into **drug discovery pipelines**, reducing cost and time by over 60%.
- **Scientific Milestone:** Bridges computational biology with molecular medicine, offering precision tools for personalised healthcare.



UPSC Relevance: GS Paper III – Science & Technology / Biotechnology / Health Themes: Artificial Intelligence in Healthcare, Precision Medicine, Biomedical Innovation, Drug Discovery, Immune Response Mechanisms.

4. Raman Research Institute Achieves World’s First Quantum-Certified True Random Number Generation



Indian researchers at **Raman Research Institute (RRI), Bengaluru** achieved a **global first** by **certifying true random number generation (TRNG)** on a **commercial quantum computer**, under the **National Quantum Mission (NQM)** – marking a major leap toward *quantum-safe encryption and digital sovereignty*

About the Breakthrough

Aspect	Details
Institution	Raman Research Institute (RRI), Bengaluru
Mission Framework	National Quantum Mission (NQM)
Achievement	First-ever certification of true randomness generated using a commercial quantum computer.
Innovation Principle	Used Leggett–Garg inequality – exploiting time separation in a single quantum particle rather than entangled pairs, making it compact, scalable, and affordable.
Outcome	Achieved device-independent randomness – randomness arises from fundamental quantum behaviour, not from the machine itself.
Practical Test	Demonstrated successfully on a commercial quantum system, showing deployment readiness for real-world digital security applications.

Need for True Randomness in Digital Security

Issue	Explanation
Encryption Backbone	Random numbers form the core of encryption, digital signatures, and authentication systems. Even 1% predictability can compromise entire networks (NIST Report, 2024).
Current Limitation	Most systems rely on Pseudorandom Number Generators (PRNGs) – algorithm-based and ultimately predictable.
Economic Risk	Global cybercrime losses = \$10.5 trillion/year (2025) – demanding quantum-secure architectures (Cybersecurity Ventures).

About Quantum Random Number Generators (QRNGs)

QRNGs produce random numbers by harnessing the *inherent uncertainty of quantum physics* – e.g., photon polarisation or particle spin – ensuring **true unpredictability** and **tamper-proof randomness**.

Difference from PRNGs:

- PRNGs → Algorithm-driven (predictable pattern).
- QRNGs → Physics-driven (fundamental randomness).



HOT Question Explain how true random number generation through quantum systems can revolutionise cybersecurity and digital governance in India



5. Google's Willow Chip Achieves Verifiable Quantum Advantage Using "Quantum Echoes"



Google's Quantum AI team announced a breakthrough in quantum computing by achieving verifiable quantum advantage on its Willow processor through a new algorithm, *Quantum Echoes*. This marks the first time a quantum computer's superior performance has been independently verifiable.

- **Quantum Advantage:** Refers to the stage where a quantum computer outperforms classical computers for a meaningful scientific problem.
- **Qubits vs Bits:** Classical computers process bits (0 or 1), while quantum computers use qubits, which exist in a superposition of 0 and 1 – enabling exponential parallel computation.
- **Verifiable Quantum Advantage:** Goes beyond speed; ensures that results can be independently checked and validated, proving the quantum machine's correctness, not randomness.
- **Quantum Echoes Algorithm:**
 - Developed by Google's Quantum AI team (2025).
 - Based on the concept of Out-of-Time-Order Correlator (OTOC) – used to study chaos and information flow in quantum systems.
 - Works by running operations forward and backward in time, creating an "echo" that reveals how information spreads in the system.
- **Willow Chip:**
 - Google's advanced superconducting quantum processor, succeeding *Sycamore*.
 - Successfully demonstrated verifiable quantum advantage, outperforming the best classical simulations.

Prelims relevant keywords : *Quantum Advantage vs Quantum Supremacy* – difference in verifiability. *Willow Chip* – Google Quantum AI, 2025.

OTOC (Out-of-Time-Order Correlator) – measures quantum chaos.

National Quantum Mission (India, 2023) – ₹6,000 crore initiative under DST.



UPSC Relevance: GS Paper III: Science & Technology – Quantum Computing, Emerging Technologies, Cybersecurity.



HOT Question Discuss the significance of verifiable quantum advantage in establishing trust and practical applicability in quantum computing.



6. Scientists Discover “Time Rondeau Crystal” — A New Phase of Matter Where Order and Randomness Coexist



Researchers have identified a **new phase of matter**, the **Time Rondeau Crystal (TRC)**, in which atomic motion displays both **periodic order and random irregularity in time**, expanding the frontier of quantum physics.

Key Highlights

Aspect	Details
Discovery	Scientists created the Time Rondeau Crystal (TRC) using diamond-based quantum systems under precisely controlled laboratory conditions.
Nature of TRC	Atoms in the TRC oscillate in a repeating temporal pattern (like a rhythm) but with random fluctuations interspersed — a blend of order and chaos.
Comparison with Time Crystals	A time crystal exhibits perfectly periodic motion in time, while the TRC displays quasi-periodic (irregular yet rhythmic) motion.
Underlying Concept	Challenges the traditional belief that temporal order must be perfectly periodic, showing new possibilities in non-equilibrium physics.
Applications	Could help build more stable quantum systems, enhance error correction in quantum computers, and aid the study of complex temporal symmetries.

About Phases of Matter

- **Common Phases:** Solid, liquid, and gas — defined by particle arrangement and motion.
- **Advanced Phases:** Include plasma, **Bose–Einstein condensates**, **time crystals**, and now, the **time rondeau crystal**.
- **Time Crystals:** Discovered in 2016, these are systems that spontaneously oscillate in time without energy input — a form of “temporal symmetry breaking.”



UPSC Relevance: GS Paper III – Science & Technology / Quantum Physics / **Research & Innovation**, *Themes:* New Phases of Matter, Quantum Coherence, Time Crystals, Non-equilibrium Systems, Quantum Computing.



7. Scientists Propose “LILA” – A Lunar Observatory to Detect Mid-Frequency Gravitational Waves



The **Laser Interferometer Lunar Antenna (LILA)**, proposed by **Vanderbilt Lunar Labs (USA)**, aims to detect **gravitational waves** from the Moon’s surface, covering the **mid-frequency (0.1–10 Hz)** range beyond the reach of LIGO and LISA

Key Highlights

Aspect	Details
Full Form	Laser Interferometer Lunar Antenna (LILA)
Lead Agency	Vanderbilt Lunar Labs, USA, with global scientific collaboration
Objective	To detect gravitational waves in the mid-frequency band (0.1–10 Hz)
Scientific Gap	Fills the “decihertz gap” between LIGO (high-frequency) and LISA (low-frequency)
Technology	Uses laser interferometry to measure minute spacetime distortions via wave interference

Developmental Phases

- Pioneer Phase:**
Robotic deployment of a **3–5 km interferometer** to test mid-band sensitivity and new technologies.
- Horizon Phase:**
Construction of a **40 km triangular array** by astronauts, featuring **quantum sensors** and advanced **seismic isolation** systems.

Why the Moon Is Ideal for LILA

- Natural Vacuum:** No air or humidity – perfect for undistorted laser paths.
- Low Seismic Activity:** Minimal vibrations compared to Earth.
- No Newtonian Noise:** Absence of oceans or large mass shifts ensures cleaner signal detection.
(*Newtonian noise = gravitational disturbances from moving masses like air or water.*)



UPSC Relevance: GS Paper III – Science & Technology / Space Research / **Physics Themes:** Gravitational Waves, Space-based Astronomy, Lunar Exploration, Quantum Sensing, Global Scientific Collaboration.

8. Astronomers Capture First-Ever Image of Two Black Holes Orbiting Each Other in Quasar OJ287



Using the **RadioAstron Space Telescope**, scientists have directly imaged **two orbiting black holes** in the quasar **OJ287**, confirming a century-old prediction about binary black hole systems and advancing gravitational-wave research.

Key Highlights

Aspect	Details
Object Observed	Quasar OJ287, located about 5 billion light-years from Earth
Instruments Used	RadioAstron Space Telescope (space-ground interferometry) + global radio observatories
Breakthrough Observation	Detected two distinct radio emission points, corresponding to two orbiting black holes
Phenomenon Detected	The smaller black hole ejects a twisting, high-energy jet as it orbits its massive companion
Historic Evidence	OJ287's rhythmic flickering, observed since the 19th century, had suggested a binary system
Model Validation	Confirms orbital models proposed in 2018 & 2021 predicting periodic energy bursts every ~12 years

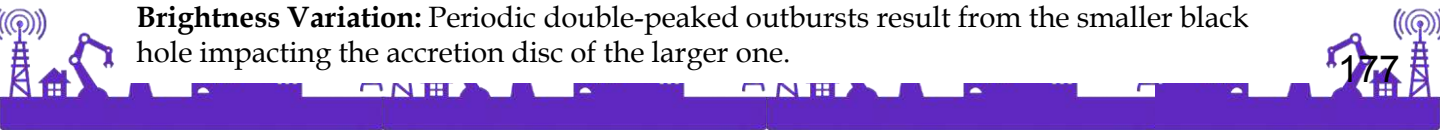
Scientific Significance

- **Proof of Binary Black Holes:** First **direct imaging evidence** of two supermassive black holes orbiting each other.
- **Gravitational Wave Physics:** Provides a **real-world testbed** for studying gravitational waves generated by inspiraling massive objects.
- **Astrophysical Dynamics:** Enhances understanding of **jet formation**, **accretion disc interaction**, and **relativistic effects** near event horizons.
- **Cosmic Chronometer:** Validates the hypothesis that periodic **quasar brightness variations** can be linked to **binary black hole motion**.
- **Technological Feat:** The combined Earth-space baseline of RadioAstron achieved **unprecedented angular resolution**, surpassing all Earth-based telescopes.

About Quasar OJ287

- **Type:** Blazar-type quasar (an active galactic nucleus powered by a supermassive black hole).
- **Distance:** ~5 billion light-years from Earth (constellation Cancer).
- **Primary Black Hole:** Estimated mass $\approx$ **18 billion solar masses**.
- **Secondary Black Hole:** $\approx$ **150 million solar masses**, orbiting every **12 years**.

Brightness Variation: Periodic double-peaked outbursts result from the smaller black hole impacting the accretion disc of the larger one.



9. Mysterious Gamma-Ray Glow Near Milky Way Center May Signal Dark Matter



Astronomers have detected a **diffuse gamma-ray glow** near the **Milky Way's core**, possibly caused by **dark matter annihilation**, a finding that upcoming observations by the **Cherenkov Telescope Array** may soon confirm.

Key Highlights

Aspect	Details
Phenomenon Detected	Diffuse gamma-ray glow near the Milky Way's center
Possible Cause	Annihilation of dark matter particles producing gamma radiation
Instrument Involved	Cherenkov Telescope Array Observatory (CTAO), Chile
Significance	Could offer the first indirect observational evidence of dark matter
Alternative Explanations	Emissions from millisecond pulsars or cosmic-ray interactions remain possible

About Dark Matter

- **Definition:** A hypothetical, invisible form of matter that neither emits nor absorbs light but exerts **gravitational influence** on visible matter.
- **Composition in Universe:** ~85% of all matter and ~27% of total cosmic mass-energy.
- **Detection Method:** Indirect — through gravitational effects on galaxies, cosmic microwave background, and light bending.
- **Supporting Evidence:**
 - **Galaxy Rotation Curves:** Stars move faster than visible mass predicts.
 - **Gravitational Lensing:** Light from distant galaxies bends around massive unseen structures.

Cosmic Structure Formation: Explains the large-scale distribution of galaxies.

About Cherenkov Telescope Array Observatory (CTAO)

- **Location:** Atacama Desert, Chile (Southern Array).
- **Purpose:** Detects **gamma-rays** via Cherenkov radiation from particle cascades in Earth's atmosphere.
- **Capability:** Covers energies from 20 GeV to 300 TeV with 100+ telescopes.
- **Scientific Goal:** Probe **dark matter**, **supernovae**, **black holes**, and **cosmic ray origins**



10. Chang’e-6 Mission Uncovers Rare Meteorite Fragments in Lunar Soil, Hinting at Shared Earth–Moon Origins



Chinese scientists analysing **Chang’e-6 lunar samples** discovered **rare CI chondrite meteorite fragments**, offering new clues on how **water and organic materials** reached the Earth–Moon system in the early Solar System.

Key Highlights

Aspect	Details
Mission Name	Chang’e-6 (China’s Lunar Exploration Programme)
Mission Objective	To collect and return soil samples from the Moon’s far side, specifically the South Pole–Aitken (SPA) Basin
Historic Achievement	First mission (2024) to return samples from the far side of the Moon
Instrument	Robotic sample-return spacecraft with autonomous drilling and ascent module
Location	South Pole–Aitken Basin — the largest, deepest, and oldest known impact basin on the Moon

About the Discovery

- **Nature of Finding:** Detection of **CI chondrite fragments** — meteorites rich in **carbon, water, and organic molecules**.
- **Preservation Factor:** The **absence of atmosphere and tectonic activity** on the Moon preserved these ancient extraterrestrial materials.
- **Scientific Implication:**
 - Suggests a **common bombardment history** for the early **Earth–Moon system**.
 - Indicates **water-bearing asteroids** contributed to the delivery of volatiles essential for life.
 - Provides **pristine chemical records** of the Solar System’s formation environment.

About CI Chondrites

- **Full Form:** Carbonaceous Ivuna-type chondrites.
- **Origin:** From the **outer, colder regions** of the early Solar System.
- **Composition:** Contain **amino acids, complex organics, and hydrated minerals**.
- **Scientific Importance:** Serve as **time capsules** preserving the original chemistry of the protoplanetary disk.

11. Agnikul Cosmos to Build Fully Reusable Rockets, Pioneering Sustainable Space Launches from India



Chennai-based **Agnikul Cosmos** announced plans to develop **fully reusable rockets**, aligning with the **IAC 2025 theme “Sustainable Space: Resilient Earth”**, marking a major leap for India’s private spacetechnology ecosystem.

Key Highlights

Aspect	Details
Company	Agnikul Cosmos (Chennai-based spacetechnology startup)
Project Goal	Develop fully reusable rockets with zero discarded parts
Global Event	Announced ahead of IAC 2025 (Theme: “Sustainable Space: Resilient Earth”)
Support System	Backed by IN-SPACe for regulatory and technical assistance
Past Milestone	Successfully launched Agnibaan SOrTeD (Suborbital Technology Demonstrator) in 2024
Next Step	Full orbital launch planned soon
Focus Areas	Cost efficiency, modular scalability, sustainability, and debris reduction

About Reusable Launch Vehicles (RLVs)

- **Definition:** RLVs are rockets **designed for multiple launches and landings**, unlike expendable systems discarded after one use.
- **Significance:** Reduces **launch costs**, mitigates **space debris**, and supports **sustainable orbital operations**.
- **India’s Efforts:**
 - **RLV-TD HEX-01 (2016)** – ISRO’s first atmospheric test of a winged spaceplane.
 - **RLV-LEX Series (2024)** and **PUSHPAK** – Demonstrated autonomous runway landings.
- **Global Benchmarks:**
 - **SpaceX Falcon 9 & Falcon Heavy (USA)** – First commercial reusable boosters.

Long March 8 (China) – Reusable medium-lift rocket program.



12. ISRO to Launch CMS-03, India’s Heaviest Military Communication Satellite aboard LVM3



ISRO will launch the **4,400 kg CMS-03 (GSAT-7R)** – India’s most advanced **multi-band military communication satellite** – using the **LVM3 rocket** from **Sriharikota**.

Key Highlights

Aspect	Details
Satellite Name	CMS-03 (GSAT-7R)
Weight	4,400 kg – India’s heaviest communication satellite
Orbit	Geosynchronous Transfer Orbit (GTO)
Launch Vehicle	LVM3 (“Bahubali”), India’s most powerful launcher
Launch Site	Satish Dhawan Space Centre, Sriharikota
Purpose	Secure, encrypted military communications and maritime connectivity
Range	Up to 2,000 km beyond India’s coastline
Transponders	UHF, S, C, and Ku bands for robust, multi-channel data links
Security Features	Advanced encryption and anti-jamming systems
Replaces	GSAT-7 (Rukmini) launched in 2013

About Launch Vehicle Mark-3 (LVM3)

- **Type:** Three-stage, fully indigenous medium-to-heavy lift vehicle.
- **Former Name:** GSLV Mk III.
- **Payload Capacity:**
 - 4,000 kg to GTO.
 - 8,000–10,000 kg to Low Earth Orbit (LEO).
- **Propulsion System:**
 - 1st Stage – Solid booster.
 - 2nd Stage – Liquid core stage.
 - 3rd Stage – Cryogenic upper stage (C25).
- **Major Missions:**
 - Chandrayaan-2 (2019)
 - Chandrayaan-3 (2023)
 - OneWeb satellite launches
 - Gaganyaan human spaceflight (upcoming)

13. DRDO Developing Astra Mark 2 Air-to-Air Missile with Extended 200 km Range



India’s **DRDO** is developing the **Astra Mark 2**, a **Beyond Visual Range (BVR) air-to-air missile** with a range exceeding **200 km**, enhancing the Indian Air Force’s long-range combat capabilities.

Key Highlights

Feature	Details
Missile Type	Beyond Visual Range (BVR) Air-to-Air Missile
Developer	Defence Research and Development Organisation (DRDO)
Range	Over 200 km (upgraded from Astra Mk-1’s 110 km)
Propulsion System	Dual-pulse solid rocket motor (vs. single pulse in Mk-1)
Speed	Over Mach 4 (four times the speed of sound)
Launch Platforms	Su-30MKI and LCA Tejas Mk1A (initially); adaptable for Rafale and AMCA in future
Guidance System	Active radar homing with electronic counter-countermeasures (ECCM)
Warhead	High-explosive fragmentation with proximity fuze
Strategic Significance	Enables first-shot capability and deters enemy aircraft before they can retaliate

Astra Missile Evolution



Version	Range	Key Upgrade	Status
Astra Mk-1	~110 km	Single-pulse motor	Inducted into IAF (2023)
Astra Mk-2	200+ km	Dual-pulse propulsion, longer range	Under development
Astra Mk-3	~350 km (planned)	Solid fuel ducted ramjet	In prototype phase



UPSC Relevance: GS Paper III – Science & Technology / Defence Technology / Indigenisation of Defence Production

Themes: DRDO Missile Systems, Air-to-Air Missiles, Astra Series, Beyond Visual Range Weapons, Defence Indigenisation, Atmanirbhar Bharat in

14. HAL and Russia’s UAC Partner to Produce SJ-100 Passenger Aircraft in India



HAL signed an MoU with Russia’s **PJSC United Aircraft Corporation (UAC)** to **manufacture the SJ-100 civil commuter aircraft** domestically – India’s first passenger aircraft production since the **AVRO HS748**.

Key Highlights

Feature	Details
Aircraft Model	SJ-100 (Superjet 100)
Type	Twin-engine, narrow-body regional commuter aircraft
Passenger Capacity	103 passengers
Flight Range	3,530 km
Operating Temperature Range	-55°C to +45°C (adaptable to Indian climate)
Manufacturer Collaboration	Hindustan Aeronautics Limited (HAL) and Russia’s PJSC UAC
Manufacturing Rights	HAL gains domestic rights for licensed production
Target Market	Regional & short-haul routes under the UDAN Scheme
Significance	First large-scale civil passenger aircraft production since AVRO HS748 (1961–1988)

Strategic Significance

- **Boost to UDAN Scheme:** Expands affordable connectivity to **Tier-2 & Tier-3 cities**.
- **Industrial Revival:** Marks India’s **return to civil aircraft manufacturing**, diversifying HAL’s portfolio beyond defence aviation.
- **Market Demand:** Over **200 aircraft** projected for India’s domestic market in the next decade, with **350 more** needed for regional tourism and Indian Ocean routes.
- **Economic Impact:** Strengthens **Make in India** and **Atmanirbhar Bharat** in aerospace manufacturing.
- **Export Potential:** Positions India as a **regional hub for mid-sized commuter aircraft** in South and Southeast Asia.



UPSC Relevance: **GS Paper III – Infrastructure / Industry / Science & Technology Themes:** Indian Aviation Sector, Civil Aircraft Manufacturing, HAL-UAC Collaboration, Regional Connectivity (UDAN), Make in India, Atmanirbhar Bharat in Aerospace.

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15. Gujarat Firm Deploys U.S.'s First Commercial Li-Fi Internet in New York



Nav Wireless Technologies, a Gujarat-based company, announced the successful deployment of the **United States' first commercial Li-Fi (Light Fidelity) internet system** in **New York City**, marking India's growing leadership in next-gen wireless communication technology.

- **What is Li-Fi?**

- Li-Fi (Light Fidelity) is a **wireless optical data transmission system** that uses **visible, infrared, or ultraviolet light** emitted from **LEDs** to deliver ultra-high-speed internet.
- Unlike Wi-Fi (which uses radio waves), Li-Fi transmits **digital information through light pulses** invisible to the human eye.

- **How it Works:**

- **Transmission:** LEDs flicker rapidly to encode digital data in light waves.
- **Reception:** A **photodiode sensor** detects light pulses and converts them into electrical signals.
- **Processing:** A decoder or modem reconstructs usable data (audio, text, or video).

- **Advantages:**

- ⚡ **Speed:** Capable of speeds **exceeding 100 Gbps** – far higher than traditional Wi-Fi.
- 🛡️ **Security:** Light signals **cannot pass through walls**, ensuring better data protection.
- 🌈 **Bandwidth:** The **visible-light spectrum is 10,000× wider** than the radio spectrum – reducing network congestion.
- 🏠 **Electromagnetic Safety:** Ideal for hospitals, aircraft, and factories – **no radio interference**.
- 💡 **Energy Efficiency:** Dual use of LEDs for lighting and communication reduces infrastructure costs.

- **Limitations:**

- 📶 **Line-of-Sight Dependency:** Any obstruction weakens or cuts off the signal.
- 🏠 **Limited Range:** Cannot penetrate walls; each room needs a dedicated transmitter.
- ☀️ **Ambient-Light Interference:** Bright sunlight or artificial light can disrupt signal transmission.



UPSC Relevance: **GS Paper III:** Science & Technology – IT, Communication & Emerging Tech. **Prelims Linkages:** *Li-Fi vs Wi-Fi* – Medium of transmission (light vs radio). *Nav Wireless Technologies* – Indian firm pioneering Li-Fi. **Applications:** Hospitals, aircraft, underwater communications



HOT Question Discuss how Li-Fi technology can complement India's digital infrastructure and address limitations of traditional Wi-Fi systems.



16. TRAI Releases Digital Radio Broadcast Policy to Enable Simulcast Transition for Private Broadcasters



The **Telecom Regulatory Authority of India (TRAI)** released its **Digital Radio Broadcast Policy 2025**, outlining a roadmap for the phased transition of private FM broadcasters to **digital and simulcast transmission** modes.

Key Highlights

Feature	Details
Digital Radio Commencement	New private broadcasters must start services in Simulcast mode (analogue + digital).
Migration for Existing Broadcasters	Existing FM broadcasters can voluntarily migrate to Simulcast mode for gradual digital adoption.
Authorisation Period	15 years, ensuring long-term operational and financial stability.
Reserve Price Proposal	Recommended for 4 A+ cities (Delhi, Mumbai, Kolkata, Chennai) and 9 A cities (Hyderabad, Bengaluru, Ahmedabad, Surat, Pune, Jaipur, Lucknow, Kanpur, Nagpur).
Infrastructure Sharing	Prasar Bharati to share land, towers, and transmission infrastructure at concessional rentals.
Frequency Planning	The government to develop and publish a transparent frequency plan for digital broadcasting in key cities.

Significance

- **Digital Modernisation:** Enables India’s FM industry to transition to **digital radio** for superior audio quality and efficient spectrum use.
- **Public-Private Synergy:** Utilises **Prasar Bharati’s infrastructure** to cut entry barriers for private broadcasters.
- **Economic Viability:** 15-year tenure and reserve price transparency encourage private investment.
- **Technological Upgrade:** Positions India to align with **global digital radio standards** like DAB+ and DRM+.
- **Consumer Benefit:** Improved reception, additional channels, and value-added data services (e.g., traffic, weather updates).



UPSC Relevance: GS Paper III – Infrastructure / Science & Technology / Government Policies Themes: Digital Radio Broadcasting, TRAI Recommendations, Public-Private Infrastructure Sharing, Digital India, Spectrum Management, Broadcasting Policy Reform.

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17. PM Modi Inaugurates 9th India Mobile Congress 2025 with Theme “Innovate to Transform”



Prime Minister Narendra Modi inaugurated the **9th edition of the India Mobile Congress (IMC 2025)** in **New Delhi**, showcasing India’s digital transformation and leadership in telecom innovation.

Key Highlights

Feature	Details
Organised by	Department of Telecommunications (DoT), Ministry of Communications, and COAI
Theme	“Innovate to Transform”
Participation	400+ companies, 7,000 delegates, 1.5 lakh visitors from 150+ countries
Focus Areas	5G, AI, Semiconductor Manufacturing, Cloud Infrastructure, Cybersecurity, and Future Tech
Key Goal	Promote digital transformation and inclusive growth through innovation

India’s Telecom Transformation (2014–2025)

Parameter	2014	2025	Progress
Broadband Users	60 million	944 million	+1,473% growth
5G Coverage	Limited 2G access	99.9% of districts	Nationwide rollout
Data Cost	₹287/GB	₹9.11/GB	98% reduction
Mobile Manufacturing	Baseline (2014)	28× increase	Export-led growth
Exports	Minimal	127× increase	\$28B+ exports
Indigenous Tech	Imports dominant	4G/5G stacks globally export-ready	Make in India success



UPSC Relevance: GS Paper III – Science & Technology / Infrastructure / Economy Themes: Telecom Sector Growth, Digital India, Make in India, IMC 2025, 5G & Future Tech, Inclusive Innovation.



18. IIL Launches India’s First gE-Deleted DIVA Marker Vaccine ‘Raksha-IBR’ for Cattle



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).

Key Highlights

Aspect	Details
Developer	Indian Immunologicals Ltd. (IIL), subsidiary of NDDB
Vaccine Name	Raksha-IBR
Type	gE-deleted DIVA marker vaccine
Virus Used	Attenuated strain of Bovine Herpes Virus-1 (BHV-1)
Function	Provides immunity against IBR and differentiates vaccinated vs. naturally infected animals
Unique Feature	Deletes glycoprotein E (gE) gene – a key virulence factor aiding immune evasion
Approach	DIVA strategy enables targeted culling and better disease management
Category	Live attenuated veterinary vaccine

Scientific Context

- ◆ **Glycoprotein E (gE):**
 - An envelope protein found in the *alphaherpesvirus* family (includes BHV-1).
 - Enhances viral virulence by helping the virus **evade immune detection**.
 - *Raksha-IBR* deletes this gene, allowing the creation of a **marker vaccine** for tracking infections.
- ◆ **DIVA (Differentiating Infected from Vaccinated Animals):**
 - A **veterinary immunization strategy** that distinguishes natural infection from vaccination.
 - The vaccine **lacks one antigen (negative marker)** – here, *gE* – so only infected animals test positive for it.
 - Prevents unnecessary culling of healthy, vaccinated animals.



UPSC Relevance: GS Paper III – Science & Technology / Biotechnology / Economy Themes: Veterinary Biotechnology, NDDB & IIL Innovations, Livestock Productivity, One Health, DIVA Strategy, Infectious Bovine Rhinotracheitis (IBR).



19. Monoclonal Antibody ‘MAM01’ Shows 100% Protection Against Malaria in Human Trials



The **University of Maryland School of Medicine** has developed a monoclonal antibody, **MAM01**, that demonstrated **complete protection against malaria infection** in a clinical trial — a major advance toward single-dose malaria prevention

About Monoclonal Antibody (mAb) Therapy

Aspect	Details
Definition	Laboratory-engineered proteins that mimic the immune system’s response to pathogens.
Advantages	Provides immediate immunity, precise targeting, and long-lasting protection with one injection.
Key Mechanism (MAM01)	Binds to a conserved region of Plasmodium falciparum’s circumsporozoite protein (CSP) — neutralising the parasite at its sporozoite stage before it invades liver cells.
Outcome	Prevents infection before the parasite reaches the bloodstream — a stage where malaria symptoms begin.

About Malaria

Parameter	Details
Causative Agent	Plasmodium parasites transmitted by Anopheles mosquitoes.
Major Species	P. falciparum and P. vivax (pose the greatest threat); others include P. malariae, P. ovale, and P. knowlesi.
Global Burden	~600,000 deaths annually, mostly in Sub-Saharan Africa (WHO, 2024).
India’s Burden	Among 11 high-burden nations; targets Zero Malaria by 2030 under NFME (2016–2030).
Existing Vaccines	RTS,S/ AS01 (Mosquirix) and R21/Matrix-M – require multiple doses.



UPSC Relevance: GS Paper III – Science & Technology / Health / Biotechnology Themes: Monoclonal Antibodies, Malaria Eradication, NFME 2016–2030, Plasmodium falciparum, MAM01 Innovation, Public Health Research.



20. Study Confirms Indigenous Rotavirus Vaccine ‘Rotavac’ Reduces Severe Diarrhoea Cases Nationwide



A national study on **India’s indigenous rotavirus vaccine, Rotavac**, has shown a **54% effectiveness** in reducing **severe rotavirus gastroenteritis** and hospitalisations among children under five.

Key Findings

Indicator	Pre-Vaccine Scenario	Post-Rotavac Introduction	Impact
Effectiveness	–	54% against severe rotavirus gastroenteritis	Significant protection
Hospital Admissions (Rotavirus-positive)	40% of all diarrhoeal cases	20% of cases	50% reduction
Child Mortality	High diarrhoeal deaths	Noticeable decline	Improved survival rates

About Rotavirus

- **Nature:** Double-stranded RNA virus causing acute gastroenteritis (diarrhoea, vomiting, dehydration).
- **Transmission:** *Fecal-oral route* via contaminated hands, surfaces, or water.
- **Global Burden:** Leading cause of severe childhood diarrhoea; India accounts for **~20% of global rotavirus deaths**.
- **Symptoms:** Watery diarrhoea, vomiting, fever, and dehydration; can be fatal without prompt treatment.

About Rotavac

Feature	Details
Type	Oral, live attenuated rotavirus vaccine
Launch Year	2012 (introduced in UIP in 2016)
Developer	Department of Biotechnology, Bharat Biotech, international collaborators
Dosage Schedule	3 doses – at 6, 10, and 14 weeks of age
Significance	India’s first indigenously developed rotavirus vaccine, symbol of Atmanirbhar Bharat in public health
Partnership	Supported by BMGF, PATH, and ICMR



UPSC Relevance: GS Paper II – Health / Governance / Science & Technology
Themes: Universal Immunisation Programme (UIP), Public Health Innovation, Vaccine Development in India, Child Mortality Reduction, Rotavirus Gastroenteritis.



21. FSSAI Bans Misuse of ‘ORS’ Label Without WHO Approval to Curb Misbranding



The **Food Safety and Standards Authority of India (FSSAI)** has barred companies from using the **‘Oral Rehydration Salts (ORS)’** tag on any product unless it conforms to the **World Health Organisation (WHO)** standard formulation.

Key Highlights

Aspect	Details
Regulatory Body	Food Safety and Standards Authority of India (FSSAI)
Legal Basis	Food Safety and Standards Act, 2006
Ministry	Ministry of Health and Family Welfare
Directive	Only products meeting WHO-approved ORS composition can use the term “ORS”
Violation Penalty	Misuse to be treated as misbranding and misleading advertisement, punishable under FSS Act
Purpose	Prevent consumer deception and reduce public health risks from improper ORS substitutes

About Oral Rehydration Salts (ORS)

- **Definition:** A scientifically balanced **electrolyte–glucose solution** used to treat **dehydration** caused by diarrhoea, vomiting, or heat stress.
- **WHO Standard Composition:**
 - Sodium chloride
 - Glucose
 - Potassium chloride
 - Trisodium citrate (in precise ratios)
- **Mechanism:** Works via **glucose–sodium co-transport** – glucose helps intestinal cells absorb sodium and water efficiently, restoring hydration.
- **Therapeutic Use:** Most effective for **childhood diarrhoea** and dehydration; should not be replaced by flavoured or sugary drinks.



UPSC Relevance: GS Paper II – Governance / Health / Regulatory Bodies
Themes: FSSAI Regulations, Misbranding Laws, Public Health Policy, WHO Standards, Food Safety and Standards Act, 2006, ORS Mechanism.



22. ICAR Scientists Develop ‘CRYODIL’: Egg-Yolk-Free Solution to Boost Buffalo Fertility



The National Institute of Animal Nutrition and Physiology (ICAR-NIANP), Bengaluru has developed CRYODIL, a ready-to-use, egg yolk-free cryoprotectant that enhances buffalo semen longevity and fertility.

About CRYODIL

Feature	Details
Developed by	ICAR – National Institute of Animal Nutrition and Physiology (NIANP), Bengaluru
Purpose	To improve semen longevity and fertility in buffaloes through cryopreservation
Composition	Uses purified whey proteins (free from milk sugars) as a natural substitute for egg yolk
Shelf Life	Up to 18 months at refrigeration temperature (vs. a few hours for traditional extenders)
Cost Efficiency	Cheaper and easier to produce than egg yolk-based alternatives
Function	Maintains sperm motility, viability, and fertilizing capacity post-thaw

Significance for India’s Dairy Sector

- **Enhanced Breeding Efficiency:** Increases artificial insemination success rates by improving semen quality.
- **Milk Yield Improvement:** Supports buffalo breeding programs; buffaloes contribute ~50% of India’s total milk output.
- **Biosecurity Advantage:** Eliminates risks of microbial contamination linked to egg yolk-based extenders.
- **Aatmanirbhar Innovation:** Reduces India’s dependency on imported cryoprotectants and promotes indigenous research.
- **Supports Missions:** Aligns with the **Rashtriya Gokul Mission** and **National Dairy Plan** aimed at genetic upgradation and productivity improvement.



UPSC Relevance: GS Paper III – Science & Technology / Agriculture / Animal Husbandry
Themes: Cryopreservation Technology, Dairy Innovation, Artificial Insemination, ICAR Research, Aatmanirbhar Bharat in Agriculture.



23. MeitY Launches 'AgriEnIcs' Programme to Deploy AI and Sensor-Based Agricultural Technologies

The **Ministry of Electronics and IT (MeitY)** launched and transferred **five indigenous agri-electronic technologies** under the **AgriEnIcs (Agriculture and Environment Electronics and Information Systems) Programme** to revolutionize smart farming and food quality management.

About AgriEnIcs Programme

Feature	Details
Full Form	Agriculture and Environment Electronics and Information Systems Programme (AgriEnIcs)
Launched by	Ministry of Electronics and Information Technology (MeitY)
Nodal Agency	Centre for Development of Advanced Computing (C-DAC), Kolkata
Associated Institutions	IIT Kharagpur, ICAR-NDRI (Kalyani), ICAR-IARI (New Delhi), Food Corporation of India (FCI)
Objective	Develop, deploy, and commercialise indigenous AI, sensor, and electronics-based agri-tech solutions
Theme	"Harnessing Sensors, Electronics, and AI for an Aatmanirbhar Bharat"

Key Indigenous Technologies Transferred

Technology	Purpose / Function
Go-P	Collar device monitors cattle body temperature to predict 'heat cycles' for timely artificial insemination.
MAST-D	Electrochemical biosensor for early detection of mastitis (udder infection) in milk.
Grain-Ex System	AI-based imaging system for real-time quality grading of pulses and grains.
CT-VIEU System	Conveyorised vision-based system for dry red chilli quality assessment.
RIGE-Sense System	Machine-vision + AI/ML system for rice quality and age estimation.
ODORPravah	Sensor-based odour and emission monitoring device for municipal solid waste, landfill, and industrial sites.



UPSC Relevance: GS Paper III – Science & Technology / Agriculture / Environment Themes: AgriTech, AI in Agriculture, Precision Farming, Indigenous Technology Development, MeitY Initiatives, Aatmanirbhar Bharat.

24. Tamil Nadu to Emerge as India’s Hub for the Low-Altitude Economy and Drone Innovation



Tamil Nadu is formulating a **Low-Altitude Economy (LAE) Roadmap** to lead India in **drone-based logistics, eVTOL mobility, and aerial infrastructure management**, aiming to become the **nation’s low-altitude economy hub**.

About Low Altitude Economy (LAE)

Aspect	Details
Definition	The Low Altitude Economy (LAE) refers to commercial and industrial activities conducted below 3,000 metres using drones and advanced air mobility technologies.
Core Ecosystem	Includes drones, eVTOLs, vertiports, charging networks, and Unmanned Traffic Management (UTM) systems for airspace coordination.
Market Potential	Global market projected at \$150–200 billion by 2030; India’s share estimated at \$5 billion, growing at ~30% annually.
Policy Enabler	Supported by India’s Drone Rules 2021, PLI Scheme for Drones, and National Airspace Management Roadmap.

Key Applications of the Low-Altitude Economy

Sector	Use Case / Impact
Logistics	UAVs for last-mile and inter-city cargo delivery, reducing costs and time.
Urban Mobility	eVTOL air taxis for fast, congestion-free urban transport.
Agriculture	Drones for precision spraying, soil mapping, and livestock monitoring.
Emergency Response	UAVs for firefighting, disaster relief, and medical supply drops.
Infrastructure Monitoring	Inspection of power lines, bridges, and pipelines using AI-integrated drones.



UPSC Relevance: GS Paper III – Economy / Science & Technology / Infrastructure Themes: Emerging Technologies, Drone Policy 2021, Air Mobility, Precision Agriculture, Urban Innovation, Aatmanirbhar Bharat in Aerospace.



25. UIDAI Waives Aadhaar Biometric Update Fees for Children Aged 7–15



The **UIDAI** has announced a **complete fee waiver for Aadhaar biometric updates** (MBU-1) for children aged **7–15 years**, benefiting nearly **six crore youngsters** across India.

About Aadhaar Biometric Updates

Age Group	Biometric Process	Purpose / Details
Below 5 years	Only demographic data and photograph captured (no fingerprints or iris)	Issued as provisional Aadhaar
At 5 years (MBU-1)	First biometric capture (fingerprints + iris scan)	Ensures unique and accurate identification as child grows
At 15 years (MBU-2)	Second mandatory biometric update	Refreshes Aadhaar data during adolescence to maintain authenticity
7–15 years (New Waiver)	No fee for biometric update for one year	Promotes inclusiveness and convenience for families

Key Highlights of the Policy

- **Full Waiver:** ₹125 charge for Aadhaar biometric updates fully waived for one year.
- **Coverage:** Applies to approximately **six crore children** aged 7–15 years.
- **Duration:** Valid for **one year** across all Aadhaar Seva Kendras and authorized centres.
- **Ease of Access:** Guardians can book appointments via the **myAadhaar portal** or local enrolment centres.
- **Outcome:** Ensures uninterrupted access to Aadhaar-linked benefits and services.



UPSC Relevance: GS Paper II – Governance / Welfare Schemes / E-Governance. *Themes:* Aadhaar Ecosystem, Digital Inclusion, UIDAI Reforms, Direct Benefit Transfer (DBT), Public Policy Simplification.



26. Google AI Hub in Visakhapatnam

Google Investment: To invest \$15 billion (2026–2030) in setting up its largest AI hub outside the US in Visakhapatnam, Andhra Pradesh.

Partnerships: Infrastructure to be built with the Adani Group and Airtel.

Key Features: Includes a renewable energy-powered AI data centre and a subsea cable landing station for global connectivity.

Significance: Marks Google's biggest investment in India, supporting the Viksit Bharat 2047 vision.

27. India-AI Impact Summit 2026

India-AI Impact Summit 2026: To be held in New Delhi by the Ministry of Electronics and IT as a global platform for ethical and inclusive AI.

Theme & Vision: Focus on People (inclusion), Planet (climate innovation), and Progress (equitable growth) – India as the first Global South host.

Key Initiatives:

AI Pitch Fest (UDAAN) – Showcases startups and innovators from Tier-2 & Tier-3 cities.

Global Impact Challenges – AI for All, AI by HER, YUVAi to drive social and women-led innovation.

Scale: Features an AI Symposium & Expo with 300+ exhibitors from 30+ countries.

28. Supermoon

Supermoon Definition: Occurs when a full or new moon aligns with its perigee, making it larger and brighter.

Appearance: Up to 14% larger and 30% brighter than a full moon at apogee.

Orbit Factor: Caused by the Moon's elliptical orbit, varying its distance from Earth – perigee (≈3,63,300 km) and apogee (≈4,05,500 km).

Effects: Leads to higher tides known as perigean spring tides; happens 3–4 times a year.



29. Xenobiology

The study and creation of **artificial life forms** using **non-Earth biological systems**.

Core Research: Focuses on **synthetic nucleic acids (XNAs)** that can **store genetic data** instead of DNA/RNA.

Containment Design: Develops **chemically distinct organisms** that **cannot exchange genes** with natural life.

Applications: Enables **safe bioengineering**, e.g., programming microbes to **produce medicines** under **controlled lab conditions**.

30. State of Global Air 2025 Report

Global Impact: Air pollution caused **7.9 million deaths in 2023**, with **86% (6.8 million)** linked to **noncommunicable diseases (NCDs)**.

Health & Economic Burden: Led to **161 million healthy years lost**, higher healthcare costs, and reduced productivity.

New Finding: **Air pollution-related dementia** caused **625,000 deaths** and **\$1 trillion** in annual economic losses.

Major Risk Factor: Now ranked with **tobacco, poor diet, inactivity, and alcohol** as top global NCD risks.

Main Pollutant: **PM2.5** caused **4.9 million deaths** and **124 million healthy years lost**; highest exposure in **South Asia, Africa, and the Middle East**.

31. Siphon-Powered Thermal Desalination

Breakthrough: IISc researchers developed a **siphon-powered thermal desalination system** in **September 2025** for faster, cheaper seawater conversion.

Core Mechanism: Uses a **fabric-metal siphon** to maintain flow and prevent **salt crystallization**.

Performance: **Produces 6+ L/m²/hour** of potable water — several times more efficient than conventional systems.

Features: **Recycles heat**, runs on **solar or waste energy**, handles **20% salinity**, and suits **off-grid or disaster-hit regions**.



32. Navi Mumbai International Airport Inaugurated

Inaugurated by **PM Modi**, a **₹19,650-crore greenfield project**.

Unique Features: India's **first airport with water taxi access** and an **Automated People Mover (APM)** between terminals.

Capacity: To handle **up to 90 million passengers annually** upon full completion by 2036.

Significance: Will **decongest Mumbai Airport**, improve **regional connectivity**, and boost **aviation capacity**.

33. Veteran Space Scientist Eknath Chitnis Passes Away

Dr. Eknath Vasant Chitnis (1925–2025): Renowned Indian space scientist and **Padma Bhushan awardee** passed away in **Pune** on **22nd October 2025**.

Legacy: One of the **architects of India's early space programme** and a founding figure behind **ISRO's creation**.

Contributions: Played a key role in **INCOSPAR**, shaping India's **technical and strategic space framework**.

Impact: His work laid the foundation for India's **pioneering space missions** and long-term scientific growth.

34. Maitri II Research Station

Maitri II Approved: India to establish a new **Antarctic research station** by **January 2029**, replacing the existing **Maitri** as the main base.

Overview: India's **fourth Antarctic station** after **Dakshin Gangotri**, **Maitri (1989)**, and **Bharati (2012)**; led by **NCPOR**, **Goa** under **MoES**.

Location & Design: To be built near **Schirmacher Oasis (Eastern Antarctica)**; **German firm** designing a **green, solar- and wind-powered facility** costing **₹2,000 crore**.

Significance: Boosts India's **Antarctic research**, strengthens its role under the **Antarctic Treaty System (1959)** and **Indian Antarctic Act (2022)**, and aids studies on **climate, glaciers, seismology, and biodiversity**.



GEOGRAPHY

DISASTER Management

1. India Crosses 500 GW Power Milestone
2. Delhi Begins Cloud-Seeding to Curb Pollution
3. Heavy Rains Trigger Landslides in Hills
4. NATPOLREX-X Held for Oil-Spill Response
5. Hanle Declared India's Dark Sky Reserve
6. Swiss Glaciers Suffer Massive Annual Ice Loss
7. Triple Whammy: Heat, Floods, and Droughts
8. Huajiang Bridge Spans Grand Canyon China
9. Taal Volcano Erupts in Philippines
10. World's Highest Motorable Pass Opened in Ladakh
11. Sri Lanka Acts as Ocean Barrier
12. Sawalkote Hydropower Project in Jammu Begins
13. Sunni Dam Hydroelectric Project Approved

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1. India Crosses 500 GW Power Capacity; Renewables Surpass 50% Share



India’s total installed power capacity crossed 500.89 GW in September 2025, with renewable sources contributing over 51%, achieving the COP26 target five years ahead of schedule.

India’s Installed Power Composition (Sept 2025)

Category	Capacity (GW)	Share (%)
Total Installed	500.89	100
Non-Fossil Fuels	256.09	51
Fossil Fuels	244.80	49

Breakdown of Renewables:

Solar Energy: 127.33 GW

Wind Energy: 53.12 GW

Others (Hydro, Biomass, Nuclear, etc.): 75.64 GW

Recent Growth

Added 28 GW of non-fossil and 5.1 GW of fossil capacity (Apr–Sept 2025).

Key Government Schemes Driving Growth

Scheme	Objective / Focus
PM Surya Ghar Muft Bijli Yojana (PMSGMBY)	Install rooftop solar panels on 1 crore households for free electricity.
PLI Scheme for Solar PV Modules (Tranche-II)	39,600 MW domestic solar module manufacturing.
PM-KUSUM Scheme	10,000 MW solar capacity on farmers’ land for decentralized power.
National Green Hydrogen Mission (NGHM)	Produce 5 MMT green hydrogen annually using ~125 GW renewable capacity.
Green Energy Corridors (GEC)	Strengthen grid networks to evacuate >200 GW of renewable power from Rajasthan, Gujarat & Ladakh.
Battery Energy Storage Systems (BESS)	40% capital funding for large-scale battery storage infrastructure.



UPSC Relevance: GS Paper III – Energy, Environment, Infrastructure, Climate Commitments. Themes: Renewable Energy Transition, COP26 Targets, Power Sector Reforms, Green Energy Corridors, DISCOM Reforms.

2. Delhi Conducts First Cloud-Seeding Trial to Tackle Winter Pollution



The **Delhi Government** carried out its **first-ever cloud-seeding flight trial** to artificially induce rainfall and reduce pollution levels during the city's peak smog season.

About Cloud Seeding

- **Definition:** A weather modification process that **artificially induces rainfall** by dispersing chemicals into clouds to enhance precipitation.
- **Working Principle:**
 - Sprays **condensation nuclei** (tiny particles that water vapour condenses upon).
 - Common agents: **Silver iodide, potassium iodide, dry ice (solid CO₂), and liquid propane.**
 - Works **only when pre-existing clouds** are present with sufficient moisture.
- **Weather Requirements:**
 - Tall, moist clouds and **low wind conditions** are ideal.
 - Unsuitable in dry, stable conditions like post-monsoon Delhi.
- **Pollution Reduction Role:**
 - Artificial rain temporarily lowers **PM2.5 and PM10 levels** by washing out airborne pollutants.

Why Delhi's Air Quality Worsens in Winter

- **Post-Monsoon Dynamics:** Dry north-westerly winds and **temperature inversion** trap pollutants near the surface.
- **Low Humidity:** Cool air holds less moisture, preventing cloud formation.

Limited Natural Rain: Winter showers depend on **Western Disturbances**, which are infrequent and weak.



UPSC Relevance: **GS Paper III:** Environment – Pollution Control Measures; Science & Tech in Environmental Management. **Prelims Linkages:** *Cloud Seeding Agents (Silver Iodide, Potassium Iodide, Dry Ice). Western Disturbances and Winter Inversions in North India.*



HOT Question “Evaluate the scientific and environmental feasibility of cloud seeding as a strategy to combat urban air pollution in India. What are its potential benefits and long-term drawbacks?”

3. Heavy Rainfall Triggers Deadly Landslides in Darjeeling, Kalimpong, and Bilaspur



Severe monsoon rains caused catastrophic **landslides in Darjeeling, Kalimpong (West Bengal), and Bilaspur (Himachal Pradesh)**, highlighting the growing **vulnerability of the Himalayan belt** to climate-induced disasters.

About Landslides

Aspect	Details
Definition	Rapid downward movement of rock, debris, or soil under gravity, often following heavy rainfall or seismic shocks.
Mechanism	Occurs when the gravitational pull exceeds the shear strength (binding force) of slope materials like soil and rock.
Natural Triggers	Intense rainfall, snowmelt, earthquakes, volcanic activity, rapid river erosion, or glacial retreat.
Human Causes	Deforestation, slope cutting for roads, quarrying, unplanned construction, and poor drainage modification.

Landslide Management Framework

Flagship Programme	National Landslide Risk Mitigation Project (NLRMP)
Nodal Agency	National Disaster Management Authority (NDMA) under Ministry of Home Affairs
Coverage	66 landslide-prone districts across India
Objectives	Hazard mapping, monitoring, early-warning systems, and community capacity building
Implementation Partners	Geological Survey of India (GSI), IMD, ISRO, and State Disaster Management Authorities

Landslide Distribution in India (GSI Data)

Parameter	Statistics
Total Vulnerable Area	12.6% of India’s non-snow land (~0.42 million sq. km)
Major Regions Affected	NW Himalayas (66.5%), NE Himalayas (18.8%), Western Ghats (14.7%)
Top States	Mizoram (12,385 cases), Uttarakhand (11,219), Jammu & Kashmir (7,280)
Most Affected Districts	Rudraprayag & Tehri Garhwal (Uttarakhand) – along Alaknanda valley & Char Dham route



UPSC Relevance: GS Paper I – Geography (Natural Hazards) | GS Paper III – Disaster Management & Environment

Themes: Landslide Vulnerability, Climate Impact on Himalayas, NLRMP, NDMA, GSI Data Mapping.

4. NATPOLREX-X Conducted to Strengthen Oil Spill Response

Event: The Indian Coast Guard (ICG) conducted the 10th NATPOLREX-X and the 27th NOSDCP Meeting off Chennai on 5-6 October 2025 to test India's marine pollution response readiness.

Participation: Included 40 foreign observers (32 countries) and 105+ national delegates from ministries, coastal states, ports, and maritime agencies.

New Initiative: Featured the first-ever shoreline clean-up drill at Marina Beach, simulating a large-scale oil spill.

Assets Deployed: Involved Pollution Control Vessels, OPVs, FPVs, and Chetak & Dornier aircraft for pollution surveillance and containment.

5. Hanle Dark Sky Reserve

Hanle Dark Sky Reserve: India's first dark sky area in Hanle, Ladakh, protects the night sky from light pollution and promotes astronomy and astro-tourism.

Quality: Rated Bortle-1, indicating exceptional sky clarity with almost no light pollution.

Location & Partnership: Lies within the Changthang Wildlife Sanctuary; established via MoU between IIA, Ladakh UT, and Ladakh Hill Development Council (Leh).

Scientific Hub: Home to the Indian Astronomical Observatory with the Himalayan Chandra Telescope, GROWTH India Telescope, and Cherenkov arrays (with TIFR & BARC).

Preservation Efforts: Residents provided with lamp shades, blackout curtains, and warm bulbs to maintain minimal artificial lighting.

6. Swiss Glaciers Record Fourth-Largest Ice Loss in 12 Months

- **Massive Glacier Loss:** Swiss glaciers lost 3% of their total ice volume (Oct 2024–Sept 2025) – the fourth-largest loss on record, per GLAMOS.
- **Primary Causes:** Low winter snowfall and extreme summer heat waves (especially in June) accelerated melting.
- **Decadal Trend:** Since 2015, Switzerland has lost 25% of its glacier volume, marking its worst decade for ice loss.
- **Rhone Glacier:** Thinned by ~1.5 m in 2025, continuing rapid retreat.
- **Alarming Outlook:** Around 100 glaciers vanished (2016–2022); most may disappear by century's end if warming persists.

7. Triple Whammy

Early Arrival: The Northeast Monsoon (NEM) 2025 arrived four days early over Tamil Nadu.

Triple Whammy Impact:

- **Early NEM onset** brought intense short-duration rains from Bay of Bengal systems.
- **Overlap** with the retreating Southwest Monsoon caused simultaneous rainfall.
- **Reservoir overflow**, including Mullaperiyar, led to flooding in downstream districts.

8. Huajiang Grand Canyon Bridge

Huajiang Grand Canyon Bridge (China): Opened in Guizhou province, now the world's highest bridge at 625 m above the Beipan River.

Engineering Feat: Features a 1,420 m main span, the largest ever built in mountainous terrain.

Impact: Cuts cross-canyon travel time by two hours, improving regional connectivity.

Comparison: France's Millau Viaduct remains the tallest by structural height at 343 m

9. Taal Volcano

Recent Activity: The Taal Volcano in the Philippines has erupted three times recently.

Location: Situated in Batangas province, about 50 km south of Manila.

Type: A complex (compound) volcano with multiple vents, cones, and lava domes on Volcano Island within Taal Lake, itself inside an ancient caldera.

History: The caldera formed from eruptions 140,000–5,380 years ago; 38 eruptions recorded to date — making it the second-most-active volcano in the Philippines.

Example Comparison: Similar in structure to Mount Vesuvius in Italy.

10. World's Highest Motorable Pass

Historic Achievement: The Border Roads Organisation (BRO) opened the Mig La Pass in Ladakh, now the world's highest motorable pass at 19,400 ft, surpassing Umling La.

- **Project Details:** Part of the Likaru–Mig La–Fukche road under BRO's Project Himank.
- **Strategic Significance:** Enhances connectivity and defence access in the eastern Ladakh sector, strengthening India's presence near the Line of Actual Control (LAC).
- **About BRO:** Established in 1960, the Border Roads Organisation (BRO) operates under the Ministry of Defence.
- **Purpose:** Builds and maintains strategic road infrastructure in border areas and neighbouring countries for defence and socio-economic development.
- **Governance:** Functions under the Border Roads Development Board (BRDB), chaired by the Defence Minister.
- **Major Projects:**
 - Project Himank & Vijayak – Ladakh
 - Project Sampark – Jammu & Kashmir
 - Project Dantak – Bhutan
 - Project Arunank – Arunachal Pradesh
- **Global Record:** The BRO has constructed 11 of the world's 14 highest motorable passes.

11. Sri Lanka's Landmass as a Natural Barrier to Ocean Swells

Study Insight: INCOIS research shows the **Sri Lankan Land Mass (SLLM)** acts as a **natural barrier**, blocking **Southern Ocean swell waves** from reaching **Tamil Nadu and Andhra Pradesh** coasts.

Wave Shield Effect: SLLM blocks about **96% of long-period swells** (observed off Kollam) before they reach **Pondicherry and northward**.

Model Findings: WAVEWATCH III simulations reveal that without Sri Lanka, **TN-AP coasts** would face **destructive wave impacts**.

Geographical Contrast: Kerala's coast suffers from **frequent erosion**, while **TN-AP coasts** remain protected due to **Sri Lanka's location**.

About WAVEWATCH III: A **third-generation ocean wave model**, evolving into a **comprehensive wave-modelling framework**.

12. Sawalkote Hydropower Project

- **Environmental Clearance:** The **Sawalkote Hydroelectric Project** on the **Chenab River, J&K**, received approval from the **MoEFCC**.
- **Implementing Agency:** To be developed by **NHPC Ltd.**
- **Significance:** First major **Indus River system** hydropower clearance since India **suspended the Indus Waters Treaty (IWT)** in April 2025.
- **Design:** A **run-of-the-river project** with a **192.5 m RCC gravity dam**, avoiding large-scale water storage.
- **Capacity:** **1,856 MW**, generating about **8,000 million units annually**, strengthening India's **energy security**.

13. Sunni Dam Hydroelectric Project

NGT Action: The **National Green Tribunal** took **suo motu cognisance** of complaints over **illegal dumping** into the **Sutlej River** during construction of the **Sunni Dam Hydroelectric Project**.

About the Project: A **run-of-the-river** hydropower project on the **Sutlej River** in **Shimla district, Himachal Pradesh**.

Implementing Agency: Developed by **Satluj Jal Vidyut Nigam (SJVN)** — a **GoI-GoHP joint venture**.

Context: Part of the **Luhri Hydroelectric Project**, executed in **three phases** along the **Sutlej**.

Run-of-the-River Concept: Utilises **natural river flow** to drive turbines with **minimal storage**, requiring a **steady upstream flow** and allowing **excess discharge to pass downstream**.

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HEALTH & Nutrition

1. Oral Bacteria Linked to Fatal Heart Attacks
2. WHO Alerts on Contaminated Cough Syrups
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4. India Develops First Indigenous Antibiotic 'Nafithromycin'
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15. SC Orders Nodal Officers for Missing Children
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18. Fiji Officially Eliminates Trachoma Disease
19. Advances in Diabetic Wound Healing Reported
20. New Insights into Crohn's Disease
21. SC Directs NHRC to Monitor Mental Health
22. India Wins ISSA Social Security Award
23. World Para Athletics Championships 2025 Announced

1. Common Oral Bacteria Linked to Fatal Heart Attacks: Finnish Study Finds New Mechanism



A Finnish study revealed that **viridans streptococci**, common oral bacteria, can **hide in coronary arteries and trigger fatal heart attacks** by activating immune inflammation through **Toll-Like Receptor-2 (TLR2)**.

About Viridans Streptococci

Feature	Details
Type	Gram-positive bacteria naturally present in the mouth, digestive, respiratory, and reproductive tracts.
Normal Role	Usually harmless but can cause dental cavities, gum infections, and infective endocarditis if they enter the bloodstream.
Survival Strategy	Form biofilms – sticky bacterial layers that help them attach to tissues and evade immune detection and antibiotics.
Prevention	Maintain oral hygiene, treat gum infections early, and ensure sterile practices during dental procedures.

Mechanism Linking Oral Bacteria to Heart Attacks

Stage	Process Description
1. Entry into Bloodstream	Bacteria enter blood via gum injuries or dental procedures.
2. Arterial Infiltration	They embed in fatty deposits of coronary arteries using biofilms.
3. Plaque Rupture	When these deposits rupture, bacterial fragments are released.
4. Immune Activation	These fragments trigger Toll-Like Receptor-2 (TLR2) on immune cells.
5. Resulting Damage	Causes acute inflammation, clot formation, and blocked blood flow, leading to heart attack.

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UPSC Relevance: GS Paper III – Science & Technology / Health and Diseases Themes: Microbiology, Non-Communicable Diseases (NCDs), Oral-Systemic Health Link, Biomedical Research, Preventive Healthcare.



2. WHO Issues Alert After Child Deaths in Madhya Pradesh Linked to Contaminated Cough Syrups



The **World Health Organisation (WHO)** issued a **medical alert** after **three India-made cough syrups** were found contaminated with **diethylene glycol (DEG)**, causing child deaths in **Madhya Pradesh**.

Key Findings

Aspect	Details
Trigger	Deaths of children in Madhya Pradesh after consuming contaminated cough syrups.
Confirmation	CDSCO report confirmed presence of diethylene glycol (DEG) in 3 syrups.
Pattern	Follows similar WHO alerts on Indian syrups linked to deaths in Gambia and other LMICs (2022–25).
Global Coordination	WHO and Indian Pharmacopoeia Commission (IPC) are strengthening DEG/EG detection under the South-East Asia Regulatory Network.

About Diethylene Glycol (DEG) Contamination

Parameter	Details
Source	Occurs when polyethylene glycol, used as a solvent in syrups, is contaminated with DEG.
Types of PEG	Pharmaceutical-grade PEG is safe, whereas industrial-grade PEG, used in antifreeze and lubricants, contains toxic DEG.
Health Impact	DEG ingestion causes acute kidney failure, neurological damage, and death, particularly in children.
Manufacturing Lapse	Caused by failure to distinguish between PEG grades during production or inadequate quality testing.

About CDSCO

Feature	Details
Full Name	Central Drugs Standard Control Organisation
Mandate	National regulatory authority for pharmaceuticals, medical devices, and cosmetics in India.
Legal Basis	Established under the Drugs and Cosmetics Act, 1940. Headed by Drugs Controller General of India (DCGI)



UPSC Relevance: GS Paper II – Governance / Health / International Organisations. Themes: Drug Safety Regulation, WHO Standards, Pharmaceutical Exports, Public Health, India’s Drug Control Framework.

3. CDSCO Launches Digital Monitoring System to Track High-Risk Drug Solvents After Cough Syrup Deaths



The CDSCO launched a **Digital Monitoring System** on the **ONDLS portal** to ensure real-time tracking of **high-risk pharmaceutical solvents** following child deaths from **diethylene glycol (DEG)-contaminated syrups** in **Madhya Pradesh and Rajasthan**.

About the Digital Monitoring System

Feature	Details
Platform	Integrated into the Online National Drug Licensing System (ONDLS) portal.
Purpose	To digitally track and monitor the manufacturing and distribution of critical pharmaceutical solvents used in formulations.
Scope	Covers ingredients such as glycerin, propylene glycol, sorbitol, polyethylene glycol, hydrogenated starch hydrolysate, maltitol, and ethyl alcohol.
Functionality	Enables real-time monitoring of solvent batches from source to production, preventing entry of industrial-grade contaminants like DEG or EG.
Regulatory Impact	Facilitates data-driven inspections and traceability to ensure compliance with pharmaceutical-grade standards.

Context & Background

- **Trigger:** Multiple deaths in **Madhya Pradesh and Rajasthan** due to **DEG-contaminated cough syrups**.
- **Systemic Issue:** Inadequate distinction between **pharmaceutical-grade and industrial-grade** solvents during manufacturing.
- **WHO Warning:** The fifth international alert since 2022 on Indian-made syrups underscored the need for stricter regulation.

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UPSC Relevance: GS Paper II – Governance / Health Regulation / E-Governance
Themes: Drug Quality Control, Digital Regulation, Public Health Safety, Pharmaceutical Standards.



4. India Develops First Indigenous Antibiotic ‘Nafithromycin’; Marks Breakthrough in Biotech Self-Reliance



India launched **Nafithromycin**, its **first fully indigenous antibiotic**, developed jointly by the **Department of Biotechnology and Wockhardt Ltd**, marking a major leap in **domestic pharma innovation and self-reliance**.

Key Highlights

Aspect	Details
Indigenous Innovation	Nafithromycin is the first antibiotic discovered and developed entirely in India, demonstrating indigenous R&D strength.
Collaborative Effort	Jointly developed by the Department of Biotechnology (DBT) and Wockhardt Ltd, showcasing effective industry-academia collaboration.
Significance	Strengthens India’s antibiotic research ecosystem, reduces import dependence, and aligns with the Aatmanirbhar Bharat vision.

Additional Announcements

Breakthrough	Details
Gene Therapy Trial (Hemophilia)	Conducted at Christian Medical College (CMC), Vellore) – achieved 60–70% correction with zero bleeding episodes, marking India’s first indigenous gene therapy trial success.
Genomic Advances	India has sequenced over 10,000 human genomes, with a target of 1 million, boosting genomic medicine and precision healthcare.

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UPSC Relevance: GS Paper III – Science & Technology / Biotechnology / Health Themes: Indigenous R&D, Antibiotic Innovation, Gene Therapy in India, Genomics and Precision Medicine.



5. Study Finds Certain Antibiotic Combinations Can Worsen Antimicrobial Resistance



A recent **global study** has revealed that combining certain antibiotics — particularly **bacteriostatic and bactericidal types** — can reduce overall treatment efficacy and **accelerate antimicrobial resistance (AMR)**, challenging conventional clinical practices.

- **Study Insight:**

- The study found that when **bacteriostatic antibiotics** (like *tetracycline*) — which halt bacterial growth — are used alongside **bactericidal antibiotics** (like *ciprofloxacin*) — which kill actively dividing bacteria — the static drug prevents the other from working effectively.
- This “**antagonistic effect**” slows bacterial metabolism, allowing more bacteria to survive and increasing the risk of resistance development.

- **Key Mechanisms:**

Type	Function	Example
Bacteriostatic	Stops bacterial replication	Tetracycline
Bactericidal	Kills growing bacteria	Ciprofloxacin

- When combined, **bacteriostatic drugs block bacterial division**, preventing the bactericidal drug from acting efficiently.
- **Resistance Implications:**
 - Inappropriate antibiotic combinations promote “**superbugs**” — pathogens resistant to multiple drugs.
 - This worsens hospital-acquired infections and limits available treatment options.
- **WHO Global Antibiotic Resistance Surveillance Report (2025):**
 - **1 in 6** bacterial infections globally (2023) were resistant to antibiotics.
 - Between **2018–2023**, resistance rose in over **40% of pathogen–drug pairs**, increasing annually by **5–15%**.
 - **Hotspots:** South-East Asia and Eastern Mediterranean regions — *1 in 3 infections resistant*.
 - **Major Resistant Pathogens:**
E. coli, *K. pneumoniae*, *Acinetobacter spp.*, *Salmonella spp.*, *Shigella spp.*, *S. aureus*, *S. pneumoniae*, *N. gonorrhoeae*.
 - **Diagnostics Gap:** Nearly half (48%) of WHO member states didn’t report data to GLASS.
- **What is AMR?**
 - **Antimicrobial Resistance (AMR)** occurs when microorganisms (bacteria, viruses, fungi, parasites) evolve to resist drugs once effective against them.
 - Example: **MDR-TB** — resistant to *isoniazid* and *rifampicin*, the two key TB drugs.



UPSC Relevance: **GS Paper II:** Health – Issues Relating to Development and Management of Health Sector. **GS Paper III:** Science & Technology – Biotechnology and Human Health.



6. WHO Warns Teens Nine Times More Likely to Vape Than Adults

The World Health Organization’s (WHO) first global estimate on e-cigarette usage reveals alarming trends – 15 million teenagers (13–15 years) use e-cigarettes worldwide, making youth nine times more likely to vape than adults.

- **About E-Cigarettes:**
 - E-cigarettes are **battery-powered devices** that heat a liquid (usually containing **nicotine**, propylene glycol, and flavouring chemicals) into an inhalable **aerosol or vapour**.
 - Also known as **vape pens**, **ENDS** (Electronic Nicotine Delivery Systems), and **ENNDs** (Electronic Non-Nicotine Delivery Systems).
 - They **do not contain tobacco** but can still be addictive and harmful due to nicotine and other chemicals.
- **WHO’s Key Findings (2025 Report):**
 - **15 million teens (13–15 yrs)** vape globally; total vapers exceed **100 million**, including 86 million adults.
 - **Youth prevalence:** Teens are **9× more likely** to vape than adults.
 - **Regional trends:**
 - Southeast Asia – Male tobacco use dropped from 70% (2000) → 37% (2024).
 - Europe – Now the **highest tobacco prevalence** (24.1%).
 - Global tobacco users fell from **1.38 billion (2000)** → **1.2 billion (2024)**.
- **India’s Legal Framework:**
 - **Prohibition of Electronic Cigarettes Act, 2019** bans:
 - Manufacture, import, export, transport, sale, storage, and advertisement of e-cigarettes.
 - **Penalties:**

Offence	Punishment
Manufacture/Sale/Advertisement	1 year jail or ₹1 lakh fine (first offence)
Repeat offence	3 years jail or ₹5 lakh fine
Storage	6 months jail or ₹50,000 fine



UPSC Relevance: **GS Paper II:** Health Policy – Regulation of Harmful Substances, Public Health Legislation. **Prelims Linkages:** *Prohibition of Electronic Cigarette Act, 2019. WHO Tobacco Control Framework (FCTC). ENDS vs ENNDs – definition difference*



HOT Question: “Evaluate the effectiveness of India’s Prohibition of Electronic Cigarettes Act, 2019, in curbing youth vaping and emerging nicotine delivery technologies.

7. Nightshade Family: Balancing Toxicity and Edibility in Common Crops



The **nightshade family (Solanaceae)** has drawn renewed scientific attention for its **dual nature** – producing both widely eaten vegetables like tomato and potato, and **toxic species** such as deadly nightshade (*belladonna*).

- **About the Nightshade Family (Solanaceae):**
 - A **diverse family of flowering plants** including food crops, ornamentals, and poisonous herbs.
 - **Common Edible Members:** Tomato, potato, brinjal (eggplant), and chilli.
 - **Toxic Varieties:** Deadly nightshade (*Atropa belladonna*), tobacco (*Nicotiana tabacum*).

- **Characteristic Features:**

Feature	Description
Flowers	Typically five-petalled, star-shaped
Leaves	Alternate arrangement, often hairy
Fruit Type	Berry (tomato) or capsule (datura)

- **Toxicity Factor:**
 - Contains **alkaloids** – nitrogen-based organic compounds responsible for **bitterness and toxicity**.
 - **Solanine**, a glycoalkaloid in potato and tomato, acts as a **natural pesticide** but becomes harmful in excess.
 - **Safe Consumption:** Ripe tomatoes and potatoes are harmless; **green potatoes** (with higher solanine) should be avoided.
- **Dual Role of Alkaloids:**
 - **Protective Function:** Natural defence against insects and microbes.
 - **Medicinal Use:** Some alkaloids (e.g., atropine from belladonna) are used in pharmaceuticals.



UPSC Relevance: GS Paper III: Science & Technology – Applications in Agriculture and Health. **Prelims Linkages:** Solanaceae Family Examples (Tomato, Potato, Brinjal, Chilli). Solanine and Alkaloid Toxicity. Medicinal Plants – Belladonna and Atropine source.



HOT Question: “Explain the agricultural and pharmacological importance of the Solanaceae family, highlighting the balance between its edible and toxic members.

8. India to Align Medical Device Standards with Global Benchmarks under IPC–BIS Framework



India’s **Indian Pharmacopoeia Commission (IPC)** will collaborate with the **Bureau of Indian Standards (BIS)** to upgrade and harmonise **medical device standards** with global norms, boosting the **\$12-billion MedTech sector**.

Key Developments

Area	Details
Nodal Agency	Indian Pharmacopoeia Commission (IPC) under the Ministry of Health & Family Welfare.
Collaboration	IPC to work with Bureau of Indian Standards (BIS) to align quality, safety, and performance norms for medical devices.
Monographs Creation	IPC drafting device-specific monographs to define specifications and quality parameters.
Testing Infrastructure	Establishing a Medical Device Division and a new testing laboratory for independent device validation.
Regulatory Coordination	IPC–BIS joint audits and harmonisation to prevent duplication across standards and streamline compliance.

Policy & Industry Vision

National Medical Devices Policy, 2023

- **Target:** Expand India’s MedTech market from **\$12 billion (2025)** to **\$50 billion** by 2030.
- **Goal:** Capture **10–12%** of the global medical device market within 25 years.
- **Focus:** Develop indigenous standards, attract investment, and ensure global competitiveness.



UPSC Relevance: **GS Paper II & III – Governance / Health / Science & Tech / Industry Regulation.** *Themes:* Medical Device Regulation, IPC–BIS Coordination, National Medical Devices Policy, Self-Reliance in Healthcare Manufacturing.



9. Amended International Health Regulations Introduce New “Pandemic Emergency” Definition

The **amendments to the International Health Regulations (IHR)** have officially come into effect, introducing a new legal category called “**Pandemic Emergency**” – a globally binding standard for coordinated responses to large-scale disease outbreaks.

- **About the International Health Regulations (IHR):**
 - A **legally binding international instrument** governing disease surveillance, reporting, and response across **196 countries** (including 194 WHO member states + Liechtenstein & the Holy See).
 - **Objective:** To prevent, control, and provide public health responses to the international spread of diseases, while minimizing interference with global trade and travel.
 - **Origins:**
 - Evolved from *International Sanitary Regulations* (1951) → renamed as *IHR* (1969).
 - Revised after the **2003 SARS outbreak** to include “Public Health Emergency of International Concern (PHEIC).”
- **2024 Amendments – Key Features:**
 - Introduced a **new category** – “**Pandemic Emergency**” distinct from PHEIC.
 - **Definition:** A disease outbreak across multiple countries that **overwhelms health systems, disrupts societies, and demands rapid, equitable, and coordinated international action.**
 - Mandates each country to create a **National IHR Authority** to coordinate multi-ministerial implementation.
 - Strengthens obligations for **data protection, disease surveillance, and transparent information sharing** during health crises.
 - **Amendment Procedure:**
 - Proposed by any State Party or the WHO Director-General.
 - Adopted through a **majority vote** at the **World Health Assembly (WHA)**.
- **India’s Obligations under the Amendment:**
 - Establish a **National IHR Authority** under the Ministry of Health & Family Welfare.
 - Upgrade **integrated disease surveillance systems** for real-time reporting.
 - Ensure **protection of personal and health data** during public health emergencies.
 - Participate in **Joint External Evaluations (JEE)** – voluntary international peer reviews of national health emergency readiness.



UPSC Relevance: **GS Paper II:** Health – International Health Regulations, WHO’s Role in Global Health Governance. **GS Paper III:** Disaster Management – Pandemic Preparedness and Biosecurity.



HOT Question: “Discuss the significance of the 2024 amendments to the International Health Regulations in redefining global pandemic governance. How do these reforms enhance India’s health security framework?”

10. 2025 Global Hunger Index Warns of Stalled Progress Toward Zero Hunger



The **2025 Global Hunger Index (GHI)** report, released by **Concern Worldwide** and **Welthungerhilfe**, marks **20 years** of hunger tracking and warns that the world is **off track to achieve Zero Hunger before 2137**.

Key Highlights

Indicator	Details
Publisher	Concern Worldwide (Ireland) & Welthungerhilfe (Germany)
Index Range	0 (best) to 100 (worst); higher scores = more hunger
Indicators Used	Undernourishment, Child Stunting, Child Wasting, Child Mortality
Global Score (2025)	18.3, only a marginal improvement from 19.0 (2016)
India's Rank (2024)	105th of 127 countries, GHI score 27.3, classified as "Serious"
Projection	At current pace, the Zero Hunger Goal (SDG 2) will not be met before 2137

Major Findings

- **Crisis Drivers:** Conflicts in **Gaza** and **Sudan** caused famine-level conditions; 20 major food crises affected ~140 million people in 2024.
- **Regional Trends:**
 - **Severe Hunger:** South Asia and Sub-Saharan Africa.
 - **Improvement:** Southeast Asia, Latin America.
 - **Lowest Hunger:** Europe and Central Asia.
- **Country Trends:** 42 countries face **serious/alarming hunger** – including Burundi, Haiti, Somalia, South Sudan, Yemen.
- **Positive Models:** Progress seen in **Mozambique, Rwanda, Somalia, Togo, Uganda**, and notably **Tajikistan**.



UPSC Relevance: **GS Paper II & III – Social Justice / Food Security / SDGs Themes:** Global Hunger Index, Food Security, Nutrition Indicators, SDG 2 (Zero Hunger).



11. RBI Economists Update Rangarajan Poverty Line Using 2022–23 Consumption Survey



Using the **2022–23 Household Consumption Expenditure Survey (HCES)**, **RBI economists** recalibrated the **Rangarajan poverty line**, revealing steep poverty reductions in **Odisha and Bihar** and a national shift toward **multidimensional poverty measures**.

Key Findings

Aspect	Highlights
Original Rangarajan Line (2014)	₹972 (rural) and ₹1,407 (urban) monthly per capita expenditure; 29.5% population BPL (2011–12).
Survey Basis	2022–23 HCES conducted by NSSO, Ministry of Statistics and Programme Implementation (MoSPI).
Top Performers	Odisha and Bihar recorded the sharpest declines in poverty.
Rural Odisha	47.8% → 8.6% (2011–12 to 2022–23).
Urban Bihar	50.8% → 9.1% (2011–12 to 2022–23).
Least Change	Kerala and Himachal Pradesh, already with low baseline poverty.
Rural Poverty (2022–23)	Lowest: Himachal Pradesh (0.4%); Highest: Chhattisgarh (25.1%).
Urban Poverty (2022–23)	Lowest: Tamil Nadu (1.9%); Highest: Chhattisgarh (13.3%).

Methodology

- New Price Index:** Instead of inflating the 2011–12 poverty line using the **Consumer Price Index (CPI)**, RBI economists created a **bespoke price index** reflecting the original **Poverty Line Basket (PLB)** weights of food and non-food items.
- Adjusted for Consumption Patterns:** This ensured a more accurate poverty update that accounted for changing expenditure habits.



UPSC Relevance: GS Paper II – Governance / Welfare Schemes
GS Paper III – Economy / Poverty & Development Themes: Poverty Measurement, Rangarajan Committee, Multidimensional Poverty Index (MPI), Inclusive Growth.



12. Kerala Becomes India's First State Free from Extreme Poverty

On **November 1, 2025**, Kerala will officially be declared **free from extreme poverty**, marking the successful completion of the **Extreme Poverty Eradication Programme (2021–2025)** — a landmark in India's social development and decentralised governance model.

About Extreme Poverty

- **Definition:** As per the **World Bank**, extreme poverty is defined as living on **less than \$2.15/day**, reflecting inability to meet basic human needs (food, shelter, healthcare).
- **Updated Benchmark (2025):** Revised to **\$3/day (PPP 2021)** to account for inflation and rising costs.
- **Measurement Basis:** Uses **Purchasing Power Parity (PPP)** and **Household Consumption Expenditure Survey (HCES)** data for comparability across nations.



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UPSC Relevance: **GS Paper II:** Governance – Poverty Alleviation, Role of Local Self-Governments. **GS Paper I:** Society – Social Empowerment and Welfare Models. **Prelims Linkages:** Kudumbashree Mission, Life Mission, Aardram Mission, Ashraya Project. Decentralised Governance – People's Plan Campaign (1996).



13. EPFO 3.0 Reforms Simplify Withdrawals, Boost Member Benefits & Launch Vishwas Scheme

On 13 October 2025, the Central Board of Trustees (CBT) of EPFO, chaired by the Union Labour Minister, approved major EPFO 3.0 reforms to simplify withdrawals, ensure digital integration, and resolve ₹2,406 crore worth of pending litigations.

Key Highlights

Reform Area	Details
Simplified Withdrawals	13 clauses merged into 3 categories — Essential Needs (education, illness, marriage), Housing Needs, and Special Circumstances.
Withdrawal Limit	Members can withdraw up to 100% of eligible balance (employee + employer share).
Service Requirement	Uniformly reduced to 12 months for all categories.
Frequency Liberalisation	Education withdrawals up to 10 times; marriage up to 5 times (earlier combined cap: 3).
Savings Protection	Members must retain 25% of balance to continue earning 8.25% interest.
Digital Transformation	Accelerates EPFO’s shift to paperless and real-time processing under EPFO 3.0.

Vishwas Scheme

- Objective:** Resolve ₹2,406 crore worth of **penal damage litigations** pending across 6,000+ cases related to delayed PF remittances.
- Outcome:** Reduces backlog, fosters compliance, and builds employer confidence.

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UPSC Relevance: GS Paper II & III – Governance / Welfare Schemes / Labour Reforms / Digital India Themes: EPFO 3.0, Vishwas Scheme, Provident Fund Reforms, Labour Welfare Modernisation



14. Experts Flag Gender Blindness in India’s Natural Farming Policy



On **October 15**, observed as **National Women Farmers’ Day**, experts cautioned that India’s **natural farming policy**, while eco-friendly, risks **deepening gender inequality** by neglecting women’s structural disadvantages in agriculture.

Gender Dimensions in Indian Agriculture

Indicator	Key Data/ Findings
Female Participation (PLFS 2023-24)	76.95% of rural women engaged in agriculture; nearly 50% of self-employed farmers are women.
Land Ownership (Agriculture Census 2021)	Only 12.8% of operational holdings owned by women, covering just 10.34% of total area.
Credit & Insurance Access (NABARD 2022)	<10% of women farmers access formal credit or crop insurance.
Role Expansion	Women increasingly handle farm operations due to male migration to non-farm sectors.

About the National Mission on Natural Farming (NMNF)

Feature	Details
Aim	Promote chemical-free, biodiversity-based, resource-efficient farming.
Approach	Based on Agroecology and traditional inputs – Beejamrut, Jeevamrut, Ghanajeevamrut.
Nodal Ministry	Ministry of Agriculture & Farmers’ Welfare.
Model State	Andhra Pradesh Community Natural Farming (APCNF).
Vision	“Farmer-led, local resource-based, low-input agriculture.”

Gender Gap Concerns

- Policy Blindness:** Gender is **absent** from NMNF design; it assumes a gender-neutral farmer model.
- Krishi Sakhis’ Role:** Women act as **activity-based para-extension workers** without job security or wages.
- Structural Inequality:** Without addressing ownership, labour, and decision-making gaps, natural farming could **reinforce unpaid female labour** and **exclude women from benefits and incentives**.



UPSC Relevance: GS Paper II – Social Justice (Women Empowerment)
GS Paper III – Agriculture / Inclusive Growth / Sustainable Farming
Themes: Feminisation of Agriculture, Natural Farming, Gender Equity, Rural Development.



15. Supreme Court Orders States to Appoint Nodal Officers for Missing Children Cases

 The **Supreme Court** has directed the **Union Government** to ensure all **States and Union Territories** appoint **nodal officers** for missing children cases, enhancing coordination through **Mission Vatsalya**, **TrackChild**, and **Khoya-Paya** portals.

Existing Digital Infrastructure for Tracing Missing Children

Platform	Purpose / Users	Key Features
TrackChild Portal	Law enforcement agencies	Tracks rescue, rehabilitation, and repatriation of missing children.
Khoya-Paya Portal	General public (parents/guardians)	Enables public reporting of missing or found children.
Mission Vatsalya Portal	Integrated welfare platform	Now integrates TrackChild & Khoya-Paya; connects 14 stakeholders.
Crime Multi Agency Centre (Cri-MAC)	Police and agencies	Shares real-time data on trafficking and child-related crimes (since 2020).

Proposed Enhancements by the Bench

- **Two-Way Mechanism:** Both citizens and officials can file reports of missing or found children.
- **National Coordination Portal:** To be supervised by the **Ministry of Home Affairs** for inter-state collaboration.
- **Real-Time Alerts:** Automatic notifications to nodal officers upon complaint registration.
- **Public Transparency:** Nodal officers' contact details to be uploaded on the **Mission Vatsalya** portal.

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UPSC Relevance: GS Paper II – Governance / Social Justice / Welfare Schemes
Themes: Child Protection, Missing Children Mechanisms, Juvenile Justice Act, Digital Governance.



16. UIDAI Launches SITAA Initiative to Tackle Deepfakes and Enhance Aadhaar Security



The **Unique Identification Authority of India (UIDAI)** launched **SITAA – Scheme for Innovation and Technology Association with Aadhaar** to promote AI-driven, deepfake-resistant authentication solutions.

Aspect	Details
Partners	MeitY Startup Hub (MSH) & NASSCOM.
Objective	Foster innovation in biometric security, AI-based authentication, and data privacy.
Goal	Build a self-reliant digital identity ecosystem under Aatmanirbhar Bharat.

Three Core Innovation Challenges

Focus Area	Purpose / Outcome
Face Liveness Detection	Develop SDKs to detect fake face inputs (photos, videos, masks, morphs, or deepfakes).
Presentation Attack Detection (PAD)	Build AI/ML tools to spot print, replay, or deepfake attacks in real or near-real time.
Contactless Fingerprint Authentication	Use smartphone cameras or low-cost sensors for spoof-proof fingerprint verification.

Significance

- Enhances **Aadhaar’s biometric integrity** amid rising **AI-based identity frauds**.
- Promotes **startup-academia collaboration** for indigenous tech development.
- Strengthens **digital trust and governance** in India’s identity infrastructure.

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UPSC Relevance: GS Paper III – Science & Technology / Cybersecurity / Digital India, Themes: Biometric Authentication, Deepfake Detection, Digital Identity Governance.



About the Reforms



UPSC Relevance: **GS Paper II:** Governance – Welfare of Vulnerable Sections, Institutional Reforms. **GS Paper I:** Society – Inclusion of Persons with Disabilities. **Prelims Linkages:** *Rehabilitation Council of India Act, 1992, Central Rehabilitation Register (CRR), Jan Vishwas and Ease of Doing Business reforms*



HOT Question: “Discuss the recent reforms introduced by the Rehabilitation Council of India (RCI) and analyse how they contribute to inclusive governance and professional accountability in disability services.”

Fiji Achievement: Fiji became the **26th country** to eliminate **trachoma** as a public health problem — its **first eliminated neglected tropical disease (NTD)**.

About NTDs: Affect over **1 billion people**, mostly in **tropical, low-income regions**; WHO recognises **21 such diseases**.

About Trachoma: Caused by *Chlamydia trachomatis*; spreads via **contact or flies**; world's **leading infectious cause of blindness**, especially among **women and children**.

Breakthrough Discovery: Nagaland University researchers found that **sinapic acid**, a natural antioxidant, **accelerates diabetic wound healing** when taken orally.

Mechanism: Found in mustard, oats, sesame, and berries, it activates the SIRT1 pathway, aiding tissue repair, angiogenesis, and inflammation control.

Efficacy: Shows an **inverted dose-response**, with **20 mg/kg** more effective than **40 mg/kg**.

Significance: Offers a **low-cost oral therapy** for **diabetic foot ulcers**, benefiting patients in **rural, resource-limited areas**.

Diabetes Context: Affects **422 million people globally**, causing **1.5 million deaths annually** (WHO 2024).

Research Insight: Diets high in **ultra-processed foods (UPFs)** may worsen **gut inflammation** and trigger **Crohn's disease flare-ups**.

About the Disease: A chronic **inflammatory bowel disease (IBD)** affecting the GI tract, mainly the **small intestine and colon**.

Symptoms: Include abdominal pain, diarrhoea, fatigue, weight loss, fever, mouth sores, and anaemia.

Treatment: No cure; focuses on **reducing inflammation**, **relieving symptoms**, and **preventing recurrence** through medications.

SC Directive: The Supreme Court has asked the NHRC to monitor **Central and State Mental Health Authorities** for proper implementation of the **Mental Healthcare Act, 2017**.

About the Act (2017): Replaced the 1987 law, aligning with the UN Convention on the Rights of Persons with Disabilities; aims to ensure mental healthcare and protect patient rights.

Key Provisions: Establishment of **Mental Health Authorities** and **Review Boards**, **right to affordable care**, and **decriminalisation of suicide attempts** by mentally ill persons.

Global Honour: On 3rd October 2025, India received the ISSA Award for Outstanding Achievement in Social Security at the World Social Security Forum in Kuala Lumpur.

e-Shram Success: India's social security coverage rose from 19% (2015) to 64.3% (2025); 300+ million unorganised workers registered.

Impact: Over **940 million citizens** now covered under social protection – the **world's fastest expansion** in social security.

Historic Milestone: India hosted its **first World Para Athletics Championships 2025** in **New Delhi** with participation from **100+ nations**.

India's Record Performance: Won **22 medals** – 6 gold, 9 silver, 7 bronze – achieving its **best-ever 10th place** finish.

Significance: Marks India's growing stature in global sports and aligns with its vision to host the **2030 Commonwealth Games** and **2036 Olympics**.

About the Event: The **World Para Athletics Championships**, held **biennially** by the **IPC**, is the **premier para track & field competition** globally.



OCTOBER 2025

HISTORY ART & CULTURE

1. Siddi Community
2. 150 Years of the National Song Vande Mataram
3. Sardar Patel's 150th Birth Anniversary
4. Dilmun Temple Unearthed on Failaka Island, Kuwait
5. BHARAT MATA on Currency
6. CHHATH Mahaparva
7. BANNI FESTIVAL
8. Ningol Chakouba
9. Ollo Tribe
10. Sundarbans Aquaculture Wins FAO Recognition
11. Sree Narayana Guru Mahasamadhi Centenary
12. Sunil Amrith Wins British Academy Book Prize
13. Sam Fender Wins Mercury Prize 2025
14. International Purple Festival 2025
15. President's Bodyguard (PBG)

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1. Siddi Community

Recognition: President Droupadi Murmu praised the **Siddi community** for achieving **72% literacy**, urging continued focus on education for empowerment.

Origin: The **Siddis (Sheedis/Habshis)** are of **African descent**, brought to India as **slaves (15th–17th centuries)** by rulers and Portuguese traders.

Distribution: Mainly found in **Gujarat, Maharashtra, Karnataka, and Andhra Pradesh**.

Culture & Religion: Practice **Islam, Hinduism, and Christianity**; known for the **Dhamal or Goma dance** blending **African and Indian traditions**.

Status: Listed as a **Scheduled Tribe (2011 Census)** and a **Particularly Vulnerable Tribal Group (PVTG)** in Gujarat.

2. 150 Years of the National Song Vande Mataram

Commemoration: The **Union Cabinet** will celebrate **150 years of 'Vande Mataram'** nationwide, honouring its contribution to India's **freedom struggle**.

Origin: Written in **Sanskrit** by **Bankimchandra Chatterji (1875)** and included in his novel **Anand Math (1882)**.

Official Status: Declared **National Song** on **January 24, 1950**, by **Dr. Rajendra Prasad**, with **equal status to the National Anthem**.

Constitutional Note: **Article 51A(a)** mandates respect for national symbols but **does not mention the national song explicitly**.

3. Rashtriya Ekta Diwas 2025 Marks Sardar Patel’s 150th Birth Anniversary



On October 31, 2025, India celebrated **Rashtriya Ekta Diwas (National Unity Day)** to honour **Sardar Vallabhbhai Patel’s 150th birth anniversary** and a decade of the **Ek Bharat Shreshtha Bharat (EBSB)** initiative.

About Sardar Vallabhbhai Patel

Aspect	Details
Full Name	Vallabhbhai Jhaverbhai Patel (1875–1950)
Birthplace	Nadiad, Gujarat
Political Role	India’s first Deputy Prime Minister and Home Minister
Agrarian Movements	Led Kheda Satyagraha (1918) and Bardoli Satyagraha (1928) – earned title “Sardar”
National Integration	Unified 565 princely states into the Indian Union – “Iron Man of India”
Civil Services Legacy	Architect of the All India Services, called the “Patron Saint of Indian Civil Servants”

Statue of Unity

- **Inaugurated:** 2018 at **Ekta Nagar**, Narmada District, Gujarat.
- **Height:** 182 metres – world’s tallest statue.
- **Designer:** Ram V. Sutar, eminent Indian sculptor.
- **Location:** Sadhu Bet Island, facing **Sardar Sarovar Dam**.
- **Symbolism:** Embodies Patel’s ideals of strength, unity, and national integrity.

Ek Bharat Shreshtha Bharat (EBSB)

Launch Date	31 October 2015
Objective	Promote “unity in diversity”, emotional integration, and cultural exchange between states.
Flagship Activities	Bhasha Sangam App, Yuva Sangam, Kashi Tamil Sangamam, and the EBSB Digital Portal.
Vision (2025)	To reinforce shared identity through inter-state partnerships, cultural immersion, and digital outreach.

Significance of 2025

- Marks **150 years of Sardar Patel’s birth** and **10 years of EBSB**.
- Serves as a reminder of India’s **federal unity, administrative strength, and cultural pluralism** – key pillars of Patel’s nation-building vision.



UPSC Relevance: GS Paper I – Modern Indian History & National Leaders
GS Paper II – Governance / Federalism / Civil Services *Themes:* National Integration, Sardar Patel’s Legacy,

4. 4,000-Year-Old Dilmun Temple Unearthed on Failaka Island, Kuwait



Archaeologists have discovered a **4,000-year-old Bronze Age temple** on **Failaka Island, Kuwait**, belonging to the **Dilmun Civilisation (3000–1600 BCE)**, offering fresh insights into ancient Gulf trade and ritual practices.

Key Excavation Highlights

Feature	Details
Site	Failaka Island, Kuwait – strategic trade post in the Persian Gulf.
Period	Circa 1900–1800 BCE (Late Dilmun phase).
Findings	Stone foundations, multi-room structures, central ritual chamber, and administrative artefacts.
Artefacts	Pottery fragments, carved seals, beads, and seal impressions indicating trade and governance.
Significance	First site in the Gulf showing two successive temples, suggesting continuity in ritual use.

Failaka Island’s Role in Ancient Trade

- **Maritime Hub:** Linked **Mesopotamia, Eastern Arabia,** and the **Indus Valley**, facilitating exchange of **copper, textiles, gemstones, and pottery**.
- **Permanent Settlement:** The new findings prove that Failaka was **not just a port**, but a **ritual-administrative centre**.
- **Cultural Integration:** Demonstrates the Gulf’s participation in **trans-regional trade networks** 4,000 years ago.

About the Dilmun Civilisation

Aspect	Details
Timeline	3000–1600 BCE
Core Region	Modern-day Kuwait, Bahrain, and Eastern Saudi Arabia
Cultural Mentions	Referenced in Mesopotamian texts as a “land of purity, water, and prosperity.”
Economic Role	Served as a trading intermediary between Mesopotamia and the Indus Valley Civilisation.
People & Society	Composed of skilled traders, sailors, and craftsmen; developed organised administration and spiritual practices.



UPSC Relevance: GS Paper I – Art & Culture / Ancient History / World Civilisations Themes: Bronze Age Civilisations, Gulf–Indus Valley Trade, Archaeological Discoveries, Dilmun Culture.,

5. BHARAT MATA on Currency

Commemoration: PM Modi unveiled a ₹100 commemorative coin marking the RSS centenary.

Historic Feature: First Indian coin to depict Bharat Mata.

About RSS: Founded in 1925 in Nagpur by Keshav Baliram Hedgewar, now the world's largest volunteer organisation.

6. CHHATH Mahaparva

UNESCO Nomination: PM Modi announced efforts to secure UNESCO Intangible Cultural Heritage status for Chhath Mahaparva.

Rationale: The festival embodies ecological balance, social harmony, and sun-worship traditions, reflecting India's living heritage.

About Chhath Mahaparva: A four-day festival (Nahay-Khay, Kharna, Sandhya Arghya, Usha Arghya) dedicated to Surya Dev and Chhathi Maiya.

Observance: Devotees fast, offer prayers to the rising and setting Sun, and perform rituals in water bodies.

Celebration: Predominantly in Bihar, Jharkhand, eastern UP, Nepal, and among the Indian diaspora.

Significance: Promotes gratitude to nature, discipline, cleanliness, and community unity beyond caste or class.

7. BANNI FESTIVAL

Incident: Four people died during the Banni Festival (Karrala Samaram) in Kurnool, Andhra Pradesh.

About the Festival: An annual stick-fight ritual held on Dussehra night at the Mala Malleswara Swamy Temple, Devaragattu (Andhra-Karnataka border).

Mythological Significance: Marks Lord Mala Malleswara Swamy and Goddess Parvati's victory over demons Mani and Mallasura.

Historical Roots: The tradition dates back to the Vijayanagara Empire.

7. Ningol Chakouba

Ningol Chakouba: A Manipuri festival celebrating the bond between married women and their brothers.

Timing: Observed annually on the second day of Hiyangei in the Meitei lunar calendar.

Meaning: 'Ningol' means *married woman* and 'Chakouba' means *grand feast*.

Tradition: Features family reunions and a fish fair organised by the Manipur Fisheries Department a day before the festival.

8. Olo Tribe

Initiative: The Khonsa Battalion of Assam Rifles launched a skill-based empowerment program for Olo tribe women under Operation Sadbhavana in Lazu village, Arunachal Pradesh.

About the Olo Tribe: Also called Lazu Naga or a Tangshang Naga subgroup, they are a Tibeto-Burman community living in the Lazu Circle, Tirap district.

Society & Culture: Patriarchal and clan-based, led by chiefs Lowang and Ngongpa; main festival Woraang (Voorang) celebrates the harvest season.

Status: Not yet recognised as a Scheduled Tribe (ST) and often classified under Nocte or other Naga tribes.

Population: Approximately 1,500 members as per the 2011 Census.

9. Sundarbans Aquaculture Model Wins FAO Global Recognition

Global Recognition: FAO awarded Global Technical Recognition to the Sustainable Aquaculture in Mangrove Ecosystems (SAIME) project from the Sundarbans.

About SAIME: A community-led initiative (since 2019) promoting eco-friendly, climate-resilient aquaculture alongside mangrove restoration.

Model Features: Maintains 5–30% mangrove cover in shrimp farms; uses mangrove litter as natural feed, cutting costs.

Impact: Farmers saw 100% profit gains through lower inputs and higher productivity.

Significance: Strengthens coastal resilience, supports sustainable livelihoods, aids carbon sequestration, and encourages chemical-free aquaculture.

10. Sree Narayana Guru Mahasamadhi Centenary

Event: The President inaugurated the Mahasamadhi Centenary of Sree Narayana Guru at Sivagiri Mutt, Varkala, Kerala.

About Sree Narayana Guru (1856–1928): A social reformer and spiritual leader who spearheaded Kerala's 19th-century socio-religious renaissance.

Philosophy: Championed "One Caste, One Religion, One God for All," promoting equality and social justice.

Legacy: Founded the SNDP Yogam (1903) and Sivagiri Mutt (1904) to uplift marginalized communities through education, hygiene, and agriculture.

Writings: Authored 60+ works in Malayalam and Sanskrit, including *Advaita Deepika* and *Anukampa Dasakam*.

11. Sunil Amrith Wins British Academy Book Prize

Award: Indian-origin historian Sunil Amrith won the 2025 British Academy Book Prize for "*The Burning Earth: An Environmental History of the Last 500 Years*."

About the Prize: Valued at £25,000, it recognises outstanding non-fiction that deepens understanding of the modern world through humanities and social sciences.

About the Author: Professor at Yale University, born in Kenya, raised in Singapore, and educated at Cambridge — reflecting a global academic journey.

Book Theme: Explores 500 years of environmental and human history, linking colonisation, industrialisation, and migration to today's ecological crisis.

12. Sam Fender Wins Mercury Prize 2025

Winner: Sam Fender won the 2025 Mercury Prize for his third album "*People Watching*."

Tribute: Dedicated the win to his late friend Annie Orwin, who inspired the album's title track.

Background: This is his first win; he was previously nominated in 2022 for "*Seventeen Going Under*."

About the Prize: Established in 1992, the Mercury Prize honours the best British or Irish album, offering £25,000 and shortlisting 12 albums annually.

13. International Purple Festival 2025

Event: The 3rd International Purple Festival 2025 — India's first inclusive celebration for Persons with Disabilities (PwDs) — began on 9th October 2025 in Panaji, Goa.

Purpose: Showcases India's commitment to accessibility, empowerment, and inclusion.

Theme: Celebrates the achievements and creativity of PwDs, promoting their full participation in society.

Significance: Aligns with India's vision of inclusive growth and mainstreaming Persons with Disabilities in national development.

14. President's Bodyguard (PBG)

Event: President Droupadi Murmu presented the Diamond Jubilee Silver Trumpet and Trumpet Banner to the President's Bodyguard (PBG), celebrating 75 years since its re-designation.

About PBG: The oldest and most senior regiment of the Indian Army, serving as the elite cavalry unit for the Head of State.

Origins: Raised in 1773 at Benares (Varanasi) by Warren Hastings with aid from Raja Chet Singh.

Re-designation: Renamed the President's Bodyguard in 1950 after India became a republic.

Roles: Performs ceremonial duties and also functions as paratroopers, reconnaissance, and armoured crew units.