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India–UK CETA
Trade Pact

National Cooperative
Policy 2025.....

Monsoon surge;
updated Paris NDCs

NISAR satellite launch;
healthcare
bio-manufacturing (CSIR-NIIST)

PM's Global South
tour; BRICS summit

India Achieves 50%
Non-Fossil Power
Capacity

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FOREWORD

Current Affairs form the lifeblood of UPSC preparation. In an examination that tests not just memory but perspective, analysis, and vision, the ability to connect daily events with static concepts is what separates an aspirant from a topper.

The **EPIC UPSC Current Affairs Magazine – July Edition** has been meticulously curated to serve as more than just a news digest. It is designed to **bridge the gap between information and insight**, enabling aspirants to link each development with the relevant UPSC syllabus and examination requirements.

This compilation is a sincere attempt to **condense, simplify, and prioritise** the vast ocean of current affairs into **exam-ready, high-yield content**. Our aim is to ensure that every page you turn not only enhances your knowledge but also sharpens your ability to answer with precision in both Prelims and Mains.

On behalf of the entire EPIC UPSC Team which compiled this edition, I express my gratitude to **Purushoth Sir**, whose constant guidance, academic direction, and vision for quality UPSC education shall continue to inspire our work.

May this July edition become your trusted companion in the pursuit of excellence, and may it help you take one step closer to your goal of serving the nation.

Vidya Varshini
CORE Associate

Content, **O**utreach, **R**esearch and **E**mpowerment
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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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JULY 2025

INDIAN POLITY GOVERNANCE

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1. Chakma Autonomous District Council



Governor's Rule was imposed in the **Chakma Autonomous District Council (CADC)** of Mizoram due to political instability, under provisions of the **Sixth Schedule** of the Constitution.

What are Autonomous District Councils (ADCs)?

Created under: Sixth Schedule of the Constitution.

States Covered: Assam, Meghalaya, Tripura, Mizoram.

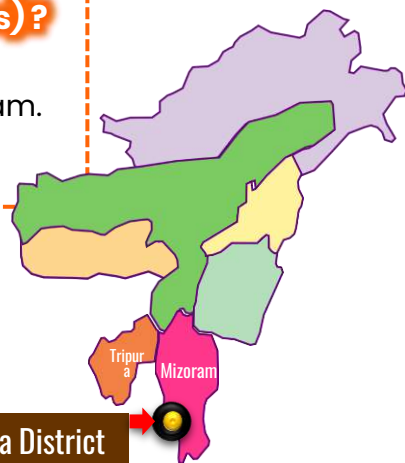
Purpose: To provide self-governance to **tribal communities** in designated tribal areas.

Key Powers & Functions

Legislative: Can make laws on land, forests, water, agriculture, village administration, and social customs.

•**Executive:** Responsible for public health, education, sanitation, roads, etc.

•**Judicial:** Can set up courts to adjudicate cases based on tribal customary laws.



Structure of ADCs

Total Members: Up to 30

(Elected Members: 26, Nominated by Governor: 4)

Tenure: 5 years

Governor's Role: Can assume control if governance collapses (as in CADC case).



UPSC Relevance: **GS Paper I** - Society – Tribal Issues and Constitutional Safeguards. **GS Paper II** – Indian Constitution – Federalism, Devolution of Powers, Role of Governor. **Prelims:** Sixth Schedule, Chakma Tribe, CADC, Role of ADCs.



HOT Question:

"How do Autonomous District Councils under the Sixth Schedule balance tribal autonomy with state integration?"



2. Public Gambling Act, 1867



The **Enforcement Directorate (ED)** has filed a case under the **Prevention of Money Laundering Act (PMLA), 2002** against celebrities for promoting **illegal betting apps**, violating the **Public Gambling Act, 1867**



Public Gambling Act, 1867

Purpose: Prohibits public gambling and running or being in charge of a public gambling house.

Jurisdiction: Applicable in Delhi, Uttar Pradesh, Madhya Pradesh, and other adopting states.

Exemptions: Games of skill (e.g. **rummy, chess**) are not considered gambling.

Legal Status:

Betting/Gambling = State Subject under **List II of the 7th Schedule**.

States can modify or enact their own gambling laws (e.g. Sikkim, Nagaland allow online gaming under regulation).



PMLA, 2002 – Overview

Aim: To prevent and control **money laundering** and confiscate properties involved in such activities.

Enforcement Agencies:

- **ED** (Enforcement Directorate)
- **FIU-IND** (Financial Intelligence Unit – India)

Scope: Investigates financial crimes, including proceeds of crime from illegal betting.

Recent Use: Targeting money laundering channels created through illegal gaming and betting platforms.



UPSC Relevance: **GS Paper II** - Polity – Federal Structure, Role of Law Enforcement. **GS Paper III** – Internal Security – Money Laundering, Cybercrime. **Prelims:** PMLA 2002, Public Gambling Act 1867, Game of skill vs. game of chance, State List – 7th Schedule.



HOT Question: “Should the regulation of online betting and gaming be centrally legislated or remain a state subject? Discuss in the context of growing digital financial crimes.”



3. President Invokes Article 143



The **President of India invoked Article 143** to seek the **Supreme Court’s opinion** on whether the **President or Governors can be judicially compelled** to give **timely assent to bills** and provide **justification for delay or withholding**.



- **Article Invoked:** Article 143 – Advisory jurisdiction of Supreme Court
- **Issue Raised:** Whether the **Executive (President/Governors)** can be directed by courts to:
 - o Provide **reasons** for assent delays
 - o Adhere to **timelines** in processing legislative bills

About Article 143 – Advisory Jurisdiction

Clause	Description
Clause 1	President can seek SC's advice on matters of public importance (Court may choose to respond)
Clause 2	Applies to disputes excluded under Article 131 (e.g., pre-Constitution treaties); SC must respond

Origin: Based on *Section 213 of the Government of India Act, 1935*
Invocation Process: President acts **on Council of Ministers’ advice**
Bench Requirement: Requires **Constitution Bench** (min. 5 judges, per Article 145(3))
Nature of Opinion: *Non-binding* but carries **persuasive institutional weight**

Historical Use of Article 143:
Invoked around **15 times**, including:

- **Berubari Union (1960)**
- **Kerala Education Bill**
- **Cauvery Water Dispute**
- **Allocation of Natural Resources**



Legal Nuances:

- Not Suo Motu:** SC cannot invoke Article 143 on its own
- No Timeline Mandated:** SC can delay answering; no constitutional deadline
- Not Binding under Article 141:** As per *St. Xavier’s Case*
- Cannot Revisit Settled Law:** Article 143 cannot be used to review past rulings or disturb **ratio decidendi**



 **•UPSC Relevance:** **GS Paper II** - Indian Constitution, Separation of Powers, Federalism. **Mains** - “In what ways can advisory opinions of the Supreme Court under Article 143 enhance institutional balance?”

 **HOT Question:** “To what extent can Article 143 of the Indian Constitution serve as an effective mechanism to pre-empt constitutional crises between the Executive and the Judiciary?”



4. President Rule



President's Rule has been **extended in Manipur** for another 6 months due to continued failure of constitutional governance and law-and-order breakdown.



President's Rule (Articles 356 & 365)

- ◆ **Article 356**: Invoked when the **state government fails to function as per the Constitution**. The President can assume all or some of the functions of the state government.
- ◆ **Article 365**: If a state **fails to comply with the directions** of the Union Government, it may be considered a breakdown of constitutional machinery

Duration & Extension

Initially imposed for **6 months**.
Can be extended every 6 months **up to a maximum of 3 years**, subject to **Parliamentary approval**.

Beyond 1 year, **two conditions** must be met:

National Emergency in operation.
Election Commission certifies that elections cannot be held.



UPSC Relevance: GS Paper II - Polity – Federalism, Emergency Provisions. **Prelims:** Articles 356 and 365.



HOT Question: “Does the repeated use of Article 356 undermine the spirit of federalism? Analyse in light of the situation in Manipur.”



5. Vice President Resignation



The **Vice President** of India has **resigned before completing his term**, becoming only the **third Vice President** in Indian history to do so voluntarily.



Constitutional Provision

Article 68(1) of the Constitution: If the office of the **Vice President becomes vacant** due to **resignation, removal, or death**, an election must be held **"as soon as possible"**.

The **newly elected Vice President** serves a **full 5-year term** from the date of taking office, not just the remaining term of the predecessor.

Historical Precedents: Mid-Term Vacancies in Vice Presidency

Vice President	Reason for Vacancy	Date of Vacancy	Successor (Mid-Term Election)
Dr. Zakir Husain	Resigned after being elected President	May 1967	V.V. Giri
V.V. Giri	Resigned to contest Presidential Election	July 1969	Gopal Swarup Pathak
B.D. Jatti	Resigned voluntarily	August 30, 1979	M. Hidayatullah
Krishan Kant	Died in office	July 27, 2002	Bhairon Singh Shekhawat



UPSC Relevance: GS Paper II - Constitutional offices, **federal structure**, political ethics. **Prelims:** Articles **63–68** (Vice President), **tenure**, **election process**, **vacancy rules**.



HOT Question: "What does Article 68(1)'s phrase 'as soon as possible' imply in the context of constitutional vacancies? Should a time limit be prescribed for greater accountability?"



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6. Defence Acquisition Council



The **Defence Acquisition Council (DAC)** cleared **capital acquisition proposals worth ₹1.05 lakh crore** to accelerate defence modernisation.



What is the DAC?

Defence Acquisition Council (DAC) is the **highest decision-making body** in the **defence procurement system** of India. **Established in 2001** to streamline defence purchases and policy reforms.



Key Functions

Chaired by the **Union Defence Minister**.
Provides '**Acceptance of Necessity (AoN)**' for capital acquisition proposals.
Reviews and monitors progress of **major acquisition projects**.
Ensures alignment with the **Make in India** and **Atmanirbhar Bharat** defence goals.

About Capital Acquisitions

Capital acquisition refers to procurement of:

- New **weapons, platforms, systems, sensors**, etc.
- Upgrades for existing assets for **modernisation and strategic edge**.



UPSC Relevance: **GS Paper II/III** - Strategic preparedness, defence reforms, indigenization of defence, national security planning.. **Prelims:** DAC, Acceptance of Necessity (AoN), Defence Procurement Procedure (DPP), Ministry of Defence bodies.



HOT Question: "In the context of Atmanirbhar Bharat, how can DAC's procurement decisions balance national security needs with domestic manufacturing capacity?"



7. Special Intensive Revision (SIR)



The **Supreme Court** allowed the **Election Commission of India (ECI)** to proceed with **Special Intensive Revision** of electoral rolls in Bihar, citing its discretionary powers under election laws and a key **1977 SC judgment**.



Topic	Details
Issue Raised	Petitioners challenged ECI's authority to conduct SIR and use non-statutory enumeration forms
SC View	ECI can act under Section 21(3) of the RP Act, 1950 in the manner it deems fit to revise rolls
1977 Ruling Referred	Mohinder Singh Gill v. CEC – upheld ECI's independence and broad powers under Articles 324, 327 & 328 of the Constitution
Concerns	Allegations that SIR shifted burden of proving citizenship onto voters and lacked statutory backing for the new forms used

Types of Electoral Roll Revision:

Type	Description
Intensive Revision	House-to-house enumeration to freshly build rolls—used when existing rolls are outdated or post-delimitation
Summary Revision	Annual update via claims/objections—no field visits
Special Revision	Exception-driven update for missed areas or legal errors; can be summary or intensive in nature
Special Intensive Revision (SIR)	Invoked under Section 21(3) of RP Act, 1950 for comprehensive revisions using ECI's discretionary powers

Mohinder Singh Gill Case (1977):

- **Held:** ECI is a **constitutional authority** that must act **proactively and independently** for free and fair elections
- **Doctrine Established:** In the absence of legislative clarity, **ECI can frame procedures** for smooth conduct of elections
- **Judicial Review** of ECI actions is **limited to post-election phase** unless there's gross illegality



UPSC Relevance: **GS Paper II:** Polity: Election Laws, Constitutional Bodies, Judicial Review. **Prelims** Article 324, RP Act 1950 & 1951, ECI powers, Mohinder Singh Gill case, Electoral Roll



HOT Question: “How does the 1977 Supreme Court judgment in Mohinder Singh Gill v. CEC reinforce the constitutional autonomy of the Election Commission in the conduct of elections?”



8. Divergent High Court Rulings on Phone Tapping



The **Delhi High Court** and **Madras High Court** recently delivered **contradictory judgments** on the **legality of phone-tapping**, raising important questions on privacy, national security, and procedural law.



Delhi High Court Ruling:

Upheld the admissibility of phone-tapping evidence in a **CBI corruption case**.

Emphasized the **seriousness of corruption** and its **impact on national governance and public interest**.

Madras High Court Ruling:

Quashed a 2011 interception order issued by the **Ministry of Home Affairs (MHA)**.

Held that: The order **did not comply** with **procedural safeguards**.

The case (**tax evasion**) **did not meet the threshold** of "**public emergency**" under **Section 5(2)** of the **Indian Telegraph Act, 1885**.

Reinforced the **limited scope** of interception powers and the **right to privacy**.

Supreme Court’s 1997 Landmark Judgment

People’s Union of Civil Liberties (PUCL) vs Union of India

Principle	Supreme Court Ruling (1997)
Constitutionality	Upheld Section 5(2) of the Telegraph Act as constitutional
Safeguards Required	Mandated strict procedural norms for lawful interception
Authority to Sanction	Only Home Secretary (State/Centre) can approve phone tapping
Alternate Means Check	Must assess if information can be acquired by other means
Review Committee	Review required within 2 months, headed by Cabinet/Chief Secretaries
Rule 419-A (17)	Codified these safeguards under Telegraph Rules, adding scrutiny mechanisms



Legal & Policy Significance:

- **Conflict in interpretation** could prompt **Supreme Court intervention** or **policy review**.
- Brings renewed focus on **privacy as a fundamental right** (as upheld in **KS Puttaswamy case, 2017**).
- Calls for **balancing national security** with **individual liberties and procedural fairness**.



UPSC Relevance: **GS Paper II: Polity** Judiciary, Fundamental Rights, Separation of Powers, Governance Surveillance, Right to Privacy, Rule of Law. **GS Paper III– Internal Security:** Intelligence Oversight, Cyber Governance.



HOT Question: “How should the Indian legal framework reconcile the need for surveillance in public interest with the fundamental right to privacy?”



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9. Rehabilitation is NOT a Fundamental Right



The **Supreme Court** held that **rehabilitation is not a Fundamental Right** under the Constitution in a recent **land acquisition case**.

No Fundamental Right to Rehabilitation:

- Rehabilitation is **not guaranteed under Article 21** (Right to Life) unless explicitly provided by law.

Compensation vs Rehabilitation:

- Fair compensation** for acquired land is a **constitutional guarantee** under Article 300A and Land Acquisition laws.
- Rehabilitation** is not automatic and must be backed by a **statutory provision** or specific government scheme.

Legal Interpretation:

- Right to livelihood under **Article 21** does **not extend** to mandating rehabilitation by the state unless law specifically provides it.
- The **Land Acquisition Act (LARR Act 2013)** contains rehabilitation clauses, but they apply only when acquisition is under that law.



• **UPSC Relevance:** Prelims: Article 21, Article 300A (Right to Property), LARR Act 2013, Fundamental vs Statutory Rights. **GS Paper II:** Constitutionality of rehabilitation and resettlement, Balance between development and rights of displaced persons, Judicial interpretation of Right to Life in socio-economic contexts.



HOT Question: "Should rehabilitation and resettlement be elevated to the status of a Fundamental Right to ensure social justice in large infrastructure projects?"



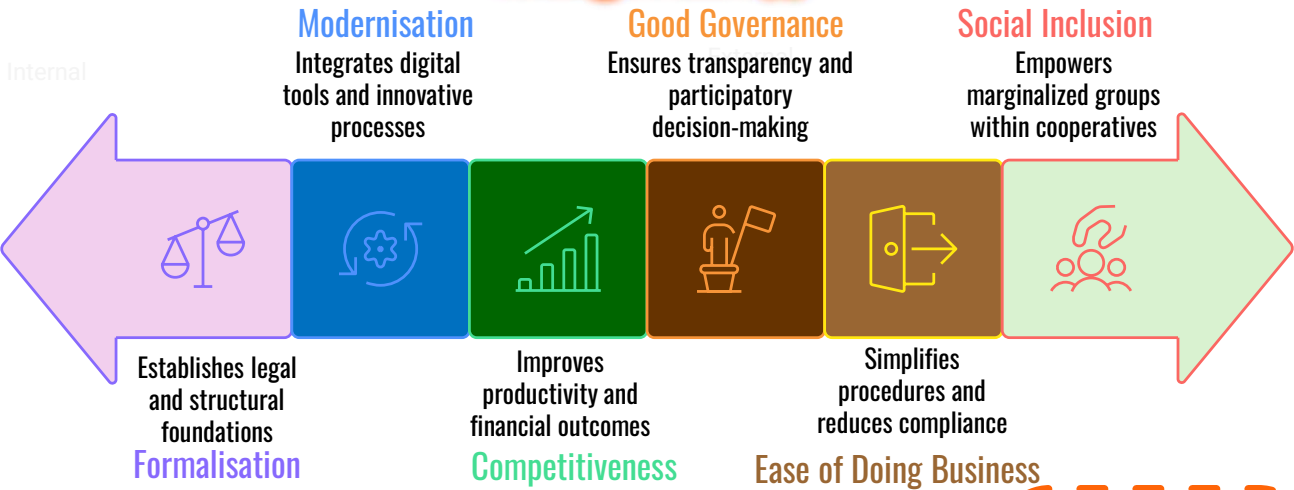
10. National Cooperative Policy



The Ministry of Cooperation launched the National Cooperative Policy 2025, aiming to transform cooperatives into engines of inclusive growth, based on the Suresh Prabhu Committee recommendations.

Feature	Description
Policy Edition	3rd National Cooperative Policy
Main Aim	Create one cooperative in every village
Growth Targets	▲ 30% more cooperatives by 2030, ▲ 3× GDP share by 2034
Review Mechanism	Policy to be legally reviewed every 10 years for relevance and reform

Strategic Pillars (6)



Innovations in Sectoral Expansion:

New Sector	Role of Cooperatives
Green Energy	Solar and biomass cooperatives for rural electrification
Taxi Aggregators	Community-owned mobility platforms (like rural Ola/Uber)
Microinsurance	Affordable, community-based risk coverage
Tourism	Village tourism cooperatives to promote eco-tourism and livelihoods

Model Village Initiative:

NABARD to develop 5 Model Cooperative Villages per tehsil. Backed by State Cooperative Banks for credit and operational support.



UPSC Relevance: GS Paper II - Government Policies & Institutions: Ministry of Cooperation.
GS Paper III - Inclusive Growth, Rural Development, Cooperatives.



HOT Question: “Critically examine whether cooperatives can be an alternative model for inclusive growth in India’s rural economy under the 2025 policy framework.”



11. First Global University in India under UGC Norms



The **University of Southampton** inaugurated its **first offshore campus in Gurgaon (Delhi NCR)**, becoming the **first foreign university to operate in India** under the **UGC's 2023 regulations** — a major step under **NEP 2020** to internationalize Indian higher education.



First Operational Foreign University Campus in India

Location: Gurgaon, Delhi NCR

Programs Offered:

- **UG:** Computer Science, Economics, Business
- **PG:** Finance, International Management

First Cohort: ~170 students from **August 2025**



Accessibility

- **Lower tuition fees** than the UK campus.
- Promotes **affordability** and accessibility for Indian students seeking foreign-quality education.

Global Integration

- Degrees identical to those awarded in the UK.
- Option for students to study up to **1 year in UK or Malaysia** campus.
- No **IELTS/TOEFL** required; streamlined admission process.
- **Faculty hiring standards** match international norms.

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UPSC Relevance: **GS Paper II - Governance, Education** : Role of foreign universities in Indian higher education reform. **Prelims:** UGC Regulations 2023, NEP 2020 Provisions on internationalization, First foreign university campus in India.



HOT Question: "How does the opening of foreign university campuses in India impact the goals of NEP 2020, and what are the challenges in ensuring quality and equity in such international partnerships?"



12. Impeachment launched against Justice Varma



Over **200 MPs** (145 in Lok Sabha, 63 in Rajya Sabha) have moved an **impeachment motion against Justice Yashwant Varma** of the **Allahabad High Court**, after a large amount of unaccounted cash—some **charred**—was recovered from his official residence following a fire.

Impeachment of Judges – Constitutional & Statutory Procedure

Step	Details
1. Initiation	Requires signatures of 100 Lok Sabha MPs or 50 Rajya Sabha MPs .
2. Admission by Speaker/Chairman	If admitted, a 3-member inquiry committee is constituted: 1 SC Judge + 1 HC Chief Justice + 1 Eminent Jurist.
3. Inquiry Report	The committee examines charges and submits a report.
4. Voting in Parliament	If guilty, each House must pass the motion with: – 2/3rd members present and voting – Majority of total House strength
5. Presidential Order	If both Houses pass it, the President orders removal .



HOT Question: “How does the current process of judicial impeachment balance judicial independence with accountability? Should reforms be considered to strengthen the system?”

Governed by **Article 124(4)** and the **Judges (Inquiry) Act, 1968**.

Historical Impeachment Attempts in India

Judge	Court	Year	Status	Remarks
V. Ramaswami	Supreme Court	1993	Failed in Lok Sabha	Congress abstention; no majority.
Soumitra Sen	Calcutta HC	2011	Resigned after RS vote	Misappropriation of funds.
P.D. Dinakaran	Sikkim HC	2011	Resigned before inquiry	Land grabbing charges.
J.B. Pardiwala	Gujarat HC	2015	Motion withdrawn	Due to remarks on reservation.
S.N. Shukla	Allahabad HC	2021	No motion moved	SC recommended removal; medical scam.
Yashwant Varma	Allahabad HC	2025	Ongoing	Cash recovered post-fire; LS motion admitted, RS motion rejected; judicial challenge pending.

13. Enemy Properties Act



The **Madhya Pradesh High Court** dismissed a plea by an actor challenging the government's move to designate his ancestral property as "**enemy property**" under the **Enemy Property Act, 1968**.

Enemy Property Act, 1968 – Key Highlights

What is Enemy Property?

Property **owned or managed by nationals of countries** that committed **external aggression against India**, mainly:

- **Pakistan (post-1947 and 1965 wars)**
- **China (post-1962 war)**

Enemy:

Includes citizens, firms, or legal heirs of enemy nations.

Custodian of Enemy Property:

A statutory authority under the **Ministry of Home Affairs (MHA)** empowered to **take over and manage** such properties.

Amendments (2017):

- Declared **all rights of heirs or successors of enemy nationals void**.
- Government permission now **mandatory to transfer or use** such property.
- **Bars civil courts** from entertaining disputes relating to enemy property.

✦ Why It Matters

- The law affects **thousands of properties**, especially of those who **migrated to Pakistan or China** during conflict periods.
- Balances **national security** and **property rights** but often triggers legal disputes over **inheritance and ownership**.



• **UPSC Relevance:** GS Paper II - Constitutional implications of **property rights**, Legal safeguards vs national interest, Use of executive discretion in property laws. **Prelims:** Enemy Property Act, 1968, Custodian of Enemy Property, Related Ministries and wartime legal frameworks.



HOT Question: "Do you think the Enemy Property Act strikes a fair balance between national interest and individual rights? Discuss in light of recent court rulings."



14. Admiralty Act, 2017



MSC Elsa 3, a Liberia-flagged container ship, **capsized and sank** off the **Kerala coast** on 25 May 2025.

The **Kerala Government** invoked the **Admiralty (Jurisdiction and Settlement of Maritime Claims) Act, 2017** to **seek compensation** for environmental damage.

Admiralty Act, 2017 – Key Features



Scope: Applies to **all vessels**, regardless of nationality or domicile of the owner.

Types of Claims Covered:

- **Environmental damage**
- **Loss of life**, injury, or property damage at sea
- **Disputes over ship ownership**, wages, towage, salvage
- **Marine pollution and wreck removal**

Jurisdiction: **High Courts** act as Admiralty Courts with power to:

- **Arrest ships**
- **Adjudicate maritime claims**
- **Award compensation**

Compensation: Can include:

- Cleanup costs
- Compensation for environmental harm
- Loss recovery for affected parties

Liability: Falls on **ship owners** or **insurers** for:

- **Pollution control**
- **Damage recovery**
- **Restoration expenses**



UPSC Relevance: **GS Paper II – Governance** : Legal framework for maritime disputes. **GS Paper III – Environment** : Liability for marine pollution. **Prelims:** Admiralty Act, 2017, MSC Elsa 3, jurisdiction of High Courts in maritime law.



HOT Question: “How does the Admiralty Act, 2017 empower Indian coastal states to seek accountability in transnational maritime incidents?”



15. Diyya (Blood Money) under Sharia Law



A **Kerala nurse** was sentenced to **death in Yemen**, where **Sharia law** permits **Diyya (blood money)** as a form of **pardon or reconciliation** in place of capital punishment.

Diyya:

Monetary **compensation** paid to the **victim's family** under **Islamic Sharia law**.

Applicability:

- Used primarily for **unintentional killings** or when **Qisas** (retributive justice) is waived. Encourages **reparative justice** over pure retribution.



Legal Recognition:

Countries like **Yemen, Iran, UAE, and Kuwait** **formally recognise** and implement Diyya in their judicial systems.

Judicial Oversight:

Courts may **mediate or monitor**, but **final decision rests with the victim's family**.

Qisas:

Islamic principle of **equal retaliation** – "an eye for an eye" – applicable to serious crimes like **murder** or **bodily harm**.

Negotiation and Variability:



Amount negotiated between offender and victim's heirs. In some nations, **minimum limits** are legally fixed. Amount **may vary** based on **gender, religion, or nationality** of the victim.

Moral and Social Basis:

Promotes the **Islamic virtues of forgiveness, reconciliation, and restorative justice**.



UPSC Relevance: **GS Paper 2** – Polity & Governance (Comparative Judicial Systems, Rights of Indians Abroad). **GS Paper 4** – Ethics (Conflict between legal justice and moral/religious justice). **Essay Paper** – Topics on justice, forgiveness, or global legal frameworks



HOT Question: "In what ways does the Diyya system reflect the tension between retributive and restorative justice? How can India ensure legal protection for citizens under foreign legal systems?"



16. New Akashvani Kendra in Ujjain under BIND Scheme



The Union Government proposed setting up a new **Akashvani Kendra in Ujjain** under the **Broadcasting Infrastructure and Network Development (BIND) scheme** to enhance public broadcasting outreach in underserved regions.



About BIND Scheme:

- **Launched:** 2023
- **Type:** Central Sector Scheme (fully funded by Union Govt)
- **Duration:** 2023–2026
- **Implementing Body:** Ministry of Information & Broadcasting via **Prasar Bharati**
- **Goal:** Strengthen infrastructure and content delivery of **All India Radio (AIR)** and **Doordarshan (DD)**

Area	Target
AIR FM Coverage	Expand to cover 66% of India’s geographical area and 80% of the population
DD Set-top Boxes	Distribute 8 lakh+ boxes in remote and border areas
HD Studios	Upgrade existing facilities to HD and digital standards
Field Reporting	Deploy OB vans and mobile units for live outdoor broadcasts
Tribal and LWE Regions	Prioritise media access in Left-Wing Extremism-affected, border, tribal, and aspirational districts
DD Free Dish	Expand platform to accommodate more channels
Content Development	Support production of quality educational, cultural, and news content

Significance of New Ujjain Kendra:

- Improves **media penetration** in central India.
- Promotes **local culture, language, and governance** communication.
- Boosts **national integration and disaster communication infrastructure.**



UPSC Relevance: **GS Paper 2** – Government Policies & Interventions. **GS Paper 1** – Society (regional development, communication). **GS Paper 3** – Internal Security (media outreach in LWE and border areas). **Essay or Interview** – “Role of Public Broadcasting in Strengthening Democracy.



HOT Question: “How can schemes like BIND contribute to balanced regional development and counter disinformation in remote areas?”



17. Supreme Court's Reservation Policy for Staff – 2025



Supreme Court Introduces Reservation in Internal Administrative Posts



•Policy Change:

- Supreme Court of India has **formally implemented reservations** in its **internal administrative posts**.

•Reservation Quota:

- Scheduled Castes (SC):** 15%
- Scheduled Tribes (ST):** 7.5%

•Scope:

- Applicable to **non-judicial staff**: registrars, assistants, clerks, librarians, technical staff, etc.
- ✗ Not applicable to judges.**



Significance

- First-of-its-kind:** Marks the **first official reservation policy** within the Supreme Court's internal staffing.
- Policy Alignment:** Brings the **Supreme Court administration in line with central government rules** on reservation.
- Inclusion Milestone:** Supports representation and inclusion of SC/ST communities within the higher judiciary's institutional structure (though not in the judiciary itself).



UPSC Relevance: **GS Paper II - Polity & Governance:** Reservation policies in constitutional bodies, Judicial reforms. **GS Paper I - Society:** Issues related to **affirmative action** and **social justice**



HOT Question: "To what extent should the principle of affirmative action be extended to non-elected arms of the state such as the judiciary's internal administration?"

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18. New Sports Bill Seeks to Replace 2011 Code



A **new Sports Bill** was introduced in **Lok Sabha** to **replace the non-binding Sports Code, 2011** with a **legally enforceable framework** governing all **National Sports Federations (NSFs)**—including the **BCCI**.

Uniform Legal Framework:

- Brings all NSFs under one law for **transparency, accountability, and athlete welfare**.

Three New Regulatory Bodies:

- National Sports Board (NSB)**: Apex body for recognition, regulation, and monitoring of NSFs.
- National Sports Tribunal**: Civil court-like body to resolve sports disputes (only SC appeal allowed).
- Election Panel**: Ensures **timely, free & fair elections** across all NSFs.

Transparency & Ethics Reforms:

- All NSFs deemed **public authorities under the RTI Act**.
- Use of "India" or **national symbols** requires **NSB approval**.
- Safe Sport Policy** mandates POSH-compliant grievance redressal.
- Age limit**: NSF officials to be **25–70 years** (extendable to 75 internationally).



NSF Executive Committees capped at 15 members.

Challenges and Implications:

- Autonomy vs Oversight**: May dilute independence of federations.
- BCCI Resistance**: BCCI likely to **oppose inclusion**, citing self-funding and ICC membership.
- Federal Tensions**: **Sports is a State subject**; may trigger Centre–State friction.
- Legal Conflicts**: May clash with **Olympic Charter** and global sports norms.
- Implementation Gaps**: Success depends on capacity of NSB and Tribunal.



UPSC Relevance: **GS Paper II** – Governance, Polity (Transparency, Accountability).
GS Paper III – Sports, Infrastructure, Issues in Indian Society



HOT Question: "How can the government strike a balance between autonomy of sports federations and the need for transparency and athlete-first governance?"



19. Ahmedabad Air Crash



The **June 2025 Air India Boeing 787 crash in Ahmedabad** has spotlighted **systemic failures** in India’s civil aviation sector — from regulatory lapses to crew fatigue and infrastructure negligence.

Key Systemic Failures:

Sector	Major Issues
Aircraft Certification	DGCA lacks in-house technical expertise; over-relies on FAA/EASA.
Maintenance	Unregulated AME duty hours, delegation to underqualified technicians.
Pilot/Cabin Crew Fatigue	FTDLs frequently breached; mental health concerns discouraged.
Air Traffic Control (ATC)	ATCO shortages; safety recommendations ignored.
DGCA Oversight	Conflict of interest, poor enforcement powers, airline domination.
Obstruction Hazards	Over 1,000 vertical obstructions in Mumbai’s airspace; lax regulation.

Regulatory & Judicial Concerns

DGCA’s Independence is weak, with limited authority over airline safety enforcement.

2015 Rule Regularisations allowed unsafe height exemptions for buildings near airports.

Judiciary has intervened occasionally (e.g. Ghatkopar PIL, 2018) but often defers to DGCA’s technical discretion.

Crash Inquiry Reports (e.g., Mangaluru 2010) remain largely **unimplemented**



UPSC Relevance: **GS Paper 2:** Governance, Regulatory Bodies, Accountability. **GS Paper 3:** Infrastructure, Aviation Safety, Disaster Management. **Ethics (GS 4):** Accountability, Institutional Integrity, Safety vs Profit Dilemma



HOT Question: “The Ahmedabad air crash is not just an accident, but a reflection of systemic neglect in India’s aviation sector. Critically examine the institutional weaknesses and suggest reforms.”



20. Maharashtra's Special Public Security Bill, 2024



Maharashtra Legislative Assembly passed the **Special Public Security Bill, 2024** to counter **urban Left-Wing Extremism (LWE)** by criminalising ideological, logistical, or organisational support to Maoist-affiliated groups.



- **Urban Maoism Criminalised:** Targets ideological/logistical support to LWE in cities.
- **Organisational Bans:** Enables banning of front organisations supporting Maoists.
- **Judicial Oversight:** Advisory boards ensure safeguards and review executive actions.
- **Focus on Prevention:** Aims to choke urban support networks sustaining rural insurgencies.

Urban Maoism is Naxalism minus AK-47” – ideological warfare from urban centres rather than armed conflict in jungles.

Urban Maoism	Rural Maoism
Intellectual & propaganda support	Armed insurgency
Operates through NGOs, academia, activism	Operates through guerrilla warfare
Exploits digital anonymity & legal cover	Operates covertly in forested areas
Aims at subversion, not confrontation	Aims at direct confrontation with the state



Urban Maoist Objectives

1. **Radicalisation** of youth through ideology
2. **Institutional infiltration** –universities, civil rights groups, legal forums
3. **Funding & logistics** for rural cadres
4. **Narrative warfare** –creating distrust in democracy and security forces
5. **Linkage maintenance** –connecting safe urban hubs with rural bases



UPSC Relevance: **GS Paper III:** Internal Security, Role of Non-State Actors, Cyber Security. **GS Paper II:** Federalism, Civil Rights vs Security. **Essay:** Civil Liberties and National Security: Finding the Balance.



HOT Question: “Discuss the emerging threat of Urban Maoism in India and evaluate the effectiveness of legal and administrative mechanisms to counter it without undermining civil liberties.”



JULY 2025

INTERNATIONAL AFFAIRS

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

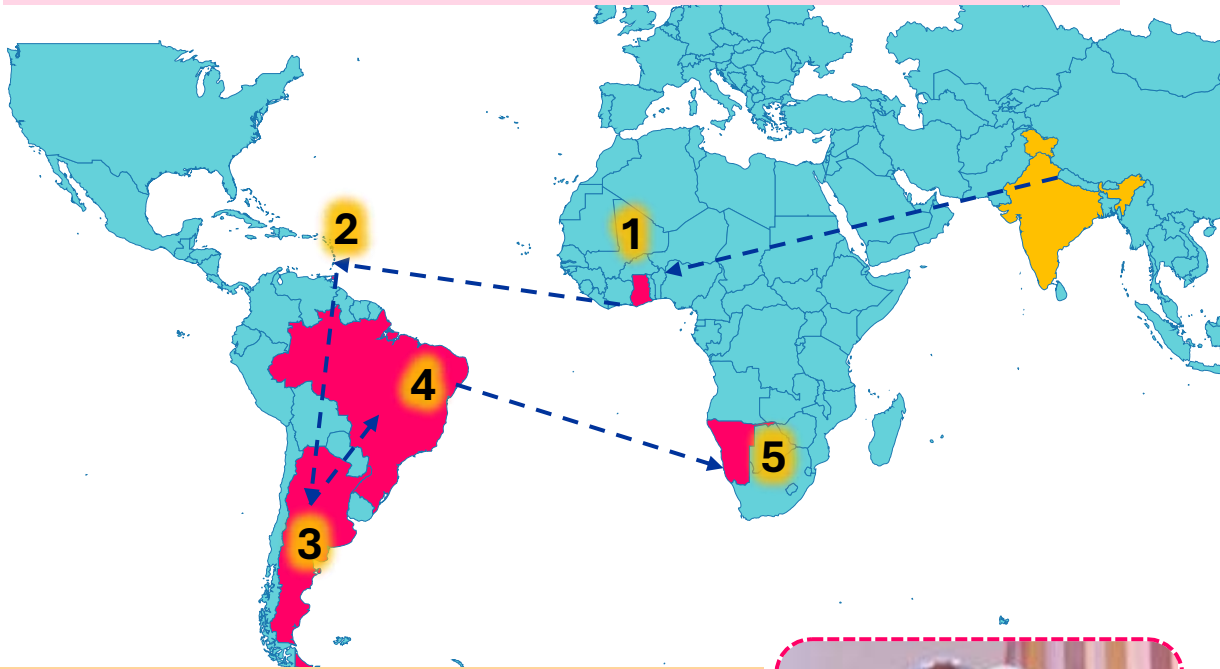
1. Prime Minister 5 Nation Tour
2. PM Visit to Maldives
3. Ezulwini Consensus
4. India Opposes Amendments to the Plant Treaty
5. India-EFTA Trade and Economic Partnership (TEPA)
6. India-UK CETA
7. Preah Vihear Temple and Cambodia-Thailand Dispute
8. Bitra Island -India's Newest Naval Outpost
9. Kaladan Multimodal Transit Project
10. Kashi Declaration
11. Digital Colonialism
12. Geelong Treaty: AUKUS Pillar I
13. India-Singapore Kurukshetra Military Drill
14. Exercise Talisman Sabre 2025
15. Denmark's Copyright Bill: Tackling Deepfakes
16. Wilmington Declaration (2024)
17. US Withdraws from UNESCO Again
18. E3 countries
19. FfD4 Seville, Spain
20. Henley Passport Index 2025
21. Operation MED MAX
22. Red Sea Attacks by Houthis
23. Druze Community in Suwayda, Syria
24. UAE Launches Golden Visa for Indian Residents
25. XVII BRICS Summit 2025 - Rio Declaration
26. Iran-IAEA Disconnection
27. Quad Launches Critical Minerals Initiative
28. Canada's Digital Services Tax (DST)
29. Jaa Mata Exercise
30. U.S. Imposes 25% Tariff on Indian Imports



1. PM Modi's Five-Nation Diplomatic Tour (2–9 July 2025)



Prime Minister Narendra Modi undertook an eight-day **five-nation tour** across **Ghana, Trinidad and Tobago, Argentina, Brazil, and Namibia**, culminating in participation at the **17th BRICS Summit in Brazil**



1. Ghana (2–3 July)

Received national honour “**Officer of the Order of the Star of Ghana**”.

Signed four MoUs in cultural exchange, standards certification, traditional medicine, and high-level dialogue frameworks.

Emphasised India's demand-driven development cooperation model in Africa, contrasting with China's approach



2. Trinidad & Tobago (3–4 July)

Addressed Parliament and received the nation's **highest civilian award**, the Order of the Republic.

Visit marked the **first by a sitting Indian PM**.

Sparked debate back home, with protests by Muslim organizations over human rights concerns



3. Argentina (4–5 July)

- Held bilateral talks with President Javier Milei focusing on trade, investment, energy, and renewables



4. Brazil (5–8 July)

- Attended the **BRICS Summit** in Rio de Janeiro.
- Held multiple bilateral meetings on energy cooperation, global governance, and South–South collaboration



5. Namibia (8–9 July)

- Engaged in bilateral dialogue with President Netumbo Nandi-Ndaitwah and addressed Parliament, further boosting diplomatic and strategic tie



Every Award for PM Modi is a **SALUTE TO BHARAT’S RISE**
Conferred with Trinidad & Tobago’s highest civilian honour

25
Highest Civilian Honour
Bestowed on PM Modi

2025 The Order of the Republic of Trinidad & Tobago	2023 Grand Cross of the Order of Honour
2025 The Officer of the Order of the Star of Ghana	2023 Grand Cross the Legion of Honour
2025 ‘Grand Cross of the Order of Makarios III of Cyprus	2023 Order of the Nile
2025 Mithra Vihushana Award	2023 Companion of the Order of Fiji
2025 Grand Commander of the Order of the Star and Key of the Indian Ocean	2023 Grand Companion of the Order of Lagosu
2024 The Order of Mubarak Al Kabeeji	2023 Eboli Award
2024 The Order of Excellence	2020 Legion of Merit by the US Government
2024 Honorary Order of Freedom of Barbados Award	2018 Grand Collar of the State of Palestine Award
2024 The Dominice Award of Honour	2019 Order of Zayed Award
2024 The Grand Commander of the Order of the Niger	2019 Order of the Distinguished Rule of Nishan Ruzdinin
2024 Order of St. Andrews the Apostle	2019 King Hamad Order of the Renaissance
2024 Order of the Druk Gyalpo	2016 State Order of Ghazi Amir Amanullah Khan
	2016 The King Abdulaziz Sash

UPSC Relevance:

GS Paper III – Trade agreements, development diplomacy, diplomatic expenditure.

GS Paper II – India’s foreign policy, global South cooperation.

HOT Question:

“Analyse how Prime Minister Modi’s five-nation tour in July 2025 furthered India’s strategic presence in continents beyond Asia and reinforced its role in the Global South.”

2. PM Visit to Maldives



A high-level Indian visit to Maldives aimed at restoring bilateral ties post tensions from the “**India Out**” campaign.

✓ **Key Outcomes of the Visit**

Financial Support : ₹4,850 crore **Line of Credit (LoC)** extended to Maldives. India agreed to **ease Maldives’ debt repayment** burden.

Digital & Economic Cooperation : **UPI integration** in Maldives finalized. Discussions initiated on **Terms of Reference for a proposed Free Trade Agreement (FTA)**.

6 MoUs Signed	Details
Fisheries	Capacity building and resource management
Aquaculture	Support for sustainable marine farming
Meteorology	Technical cooperation and data sharing
Digital Public Infrastructure	Indian tech stack for e-governance
UPI	Cross-border digital payment system
Indian Pharmacopoeia	Use of Indian standards for medicines

Inaugurations & Handovers

3,300 social housing units in **Hulhumalé** inaugurated (under Buyer’s Credit from India).

Addu City Infrastructure Projects (roads, drainage) completed.

Handed over **two Arogya Maitri Health Cubes** (BHISHM kits) for emergency medical support.



UPSC Relevance: GS Paper II – Bilateral Relations, India’s Neighbourhood First Policy, Regional geopolitics in the Indian Ocean.
Prelims - Arogya Maitri BHISHM, UPI diplomacy, India–Maldives MoUs, Line of Credit.



HOT Question: “In the context of India’s recent outreach to Maldives, assess how digital and developmental diplomacy are becoming tools of regional influence.”

3. Ezulwini Consensus Africa's Voice on UNSC Reform



Recently referenced in global discussions on **UNSC reform**, **Global South representation**, and **India–Africa cooperation** in platforms like **G20**, **BRICS**, and **UNGA**.

Adopted: 2005 by the **African Union** in **Ezulwini, Eswatini (then Swaziland)**. Represents **Africa's unified stand** on **United Nations reforms**, particularly the **Security Council**.

Key Demands

- 2 Permanent Seats for Africa with veto power.
- 5 Non-Permanent Seats for Africa.
- Greater role for Africa in:
 - Peace and Security
 - Development
 - Global Governance



Significance

- Counters historic under-representation of Africa in global decision-making.
- Promotes equity and inclusiveness in **multilateral governance**.
- Aligns with **India's own call for comprehensive UNSC reforms** under **G4** and **L69** groupings.



UPSC Relevance: GS Paper II International Institutions, India–Africa relations, Multilateralism. **GS IV:** Issues of equity and fairness in global governance.
Prelims: International groupings, Ezulwini Consensus, UN Reforms



HOT Question: “How does the Ezulwini Consensus reflect the growing assertion of the Global South in reshaping international institutions?”

5. India–EFTA Trade and Economic Partnership Agreement (TEPA)



India’s **Trade and Economic Partnership Agreement (TEPA)** with the **European Free Trade Association (EFTA)** has been **ratified** and is set to **come into force on 1 October 2025**. This marks a **significant milestone in India–Europe trade relations**, especially after 16 years of negotiations.

What is TEPA ?

TEPA = Trade and Economic Partnership Agreement
Signed between **India** and **EFTA**, which includes: **Switzerland**
Norway, Iceland, Liechtenstein



Signed on **10 March 2024**, ratified on **22 July 2025** (in Norway).
Covers: **Goods, services, investments, IPR, government procurement, sustainability, dispute settlement.**

Key Features	Details
Tariff Reduction	India to cut tariffs on 82–83% of tariff lines (e.g. Swiss watches, chocolates, machinery)
Export Boost	99.6% of Indian exports to EFTA to enjoy reduced or zero tariffs (mostly non-agricultural goods)
Investment Commitment	EFTA to invest \$100 billion in India over 15 years (first \$50B in 10 years)
Job Creation Goal	Aims to generate 1 million direct jobs in India
Safeguard Clause	If investment/job targets are unmet, India can initiate consultations and tariff rebalancing



UPSC Relevance:
GS Paper II - India’s bilateral and multilateral trade agreements.
GS Paper III – Economic development, FDI, employment generation.



HOT Question: “How does TEPA reflect India’s evolving trade strategy with developed economies, and what challenges might arise in balancing investment expectations with domestic industry protection?”

6. India–UK Comprehensive Economic and Trade Agreement (CETA)



Free Trade Agreement (FTA) negotiated between **India** and the **United Kingdom** to establish a Comprehensive Economic and Trade Agreement covering trade in goods, services, investment, IPR, government procurement, etc. Negotiations launched in January 2022. Signed on 24 July 2025.

Importance & Strategic Significance

Largest strategic trade pact with an advanced economy post-Brexit. Aims to **double bilateral trade** to USD 120 bn by 2030. Includes investment deals worth **£6 billion** in sectors like AI, aerospace, and dairy . Provides a template for future deals with the EU, U.S., etc.

What's Covered

Area	Coverage
Goods & Tariffs	90% of UK exports to India, and ~99% of Indian exports to the UK to enjoy tariff cuts or elimination
Services	Includes access for Indian IT, education, legal services, etc.
Investment	Investment facilitation and dispute resolution included
Government Procurement	Partially covered—UK offers significant access; India cautiously protective
Digital Trade & IPR	WTO-plus commitments; UK pushes stronger IPR, India careful on data, sovereignty
Mobility & Social Security	1,800 visas for yoga instructors/artists; Double National Insurance contributions waived for intra-company transfers for 3 years.
Gender & Sustainability	Standalone chapters and progressive practices included in several clauses.



MAKE IN INDIA
Gets UK Fast Track



What Is Not Covered or Is Limited

Despite its breadth, the FTA maintains **strategic exclusions and safeguards**:

- **Sensitive Agricultural Products**: Items like **dairy, apples, edible oils, oats** are excluded from liberalization to protect Indian farmers.
- **Automobiles**: India offers limited concessions only for **high-end electric and hybrid vehicles**, capped at 10,000 units annually.

Scotch Whisky:

Tariff reduced from 150% to 30% under a quota of 2 million litres/year.

No Full Labor Mobility:

While professional movement is eased, there's no blanket liberalization of immigration or unskilled labor access.

No Investor-State Dispute Settlement (ISDS):

Disputes are resolved through **state-to-state mechanisms**, avoiding ISDS provisions.

● Pros	● Cons
Boosts Indian exports: 99% of Indian goods get duty-free access to UK.	Limited access for UK agricultural goods: India excludes sensitive items like dairy and apples.
Strengthens services sector: Liberalized access in IT, finance, education, and healthcare.	No ISDS mechanism: Investors must rely on state-to-state dispute resolution.
Encourages investment: Clear rules and protections for FDI in key sectors.	Gradual tariff reduction: India's tariff cuts on UK goods are phased over 10 years.
IPR cooperation: Enhances protection and enforcement of intellectual property.	Limited labour mobility: No major concessions on unskilled worker migration.
Customs simplification: Faster clearance, digitized procedures, and trade facilitation.	Quota restrictions: High-end UK goods like Scotch whisky and EVs face import caps.
Professional mobility: Easier visas for skilled workers and students.	Potential pressure on domestic industries: Competition may rise in sectors like electronics and machinery.
Strategic sectors benefit: Textiles, gems, marine products, and processed food gain competitive edge.	No full digital liberalization: Data localization and privacy concerns remain unresolved.



UPSC Relevance: **GS Paper II** - Bilateral relations, trade diplomacy, post-Brexit strategy. **GS Paper III** – Economic growth via FTAs, trade liberalisation, MSME & export strategy. **Prelims:** CETA signed July 2025, £6B investment, tariff elimination percentages.



HOT Question: “How does the India–UK CETA reflect a calibrated shift in India’s trade policy toward advanced economies while protecting critical domestic sectors?”



HOT Question: “Discuss the role of CETA in shaping India’s future trade architecture, especially in comparison to ongoing negotiations with the EU and the U.S.”

7. Preah Vihear Temple and Cambodia–Thailand Territorial Dispute



Renewed tensions between **Cambodia and Thailand** over the **Preah Vihear Temple** and the disputed surrounding 4.6 sq. km territory.

Legal History:

1962: The **International Court of Justice (ICJ)** awarded the temple to **Cambodia** based on French colonial-era maps.

Thailand accepted the judgment regarding the temple **but not the surrounding land** (~4.6 sq. km), leading to continued disputes.

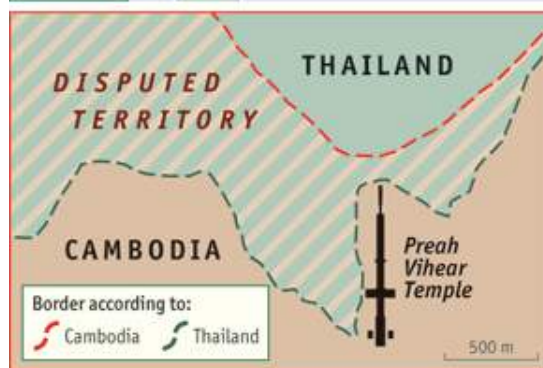


Flashpoints:

2008–2011: Armed clashes between Cambodian and Thai forces near the temple.

Both sides increased **military presence** along the border.

Casualties and damage to the temple led to international concern



Preah Vihear Temple: A Hindu temple dedicated to Lord Shiva, built during the Khmer Empire (~9th–12th century).

UNESCO World Heritage Site (2008).

Location: Atop a cliff on the Dângrêk Mountains, near the **Cambodia–Thailand border**.

Latest Developments:

Cambodia is pushing for **UNESCO and ICJ enforcement** of the 1962 and 2013 rulings (which clarified Cambodia's sovereignty over surrounding land).

Thailand prefers a **bilateral negotiation route** to resolve the issue amicably. Talks have resumed amidst renewed nationalist sentiments in both countries.



UPSC Relevance: **GS Paper II** - International Relations – India & its neighbourhood; global institutions (ICJ, UNESCO). **GS Paper I** –Art & Culture – Hindu temples abroad, Khmer architecture. **Prelims:** ICJ rulings, UNESCO sites, international borders.



HOT Question: “In territorial disputes involving cultural heritage sites, how should international law balance sovereignty claims with shared heritage values?”

8. Bitra Island to Become India’s Newest Naval Outpost in Lakshadweep



The **Lakshadweep Administration** has issued a notification to **transfer Bitra Island** to **central defence agencies** under the **Land Acquisition Act, 2013**, boosting India’s strategic naval presence in the Indian Ocean.

About Bitra Island

Feature	Description
Size	Smallest inhabited island in Lakshadweep (0.105 sq km)
Location	Amindivi subgroup, ~483 km from Kochi
Lagoon	Surrounded by 45.61 sq. km lagoon (largest in UT)
Population	271 residents (2011 Census)
Economy	Fishing and coconut farming
Climate	Tropical monsoon, ~1600 mm rainfall annually

Strategic Significance:

Strategic Factor	Importance
Sea Route Proximity	Close to major global shipping lanes (Hormuz–Malacca)
Naval Expansion	Will be Lakshadweep’s 3rd naval outpost after INS Dweeprakashak (Kavaratti) and INS Jatayu (Minicoy)
Energy Security	Enhances India’s ability to safeguard oil transport routes
Indian Ocean Strategy	Strengthens India’s naval reach to counter China’s IOR activities



UPSC Relevance: **GS Paper II** - India’s Security & International Relations.
GS Paper I –Geography: Islands, Coral Atolls, Maritime Features.
GS Paper III - Internal Security, Infrastructure in Border/Island Areas.



HOT Question: “Discuss the significance of Lakshadweep islands, particularly Bitra, in India’s maritime security and Indian Ocean strategy. How can defence infrastructure and ecological conservation be balanced?”

9. India–Myanmar Kaladan Project: Enhancing Northeast Connectivity



The Kaladan Multi-Modal Transit Transport Project (KMTTP) is nearing completion, boosting connectivity between India's mainland and the Northeast via Myanmar.

About KMTTP :

- A **bilateral infrastructure project** between India and Myanmar, signed in 2008.
- Implemented by **Ministry of External Affairs**, with technical support from **Inland Waterways Authority of India (IWAI)**.

Transit Route:

- 1. Waterway:** Kolkata → Sittwe Port (Myanmar) → Kaladan River → Paletwa
- 2. Road:** Paletwa → Zorinpui (on Mizoram border) → Aizawl



- **Bypasses the Siliguri Corridor (Chicken's Neck)**—the only narrow land link to NER.
- **Strategic & economic lifeline** for Northeast India.
- **Reduces travel time and logistics cost** for goods from Kolkata to Aizawl by over 50%.
- Strengthens India's **Act East Policy** and regional influence.
- Promotes **border trade**, tourism, and local industry in Mizoram and beyond.



UPSC Relevance: **GS Paper II** - (International Relations): Bilateral ties, neighbourhood diplomacy. **GS Paper III** - (Infrastructure, Economic Development): Connectivity initiatives, Act East Policy.
Prelims: Location of Sittwe Port, Kaladan River, Chicken's Neck corridor.



HOT Question: "How does the Kaladan Project reflect India's strategic balancing between connectivity, national security, and neighbourhood policy in the Indo-Pacific region?"

10. Kashi Declaration



Adopted at the *Youth Spiritual Summit* under the *Mera Yuva (MY) Bharat* initiative, the **Kashi Declaration** launches a youth-led anti-drug movement for a **Drug-Free India**.



- **Mera Yuva Bharat (MY Bharat):** Autonomous body to channel youth power into nation-building.
- **5-Year National De-Addiction Roadmap:** Anchored in youth participation, spiritual motivation, and community outreach.
- **National Consensus:** Treats drug abuse not only as a criminal issue but also a **public health** and **social challenge**.

Strategic Approach:

- **Multi-ministerial coordination** via institutional mechanisms.
- **Joint National Committee** with annual progress reviews.
- Integration of **spirituality, education, and technology** for sustained behavioural change.

◆ Other Government Anti-Drug Initiatives:

- *Narcotic Drugs and Psychotropic Substances Act, 1985*
- *Prevention of Illicit Trafficking in NDPS Act, 1988*
- *National Action Plan for Drug Demand Reduction (2018–25)*
- *Nasha Mukh Bharat Abhiyan (2020)*

What is the Kashi Declaration?

- Treat drug abuse as a health & social issue
- Collaboration of government, schools, families & spiritual leaders
- Create one platform to support affected people
- Not just talk but real action, real change.



UPSC Relevance: **GS Paper II** - (Governance): Public health policy, youth engagement.

GS Paper III - (Social Issues): Drug abuse, de-addiction strategies.

Prelims: Schemes like NMBA, MY Bharat; NDPS Act.



HOT Question: “How can India balance criminal justice with public health in tackling the drug menace through youth and spiritual mobilisation?”

11. Digital Colonialism: The New-Age Sovereignty Battle



Concerns are rising over the **foreign dominance of India's digital infrastructure**, platforms, and data, triggering fears of **Digital Colonialism** — where control of **data and digital ecosystems** replaces older forms of political or economic colonization.

Digital Colonialism

It refers to **foreign control over a country's digital resources** — such as **data, infrastructure, platforms, and digital services** — by multinational corporations or governments, leading to **loss of digital sovereignty, economic dependence, and policy vulnerability**.



How India is responding :

1. Promoting Digital Sovereignty

- Launch of **India Stack, ONDC (Open Network for Digital Commerce), DigiLocker**, and **UPI** to **reduce reliance on foreign apps**.
- Encouraging homegrown alternatives to social media, e-commerce, and cloud services.

2. Enforcing Data Localisation

- **Refused to join the Osaka Track** on free cross-border data flows.
- Enacted the **Digital Personal Data Protection (DPDP) Act, 2023**, which mandates that **certain types of personal data stay within India**.

3. Reducing Tech Import Dependence

- Push for **indigenous development** in electronics, semiconductors, defence tech, and AI through **Make in India, Digital India**, and **Chips to Startup (C2S)** programme.
- Promotion of **trusted telecom** and **cloud infrastructure**.

4. Policy Modernization & Global Pushback

- Following **UNCTAD's 2021 advisory**, India is reviewing data flow and digital trade rules to **prioritize economic development, public interest, and secure governance**.



UPSC Relevance: **GS Paper II** - Governance, Data Privacy, International Institutions (UNCTAD), Sovereignty. **GS Paper III** - Science and Tech, Cybersecurity, Digital Economy, Make in India. **Essay & Ethics** – Themes of sovereignty, digital justice, ethical data governance.



HOT Question: “In what ways does digital colonialism pose a greater threat to India's sovereignty than traditional forms of colonization? Evaluate with examples.”

12. Geelong Treaty: Deepening AUKUS Nuclear Submarine Ties



Australia and the UK signed the **Geelong Treaty** under **AUKUS Pillar I**, focusing on the **design and construction of nuclear-powered submarines** — a landmark moment in long-term defence cooperation.

Geelong Treaty

- A **bilateral agreement** (not trilateral) between **Australia and the UK**, signed in **Geelong, Victoria**.
- Facilitates the **transfer of nuclear-powered submarine technology** and deepens cooperation in **undersea defence capabilities**.
- While part of **AUKUS Pillar I**, the **United States is not a signatory** to this particular treaty.

Scope: 50-year partnership for **designing, building, and operating** nuclear submarines.

Knowledge Transfer: Involves UK support for **industrial base development** in Australia.

Training & Maintenance: Covers aspects of personnel training, nuclear safety, and long-term logistical cooperation.

Complements the **AUKUS SSN program** (nuclear-powered, conventionally armed submarines), primarily targeting Indo-Pacific security.



AUKUS Context

- **Pillar I:** Focuses on **nuclear-powered submarine capability**.
- **Pillar II:** Advanced Capabilities Cooperation like **AI, quantum computing, cyber**, etc.
- The Geelong Treaty operationalizes part of Pillar I for **Australia-UK bilateral cooperation**.



UPSC Relevance: **GS Paper II** - International Relations – Bilateral & multilateral defence cooperation, treaties, AUKUS, Indo-Pacific.

GS Paper III - Internal Security – Defence modernization, maritime security.

Prelims: Geelong Treaty, AUKUS structure, nuclear submarine capabilities.



HOT Question: “Does the Geelong Treaty signify a shift from trilateral to bilateral cooperation within AUKUS? What are its implications for regional power balance and India’s maritime security strategy.”

13. India–Singapore Launch 14th Bold Kurukshetra Military Drill in Rajasthan



The 14th edition of **Exercise Bold Kurukshetra** 2025 has commenced between the **Indian and Singapore Armies**, focusing on **joint mechanised warfare tactics**.

Type: Tabletop & computer-simulated wargame

Location: Jodhpur Military Station, Rajasthan

Focus: Enhancing coordination in **mechanised warfare** and **joint operational procedures**

Participants: Indian Army & Singapore Armed Forces



UPSC Relevance: **GS Paper II International Relations:** India–Singapore strategic ties. **GS Paper III - Defence:** Bilateral military exercises, regional cooperation, **Security:** Indo-Pacific security frameworks and UN-mandated operations.



HOT Question: “How do bilateral military exercises like Bold Kurukshetra contribute to India's role as a net security provider in the Indo-Pacific?”

14. Exercise Talisman Sabre 2025: Australia's Largest Multinational Defence Drill



Exercise Talisman Sabre 2025 kicked off in **Sydney**, marking the **largest military exercise** in Australia's history and one of the **most comprehensive multinational drills** globally.

About

•Participating Nations:

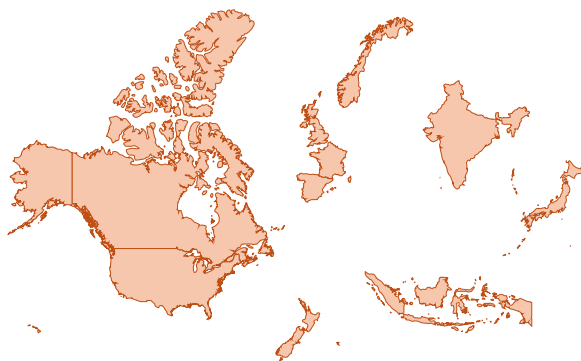
- 19

•Personnel Involved:

- Over **35,000 military troops**

•Domains Covered:

- Land
- Sea
- Air
- Space
- Cyber



Major Participants

- **U.S., India, Japan, UK, Canada, France, Germany, Indonesia, New Zealand, Norway, and others.**
- **Observers:** Malaysia and Vietnam



Activities

- Live-fire drills.
- Amphibious landings.
- Ground force manoeuvres.
- Air combat operations.
- Maritime surveillance and combat.
- Joint command simulations.



UPSC Relevance: **GS Paper II (IR):** Strengthens India's strategic partnerships and defence diplomacy. **GS Paper III - (Security):** Exposure to multi-domain warfare and joint operational capabilities. **Prelims:** Name, scope, and participants of Exercise Talisman Sabre



HOT Question: "How do multinational defence exercises like Talisman Sabre reinforce India's Act East Policy and shape the Indo-Pacific security architecture?"

15. Denmark’s Copyright Amendment Bill: Tackling Deepfakes



Denmark has proposed a **Copyright Amendment Bill** to counter the rise of **AI-generated deepfakes** by granting individuals **exclusive rights over their voice, face, and appearance**.

Deepfakes: AI-generated synthetic media that imitate real people’s **faces, voices, or actions**.

Risks: Privacy violation
Disinformation & election interference
Loss of trust in media
Challenges to law enforcement & judiciary



- Common Misuses:**
- Pornographic content (96% of cases)
 - Political manipulation
 - Celebrity impersonation
 - Financial and identity fraud

Key Features of Denmark’s Bill

Provision	Description
Imitation Protection	Bans AI recreation of a person’s face or voice without explicit consent
Performance Protection	Covers non-verbal acts (e.g., mimicry, gestures) not protected by traditional copyright
Artist Safeguards	Protects performers, actors, musicians from digital impersonation
Universal Coverage	Extends rights to all individuals, not just celebrities
Posthumous Protection	Identity rights extended 50 years after death
Consent Burden Rule	Content creators must prove they obtained prior consent
Platform Liability	Hosts must remove flagged content or face legal penalties
Civil Recourse	Victims can sue for damages or seek content removal

Lessons for India

Domain	Suggested Action
Digital Identity Rights	Recognize face, voice, and likeness as personal IP
Consent Mandate	Require written consent before using someone’s identity in AI-generated content
Platform Responsibility	Impose safe harbor limitations unless prompt takedown is ensured
Posthumous Dignity	Protect digital legacy of individuals after death
Creative Safeguards	Extend legal cover to non-verbal expressions and traditional performers
Legal Reforms	Amend the IT Act, Copyright Act, and introduce a Digital Rights Charter



HOT Question: “Should individual identity and likeness be treated as intellectual property in the era of AI? Discuss with reference to Denmark’s Copyright Amendment Bill.”

16. Wilmington Declaration 2024: QUAD's Maritime Security Push



The **Wilmington Declaration** was released by **QUAD leaders** during a summit held in **Wilmington, USA (2024)**, marking a strategic step in enhancing **Indo-Pacific maritime cooperation**.



- Launch of “QUAD at Sea Ship Observer Mission”** – first-ever coordinated maritime observer initiative.
- Aims to **boost interoperability, domain awareness, and maritime security** in the Indo-Pacific.
 - Reinforces India’s **SAGAR** doctrine (*Security and Growth for All in the Region*).
 - Enhances QUAD’s role as a collaborative maritime security provider.



HOT Question: “How does the Wilmington Declaration reflect the strategic shift of the QUAD from dialogue to operational collaboration in maritime security?”



UPSC Relevance: **GS Paper II-IR:** QUAD, Indo-Pacific architecture, maritime diplomacy and security posture. **GS Paper III Internal Security (Maritime Security):** multilateral naval frameworks. **Prelims:** Wilmington Declaration, SAGAR initiative, QUAD nations and objectives.

17. US Withdraws from UNESCO Again: A Shift in Global Cultural Diplomacy



The **United States** has formally **withdrawn from UNESCO** for the **second time**, citing alleged **anti-Israel bias**, following a similar move under President Trump.

Key Details:

Aspect	Description
UNESCO Mandate	Promotes education, science, culture, and heritage conservation globally
U.S. Exit Reason	Alleged anti-Israel bias in voting and recognition of Palestinian claims
Past Exit	First withdrawal occurred in 2017 under Trump; rejoined in 2023 under Biden
Funding Impact	U.S. was one of the largest contributors to UNESCO's budget

Global Implications:

- **Erosion of Multilateralism:** U.S. pullout signals rising **unilateralism and politicisation** of global institutions
- **Budget Crisis:** Loss of U.S. funding may **hamper UNESCO projects**, especially in developing nations
- **Geopolitical Shift:** Creates **space for China, Russia, and the EU** to expand influence in global norm-setting
- **Global Governance Weakening:** Undermines cooperation in **AI ethics, climate education, heritage conservation**

Domain	Opportunities & Challenges for India
Soft Power	With 44 World Heritage Sites, India can increase global cultural visibility
Cultural Diplomacy	Active role in UNESCO could enhance India's image as a pluralistic, civilizational power
Education & AI Norms	India can shape UNESCO's evolving norms on AI ethics, climate education, and digital inclusion
Vacuum Utilisation	Absence of U.S. offers India a chance to lead Global South advocacy within UNESCO



UPSC Relevance: **GS Paper II - IR:** Role of international institutions, India's soft power diplomacy. **GS Paper I - Indian Culture:** Importance of heritage sites and cultural promotion. **Essay/Ethics** – Multilateralism vs Unilateralism in global governance.



HOT Question: “In light of repeated U.S. withdrawals from UNESCO, evaluate the future of multilateral cultural institutions and India’s role in strengthening them.”

18. E3 Threatens Snapback Sanctions Over Iran Nuclear Stalemate



E3 countries (UK, Germany, France) warned **snapback sanctions** against **Iran** under **JCPOA (2015)** due to breakdown of U.S.–Iran nuclear talks

About E3 Countries

- **E3** is an **informal security and foreign policy group** of the **UK, France, and Germany**.



Originated in **2003** to manage nuclear risks from **Iran**, post-Iraq war.



What are Snapback Sanctions?

Part of **Joint Comprehensive Plan of Action (JCPOA)**.

Allow **automatic reimposition of UN sanctions** if **Iran violates nuclear deal** terms.



UPSC Relevance: GS Paper II - IR: Highlights **multilateral diplomacy** and **nuclear non-proliferation regimes**. Involves India's strategic interests in **West Asia**, **oil imports**, and **Chabahar Port diplomacy**. Affects India's balancing act between **U.S., Iran, and EU**



HOT Question: "How do snapback sanctions under the JCPOA challenge the balance between collective security and national sovereignty in global nuclear diplomacy?"

19. Fourth Financing for Development Conference (FfD4), Seville, Spain



Held in **Seville, Spain (2024)**, the **FfD4 Summit** adopted the **Sevilla Commitment**, the first intergovernmentally agreed **SDG financing framework** since 2015 to address the **\$4 trillion annual SDG financing gap** in developing nations.

Key Outcome :



Theme	Details
SDG Reaffirmation	Strong political support for 2030 Agenda and implementation of all 17 SDGs.
Strategic Focus	1. Catalysing investment in climate resilience & development 2. Tackling debt crisis 3. Reforming the global financial system
New Financial Mechanism	Targeted at crisis response, climate resilience, social protection, and digital/local economies.
Debt Management Tools	- Debt Swaps for Development Hub (Spain + World Bank) - Debt-for-Development Programme (Italy for Africa)
Fair Taxation	Promote progressive taxation on ultra-rich, curb tax avoidance, and boost domestic resource mobilisation.
Seville Forum	A new platform to support debt restructuring coordination among nations.

Sevilla Commitment:

A **landmark global financing framework** aimed at bridging SDG financing gaps and transforming debt into development opportunities.
Notably, the USA did not attend.



Evolution of FfD Conferences:

Edition	Location	Year	Outcome
FfD1	Monterrey, Mexico	2002	Monterrey Consensus – Introduced global FfD agenda
FfD2	Doha, Qatar	2008	Expanded global focus on development financing
FfD3	Addis Ababa, Ethiopia	2015	Addis Ababa Action Agenda (AAAA) – Linked FfD to SDGs
FfD4	Seville, Spain	2024	Sevilla Commitment – Renewed SDG financing roadmap

About Addis Ababa Action Agenda (2015)

- Adopted at FfD3.
- Global framework aligning **financial flows, policies, and investment** with **SDG implementation**.



UPSC Relevance: **GS Paper II** - International institutions, Global groupings, SDG governance. **GS Paper III** – Mobilization of resources, Inclusive growth. **GS Paper 1 (Essay)** – Issues relating to poverty, development, international cooperation.



HOT Question: “How does the Sevilla Commitment signal a shift in the global financial order, and what role can India play in shaping inclusive and equitable development finance architecture?”

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20. 🌐 Henley Passport Index 2025: India's Passport Power Surges



India made the **largest single-year leap** in the Henley Passport Index for 2025—rising **eight places to rank 77th**, now granting visa-free or visa-on-arrival access to **59 countries**, up from 85th the previous year. Meanwhile, traditional mobility leaders like the **U.S. fell to 10th place**, their lowest ranking ever.

Henley Passport Index

- Ranks **199 passports** by the number of destinations (out of 227) accessible **without a prior visa or via visa-on-arrival**.
- Based on **IATA's Timatic data**, updated by Henley & Partners.



Top Spot: Singapore retains first place with access to **193 destinations**.

Runners-up: Japan and South Korea tied at **190 destinations** each.

India: Climbed to **77th place**, offering access to **59 visa-free/VOA destinations**.

USA: Dropped to **10th**, with access to **182 destinations**, its lowest placement in the Index's history.

Why Rankings Matter

- Reflect a country's **diplomatic influence** and **global integration**.
- Rising ranks often tie to proactive **visa-waiver negotiations**, **international engagement**, and **economic growth**.
- India's rise signals enhanced negotiation power, cultural diplomacy, and growing middle-class mobility.



UPSC Relevance: **GS Paper II** - Passport power reflects foreign policy, bilateral agreements, and diplomatic outreach.. **GS Paper III** – Mobility access impacts tourism, trade, and diaspora; policy measures to negotiate visa-free entry regimes.



HOT Question: "Evaluate the role of diplomatic engagement and reciprocal visa policies in increasing a country's passport power. How does India's rise in the Henley Passport Index reflect its changing global footprint?"

21. Operation MED MAX: Busting a Global Drug Trafficking Syndicate



The **Narcotics Control Bureau (NCB)** recently dismantled a major **global pharmaceutical drug trafficking network** spanning **four continents**, marking one of India's biggest anti-drug crackdowns involving cyber and tech-enabled logistics.



Illicit drugs trafficked: Primarily prescription opioids and synthetic pharmaceutical drugs.

• **Modus operandi:**

- Used **encrypted communication platforms** (like Telegram and darknet).
- Employed **drop-shipping models** via global postal and courier services.
- **Payments made using cryptocurrency**, making transactions difficult to trace.

• **International Reach:** Syndicate operated across **Asia, Europe, North America, and Australia**.

• Demonstrates how **cybertech, global logistics, and crypto** are increasingly used in **transnational crime**.



UPSC Relevance



GS Paper II - Role of NCB, international treaties, and regulatory frameworks.

GS Paper III – (Internal Security): Cybercrime, Narcotics trafficking, International cooperation on security.



HOT Question: "Discuss how emerging technologies like cryptocurrency and encrypted messaging apps pose new challenges to India's internal security, especially in tackling narcotics trafficking."

22. Recent Red Sea Attacks by Houthis: Major Flashpoint in Maritime Security



Yemen's **Houthi militants** recently launched a fresh wave of **attacks on commercial vessels** in the Red Sea, sinking at least two bulk carriers (*Eternity C* and *Magic Seas*). These assaults have resulted in multiple casualties and crew kidnappings, highlighting escalating threats to a vital global shipping lane

Incident Overview:

MV Magic Seas (Greek-operated, Liberia-flagged):

Attacked on **6 July 2025**, sustained a four-hour assault involving drones, sea drones, grenades, and missiles.

The vessel slowly sank.

All 22 crew were evacuated, though six are reportedly held hostage by the Houthis.

MV Eternity C (Greek-operated, Liberia-flagged):

Hit on **7–8 July 2025**, attacked with sea drones and drones.

At least four crew members died, ten rescued, others are missing or abducted (ten held captive by the Houthis)



Strategic Context: The Red Sea Crisis

Since **November 2023**, Houthis have attacked over **100 ships** in the Red Sea and Gulf of Aden, claiming solidarity with Palestinians amid the Gaza war.

International reaction includes:

- **UNSC Resolution 2722 (Jan 2024)** condemning the attacks and affirming freedom of navigation.
- Launch of **Operation Prosperity Guardian**, a US-led coalition to protect shipping lanes.
- The EU's **Operation Aspides**, a purely defensive naval mission escorting merchant vessels



Maritime Security: Raises questions on the vulnerability of Red Sea routes and the adequacy of allied naval protection.

Global Trade Disruption: Over \$1 trillion worth of goods transit annually through the corridor; insurers have raised premiums, and some major operators reroute ships via Africa

Environmental Risks: Reports indicate oil spills and ecosystem damage near Eritrea

Digital Vulnerability: Rising attacks threaten undersea fiber-optic cables passing through these waters, critical to India's Internet infrastructure



UPSC Relevance: **GS Paper II – IR-** Geo-strategic implications for India, response via multilateral maritime security. **GS Paper III - Security:** Challenges to maritime safety, trade routes, and cyber infrastructure. **Prelims:** Names of attacks (*Magic Seas, Eternity C*); missions (*Prosperity Guardian, Aspides*); key maritime choke points.



HOT Question: “Assess the implications of Houthi-led maritime attacks on global shipping routes for India’s strategic and economic interests. What policy measures should India consider to safeguard maritime trade and digital infrastructure?”

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23. Druze community in Suwayda, Syria



The **Druze community in Suwayda**, Syria, is facing **ethnic cleansing** threats by **Sunni Bedouin militias** amid **post-Assad instability** and **escalating sectarian violence**.

Druze Community Overview

Aspect	Details
Origin	Emerged in 11th century from the Levant (historical Syria-Palestine region)
Beliefs	- Strict monotheism, belief in reincarnation and divinity of al-Hakim (Fatimid caliph) - Influenced by Neoplatonism, Gnosticism, Islamic esotericism
Religious Practices	- Reject Islamic orthodoxy (e.g., Hajj, Salat) - Texts are secret, studied only by elders (Uqqal)
Social Structure	- Closed community: No conversion or intermarriage - Women have high status in society and law
Global Presence	Syria, Lebanon, Israel, Jordan (~1 million globally)
Indian Link	Presence in Middle Eastern geopolitics relevant for India's West Asia diplomacy



Suwayda: Druze Heartland in Syria

Feature	Details
Location	Southern Syria, near Jordan–Israel–Syria tri-junction
Terrain	Located on the Hauran volcanic plateau; features the Jabal al-Druze range
Nickname	“Little Venezuela” due to return migration from Latin America

Crisis Overview: **Ethnic Cleansing Accusations:** Bedouin militias allegedly targeting Druze civilians.

- **Post-Assad Vacuum:** Rise of **sectarian militias** and **warlords** following Syria's civil war.
- **Strategic Tensions:** Suwayda borders **contested areas**; increased risk of spillover from **regional conflicts**.



HOT Question: “How does the conflict in Suwayda reflect the challenges faced by minority ethnoreligious communities in conflict-ridden regions?”

24. UAE Launches Nomination-Based Golden Visa for Indian and Bangladeshi Residents



The **United Arab Emirates (UAE)** has launched a **nomination-based Golden Visa scheme** for residents of **India and Bangladesh**, requiring a **one-time fee of AED 100,000 (~₹23.3 lakh)**.



A **long-term residency permit** (5 or 10 years) that **automatically renews** if eligibility is maintained.

No need for a job offer or academic qualification—applicants qualify through **investment or talent**.

Includes family: Spouses, children, and domestic workers can be added to the same permit.

Part of UAE's strategy to **attract global talent and capital**, especially from **CEPA partner countries**

Golden Visa

- A **residency-by-investment** program that provides **long-term stay rights** without conferring **citizenship or voting rights**.
- Helps bypass conventional immigration hurdles (job offer, employer sponsorship, etc.).
- Adopted by over **100 countries**, including **Portugal, Greece, Malta**, and **UAE** to attract **foreign capital and high-skill talent**.

Geopolitical and Economic Implications:

Enhances **India-UAE mobility cooperation** under **CEPA** (Comprehensive Economic Partnership Agreement).

Offers new opportunities for **Indian entrepreneurs, professionals, and students** in the Gulf region.

Could deepen **diaspora ties, remittance flows**, and **bilateral economic integration**



UPSC Relevance: **GS Paper II - IR** - Bilateral Agreements, Migration Policy, **Governance** - Diaspora Engagement, Policy Innovation.
GS Paper III - Economy - Investment, Global Labor Markets.



HOT Question: "How do golden visa schemes redefine global migration patterns and what are their implications for India's skilled workforce and economic diplomacy?"

25. XVII BRICS Summit 2025 – Rio Declaration and Global South Leadership



The **XVII BRICS Summit** was held in **Rio de Janeiro, Brazil**, under the theme: “**Strengthening Global South Cooperation for a More Inclusive and Sustainable Governance.**” It marked a **pivotal moment for multilateralism**, with the **Rio Declaration** pushing for equity, reform, and resilience.



Expansion & Global South Solidarity
Indonesia inducted as a **full BRICS member**. **11 additional partner nations** added. Signals BRICS evolving into a **broader Global South coalition** enhancing **normative influence and multilateral bargaining power**.

Reforming Global Institutions

Called for restructuring of the **UN, IMF, and World Bank** to reflect **21st-century realities**. **China and Russia** reiterated support for **India and Brazil's permanent membership** in the **UNSC**.

Artificial Intelligence Governance

BRICS Leaders' Statement on AI emphasized:

- **Ethical, inclusive AI development**
- **Capacity-building in developing countries**
- **Responsible deployment aligned with Global South interests**



Climate Finance & COP Commitments

- Called for **concessional, predictable, and accessible climate finance** from developed nations.
- Announced launch of **BRICS Climate Research Platform**.
- **India pledged support for COP30 in Brazil** and offered to **host COP33 in 2028**.



💰 **Global Trade, Finance, and Economic Sovereignty**

- Urged **quota reforms in IMF** and equity in **World Bank shareholding** for **EMDEs** (Emerging Markets and Developing Economies).
- Strengthened the **New Development Bank (NDB)** to:
 - Enhance **local currency lending**
 - Mobilize funds for **climate adaptation and resilience**

Introduced:

- **BRICS Multilateral Guarantees (BMG)** – to **de-risk investments**
- **BRICS Cross-Border Payments Platform** – to bolster **financial sovereignty** and reduce **dependence on dollar-based systems**

🏥 **Human Development & Health**

- Launched **Partnership for the Elimination of Socially Determined Diseases**, focusing on **equity in healthcare outcomes**.



UPSC Relevance: **GS Paper II - IR** - Multilateral Forums, India and Global Governance . **GS Paper III – Economy** - IMF/World Bank Reforms, Financial Sovereignty; **Environment** - Climate Finance, Global Climate Governance.



HOT Question: “How does the BRICS 2025 Rio Declaration reflect the aspirations of the Global South in reforming global governance and advancing equitable multilateralism?”

26. Iran–IAEA Disconnection



Iran disconnected IAEA surveillance cameras and scaled back cooperation after the IAEA passed a censure resolution criticizing Iran's lack of transparency in its nuclear activities.



Agency Involved: International Atomic Energy Agency (IAEA) – monitors nuclear programs globally.

Iran's Move:

- Removed 27 surveillance cameras from nuclear facilities.
- Suspended implementation of the Additional Protocol (voluntary transparency commitments).



Reason: Reaction to the IAEA Board of Governors' resolution (supported by E3 and the US) censuring Iran for not explaining uranium traces at undeclared sites. Seen as retaliation against international pressure.

IMPLICATIONS

Global Nuclear Security:

Weakens monitoring mechanisms under the **Non-Proliferation Treaty (NPT)**.
Increases uncertainty over the status of **Iran's nuclear enrichment** activities.



JCPOA Revival:

Further derails stalled efforts to revive the **Joint Comprehensive Plan of Action (JCPOA)**.

Escalates tensions between Iran and Western nations, including the US.



UPSC Relevance: **GS Paper II - IR** - Iran's nuclear issue, IAEA role, NPT framework. **GS Paper III – Internal Security** – proliferation risks and global nuclear governance. **Prelims:** Agencies: IAEA, JCPOA, NPT; Terms: Additional Protocol, E3 (France, UK, Germany).



HOT Question: "How do actions like Iran's withdrawal from IAEA oversight affect the credibility of global non-proliferation regimes? Suggest policy responses for India and the global community."

27. Quad Launches Critical Minerals Initiative to Strengthen Economic Security



The **Quad grouping** (Australia, India, Japan, USA) launched the **Critical Minerals Initiative** to counter **China's dominance** and enhance **economic security**.



Aims to build **resilient and diversified supply chains** for **critical minerals** like **lithium, cobalt, and rare earths**, crucial for:

- Renewable energy systems**
- Electric vehicles (EVs)**

Advanced electronics & defence technologies

- Seeks to reduce strategic dependence on **China**, which currently **controls major portions** of global mineral refining and processing.
- Counters **economic coercion** and **price manipulation** risks posed by concentrated supply chains.



Significance:

- Enhances **Quad's strategic collaboration** in the Indo-Pacific.
- Supports **clean energy transition** and **technology development** goals.
- Promotes **regional stability** by **reducing mineral monopolies**.
- Ensures **long-term economic security** through collective resilience.

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UPSC Relevance: **GS Paper II - IR** - Groupings & Agreements involving India. **GS Paper III – Economy**– Mineral Resources, Energy Security, Supply Chain Resilience; **Environment** – Energy transition.



HOT Question: "How does securing critical mineral supply chains reflect the strategic shift in global geopolitics and energy transition imperatives?"

28. Canada's Digital Services Tax (DST)



Canada **scrapped its proposed DST**, due to US threats of tariffs and trade negotiations being jeopardised.



The DST was a **3% levy** on revenues of global tech giants from Canadian users. It was set to be applied **retroactively**, drawing heavy US opposition and prompting Canada to withdraw the tax to protect trade relations.



UPSC Relevance:

GS Paper II - IR - Global trade policy), **GS III** – Economy (Taxation & digital commerce).



HOT Question: "Should countries impose unilateral digital taxes in absence of global coordination?"

29. Jaa Mata Exercise



Japanese Coast Guard Ship *Itsukushima* Arrives in Chennai for **Jaa Mata Exercise**



What is Jaa Mata?

Type: Bilateral maritime exercise.

Participants: Indian Coast Guard & Japan Coast Guard.

Name Meaning: "See You Later" in Japanese.

Location (2025): Chennai, India.

 **Objective**

- Enhance **interoperability** between the two coast guards.
- Improve **search and rescue (SAR)**, **maritime law enforcement**, and **anti-piracy operations**.
- Refine **joint combat and operational capabilities** in maritime zones.



UPSC Relevance: **GS Paper II - IR** - India's bilateral relations with Japan, maritime diplomacy in the Indo-Pacific. **GS Paper III:** Internal Security – Coastal security, maritime domain awareness, anti-piracy efforts.



HOT Question: "How do joint maritime exercises like Jaa Mata enhance India's maritime security and contribute to regional stability in the Indo-Pacific?"

30. U.S. Imposes 25% Tariff on Indian Imports Amid Russia Ties and Trade Barriers



On **30th July 2025**, U.S. President Donald Trump announced a **25% import tariff on Indian goods**, effective **August 1**, citing India's high trade barriers and continued **defence and energy ties with Russia**.



Tariff Rates Comparison:

- o India: **25%**
- o Vietnam: 20%,
- o Indonesia: 19%,
- o Japan & EU: 15%

Primary U.S. Concerns:

High Indian tariffs & trade restrictions

India's Russian oil imports (35% of India's energy in H1 2025)

Continued **India–Russia defence partnership**

Indian Exports Affected:

- **Textiles, furniture, pharmaceuticals, gems & jewellery**
- **Market Reaction:**
Rupee dropped to ₹87.80/USD
Gift Nifty fell by 0.6% in futures
U.S.–India trade talks (targeting \$500B by 2030) at risk.

India's Response:

India stated it is **reviewing the implications** and remains committed to **a fair and balanced trade agreement**



UPSC Relevance: **GS Paper II** - IR India–USA Bilateral Relations, Trade Policy, International Sanctions. **GS Paper III: Economy** (External Sector), Rupee Depreciation, Export Impact. **Essay** - *Balancing Strategic Autonomy vs Strategic Alliances.*



HOT Question: “How should India balance its strategic autonomy with Russia and its economic and geopolitical interests with the U.S. in a multipolar world?”

DEFENCE & INTERNAL SECURITY

1. One-Front Reinforced Threat



Lt. Gen. Rahul R. Singh confirmed active **Chinese support to Pakistan** during **Operation Sindoor**, turning the hypothetical **"two-front war"** into a **"one-front reinforced war"**, marked by integrated **military, cyber, and diplomatic collusion**.

- What is One – Front Reinforced War?**
- A conflict **led by Pakistan**, but **backed covertly and technologically** by China—**below conventional war thresholds**.
 - **Hybrid Warfare Model** combining **proxy terror, cyberwar, UAVs, satellite support**, and **information warfare**.

🔧 Elements of Collusion:

Chinese Weapon Systems in Use:
Pakistan deployed **J-10C fighters, PL-15 air-to-air missiles, HQ-9 air defence** systems.

ISR & Satellite Support:
Real-time coordination via China’s **ISR assets** and **BeiDou satellite** system for precision targeting.

Cyber and Drone Warfare:
Drone swarms and **cyber attacks** followed China’s doctrinal methods.

Info-War & Diplomacy: Chinese media amplified Pakistan’s stance. **China blocked UNSC resolutions** condemning Pakistan based terror



Area	Impact
Deterrence Complexity	Grey-zone threats + conventional conflict blur response options.
Technology Dominance	Need to counter electronic warfare, drones, networked combat.
Double-Front Threat Resurgence	Despite LAC disengagement, China indirectly activates LoC front.
Chinese Military R&D	China uses Pakistan conflict to field-test its exports and tech.

HOT Question

"How does the concept of 'one-front reinforced war' alter India's traditional strategic doctrine and deterrence posture?"

Way Forward for Indic: Shift from Reactive to Anticipatory Posture: Move from **event-based retaliation** to **long-term strategic deterrence**.

Cross-Sector Coordination: Integrate policies across **MEA, MoD, DRDO**, and **cyber-security agencies**.

Boost Indigenous Capabilities: **ISR, anti-drone tech, satellite comm, EW systems**. Prioritise **UAV production, defensive cyber capability, missile defences**.

Raise Defence Spending: From current **13% of central budget** back to **pre-2014 levels (17%)**. Focus on **multi-domain preparedness** (cyber, space, land, air).



2. MiG-21 Bids Adieu: India Retires Its First Supersonic Fighter After 60+ Years



The **Indian Air Force (IAF)** is set to **formally retire the MiG-21 Bison**, ending the six-decade legacy of **India's first supersonic jet**.



Significance:

Served over **60 years**, making it one of the **longest-serving fighter aircraft** globally. Was a **symbol of India's aerial might** during critical wars and Cold War era. Retirement comes amid a **modernisation push** with newer aircraft like **Rafale** and **Tejas**.

Fighter Jet	Origin	Engine Type	Induction Year
Dassault Rafale	France	Twin-engine	2020
Su-30MKI	Russia	Twin-engine	2002
HAL Tejas	India	Single-engine	2016
Mirage 2000	France	Single-engine	1985
MiG-29 UPG	Russia	Twin-engine	1985 (Upgraded)
SEPECAT Jaguar	UK–France	Twin-engine	1979
MiG-21 Bison	Russia	Single-engine	1963 (retiring)



UPSC Relevance:
GS Paper 3: Defence Modernisation, Indigenisation
Essay/GS2: Technological Transition, Strategic Autonomy



HOT Question:
“The phase-out of MiG-21 signals the end of an era in Indian aviation. Analyse its historical significance and examine the challenges and opportunities in IAF's modernisation efforts.”



3. INS Nistar – Diving Support Vessel



INS Nistar, India’s **first indigenously designed Diving Support Vessel**, was delivered to the **Indian Navy**.

Aspect	Information
Type	Diving Support Vessel (DSV)
Built by	Indigenously designed and constructed in India
Primary Role	Supports deep-sea diving and rescue missions
Key Capabilities	- Saturation diving up to 300 m depth - Side diving stage to 75 m
Rescue Function	Acts as a Mother Ship for the Deep Submergence Rescue Vessel (DSRV)
Technology	- Remotely Operated Vehicles (ROVs) for monitoring and salvage up to 1000 m
Other Uses	Submarine support, underwater salvage, and recovery operations

Significance

- Strengthens India’s **underwater naval capabilities**.
- Enhances response to **submarine accidents** and **deep-sea incidents**.
- Boosts **indigenous defence manufacturing** in line with *Aatmanirbhar Bharat*.



UPSC Relevance:
GS Paper III – (Security): Maritime and Naval Security, Defence Technology.
Mains: Role of indigenous technology in strengthening India’s maritime security.



HOT Question
“Evaluate the strategic and technological significance of platforms like INS Nistar in strengthening India’s undersea rescue and naval preparedness.”



4. India’s Defence Exports Surge Post-Operation Sindoor



Operation Sindoor significantly boosted global trust in Indian defence systems, leading to a sharp rise in **defence export demand**, especially for **BrahMos, Akash, UAVs**, and **hypersonic systems**

How Operation Sindoor Boosted Defence Exports

Factor	Description
Combat Validation	Real-time use of BrahMos & Akash missiles showcased operational reliability.
Adversary Exposure	Failures of Chinese imports in Pakistan enhanced India’s comparative appeal.
Export Diplomacy	India briefed ~70 countries through diplomatic outreach showcasing indigenous systems.
Media Visibility	Operation received global coverage, improving perception of Indian defence tech.
Strategic Signal	Asserted India’s Power Projection Doctrine and export viability.

Trends in Defence Exports (2013 – 2025)

Indicator	Value
Export Value (2024–25)	₹23,622 crore (vs ₹686 crore in 2013–14)
Private Sector Share	₹15,233 crore (~65%)
Defence PSUs Growth	42.85% rise due to policy simplification
Top Markets	USA, France, Armenia, ~80 countries total
Key Exports	BrahMos, Akash, UAVs, Radars, Artillery, Dornier Aircraft

Drivers of Growth

- **Policy Reforms:** De-licensing, faster approvals, online platforms
- **Private Participation:** Entry of startups and major firms
- **Competitive Pricing:** Cost-effective platforms vs Western systems
- **G2G Deals:** Facilitated through diplomatic and attaché channels
- **Credit Support:** EXIM Bank’s low-interest lines of credit
- **Global Trends:** Rising demand for **non-Western** defence equipment post-Ukraine war
- **Indigenisation Focus:** ~75% of capital procurement earmarked for Indian-made systems.



UPSC Relevance:
GS Paper III – Security, Indigenization of Technology, Exports
GS Paper II – International Relations – Defence Diplomacy



HOT Question

“How can India balance its defence export ambitions with its geopolitical commitments and ethical arms trade obligations?”

5. Extended Range Anti Submarine Rocket



India successfully tested its **indigenous anti-submarine rocket system, ERASR**, boosting its naval combat capabilities.

Aspect	Information
System Name	ERASR (Extended Range Anti-Submarine Rocket)
Type	Ship-launched rocket to target enemy submarines
Developed by	DRDO – ARDE (Armament Research & Development Establishment), Pune
Key Features	Twin-rocket motor for adjustable ranges - Electronic Time Fuze for accuracy
Purpose	Enhances anti-submarine warfare (ASW) capability of Indian Naval ships

🚢 Strategic Significance

Strengthens India’s underwater threat response and littoral combat edge.
Aids in defending critical sea lanes and coastal zones against stealth submarine threats. Showcases indigenous defence R&D and innovation.



UPSC Relevance: GS Paper III- **Security / Science & Tech:** Defence preparedness, DRDO innovations, maritime threats. **Prelims:** ERASR, DRDO–ARDE, anti-submarine warfare systems. **Mains:** “Indigenisation of defence technology is vital to India’s strategic autonomy.”



HOT Question
“Discuss the significance of indigenous technologies like ERASR in India’s anti-submarine warfare strategy and maritime security.”



6. Apache AH-64E



India is set to receive deliveries of Apache AH-64E attack helicopters from the United States, strengthening its aerial combat capabilities.

Key Features of Apache AH - 64E

Aspect	Details
Type	Multi-role attack helicopter
Origin	USA (Boeing)
Weapons	AGM-114 Hellfire missiles, Hydra-70 rockets, 30 mm chain gun
Avionics	Advanced radar (Longbow), electro-optical sensors, night vision systems
Performance	High agility, precision strike capability, all-weather/night operation
Integration	Fully networked with Indian Air Force’s command and control systems

Strategic Significance

Enhances counter-insurgency, anti-tank, and air support capabilities.
Strengthens India’s preparedness in border zones and high-conflict regions.
Symbolizes India–US defence cooperation and technology transfer.



UPSC Relevance:

GS Paper III – Security: Defence Acquisition, military modernisation, bilateral defence ties. **Prelims:** Apache AH-64E, its origin and western weapon systems. **Mains:** “India’s defence procurement strategy must balance indigenous development with strategic imports”



HOT Question

“Discuss how the induction of Apache AH-64E helicopters enhances India’s military preparedness in mountainous and desert warfare zones.”

7. Netra MkII AWACS (India's Eye on the Sky)



The Government has approved the production of **Netra MkII**, an advanced Airborne Early Warning and Control System (AWACS), under the **AWACS India Programme**.



Aspect	Details
Platform	Mounted on Airbus A321 aircraft
Technology	Equipped with Active Electronically Scanned Array (AESA) radar
Role	Functions as an airborne command, control, surveillance, and communication hub
Capabilities	Detects and tracks aerial threats over long distances
Support	Provides real-time battle management and interoperability with IAF units



Strategic Significance

Boosts indigenous defence manufacturing under Atmanirbhar Bharat.
Enhances India's airborne situational awareness and network-centric warfare.
Critical for airspace monitoring, missile defence, and early threat detection.



UPSC Relevance: GS Paper III – Defence Technology, Indigenisation of Defence Production, Security. **Prelims** – Netra MkII, AESA radar, AWACS India Programme, Airbus A321. **Mains** – “Evaluate India’s progress in developing indigenous airborne surveillance platforms.”



HOT Question
“How does an indigenously developed AWACS like Netra MkII strengthen India’s strategic autonomy in defence preparedness?”



8. LCA Mark-1A



India received the **second GE-F404 engine** from the US for the **Light Combat Aircraft (LCA) Tejas Mark-1A**, a key step in ramping up indigenous fighter jet production.

✈ About LCA Tejas Mk-1A

Type: 4.5-generation **multi-role fighter aircraft**

Designed by: Aeronautical Development Agency (ADA); manufactured by HAL

•Roles: Air superiority, ground attack, close combat, and maritime strike



Strategic Significance

Enhances India's indigenous defence capability under **Atmanirbhar Bharat**
Reduces reliance on foreign fighter platforms
Suitable for deployment on advanced border sectors and naval operations
Strengthens **India's Light Fighter Fleet** alongside Su-30 MKIs and Rafales



⚙ Key Technological Features

- **AESA Radar (Active Electronically Scanned Array):** Greater detection range and accuracy
- **Electronic Warfare (EW) Suite:** Radar warning receiver & self-protection jammers
- **Digital Map Generator (DMG):** Real-time terrain awareness
- **Smart Multi-function Displays (SMFDs):** For intuitive, mission-critical data access
- **Air-to-Air & Air-to-Ground Weapon Integration:** Includes missiles, bombs, and smart munitions



UPSC Relevance: **GS Paper III:** Indigenisation of defence, technology upgrades in armed forces. **Prelims:** LCA Tejas, GE-F404 engine, AESA radar, Atmanirbhar Bharat. **Mains:** "Discuss how platforms like LCA Tejas support India's pursuit of self-reliance in defence manufacturing."



HOT Question: "In what ways does the development and deployment of platforms like LCA Tejas Mk-1A reflect India's progress towards strategic autonomy in defence, and what challenges remain in reducing foreign dependency in critical technologies like jet engines?"



9. S-400 Air Defence System



The **Ministry of Defence** has selected an Indian firm to establish a **Maintenance, Repair, and Overhaul (MRO) facility** for the **S-400 Air Defence System**, boosting indigenization and self-reliance in defence support infrastructure.



S-400 System

Origin: Russia | Nickname in India: *Sudarshan Chakra*

Type: Long-range **Surface-to-Air Missile (SAM)** system

Components:

- **Command-and-control system**
- **Phased array radar**
- **Electronic warfare (EW)** capabilities

Features:

360° radar and missile coverage

Can **track up to 300 targets** and engage **80 simultaneously**

Multi-layered defence using **multiple types of missiles**



Performance Specs	
Feature	Capability
Tracking Range	Up to 600 km
Engagement Range	Up to 400 km
Altitude Coverage	From 30 m to 30 km
Speed of Missiles	Up to Mach 13-14

Significance of the MRO Facility

- Reduces **dependence on foreign OEMs** (Russia) for maintenance
- Supports **Make in India & Atmanirbhar Bharat** in defence sector
- Enables **faster turnaround** and **greater operational readiness**
- Sets a precedent for MRO of other **imported high-end systems**



UPSC Relevance: GS Paper III – Defence technology, Indigenization of defence production. **Prelims:** S-400 system, layered air defence, radar technology. **Mains:** “Discuss the role of indigenous MRO capabilities in enhancing India’s defence preparedness.”



HOT Question: “How does the establishment of an indigenous MRO facility for systems like S-400 reflect India’s evolving defence ecosystem and strategic autonomy goals?”



10. INS Tamal Commissioned



The **Indian Navy commissioned INS Tamal**, a **Russian-built stealth frigate**, at **Kaliningrad, Russia**, under Indo-Russian defence cooperation.



- INS Tamal is the 8th stealth frigate under Project 1135.6 and 2nd of the Tushil class.
- Built under a 2016 Indo-Russian agreement, with two ships in Russia and two in India.
- Will operate under the **Western Fleet** from **Karwar, Karnataka**.
- Named after **Tamal**, a mythical celestial sword symbolizing strength.

Feature	Details
Stealth Frigate	Reduced radar/sound signature for combat survivability
Indigenous Systems	~26% of components made in India (electronics, sensors, weapons)
Hybrid Integration	Combines Russian propulsion with Indian weapons (e.g., BrahMos)
Anti-Submarine Warfare	Equipped with heavy torpedoes and HUMSA-NG sonar
Aviation Support	Can operate ASW helicopters for early detection
High-Speed Endurance	Sails at 30+ knots, suitable for long-range operations

Significance:

- Enhances **maritime deterrence** and **blue water naval capability**.
- Demonstrates **technology fusion** between India and Russia.
- Promotes **Aatmanirbhar Bharat** with indigenous defence systems.
- Strengthens India's role in **Indo-Pacific maritime security**.



UPSC Relevance:
GS Paper III – Defence Technology, Internal Security,
GS Paper II – International Relations (India–Russia defence cooperation)



HOT Question
“How do stealth capabilities and indigenous defence systems together contribute to India’s maritime security and strategic autonomy?”



11. INS Udaygiri Delivered



INS Udaygiri, the second **stealth frigate** under **Project 17A**, was delivered to the **Indian Navy**.



- Second ship** out of **seven** under **Project 17A (P-17A)**, being built by **MDSL (Mumbai)** and **GRSE (Kolkata)**.
- Successor to the **Shivalik-class (Project 17)** frigates.
- Designed for **multi-mission roles** in **Blue Water operations**, capable of handling **conventional and asymmetric threats**.
- Enhanced **stealth features** and **indigenous weapon-sensor systems**.

Technological Features:

Feature	Details
Propulsion	- CODOG system – switches between diesel and gas turbines
Weapon Systems	- Supersonic surface-to-surface missiles



Significance:

- Enhances India's **maritime dominance** and readiness in the **Indian Ocean Region (IOR)**.
- Showcases progress in **indigenous warship production** and **naval self-reliance**.
- Strengthens India's **deterrence capability** and blue water reach under the **Navy's modernization plan**.



UPSC Relevance:
GS Paper III – Internal Security & Defence Technology,
GS Paper II – International Relations (Maritime security, Defence Indigenization)



HOT Question
“How does Project 17A reflect India's evolving maritime strategy and push towards defence indigenization?”



12. Akash Prime



India successfully conducted a test of **Akash Prime**, an upgraded version of the Akash surface-to-air missile system, in the **high altitude region of Ladakh**, effectively destroying high-speed unmanned aerial targets.

What is Akash Prime ?

Developer: DRDO
Type: Surface-to-Air Missile
Category: Short- to medium-range missile system

Upgrade Over Original Akash:

- Better accuracy
- Advanced seekers for improved target detection
- Enhanced performance in **extreme cold, low-oxygen high-altitude environment** (> 4500 m)



Key Features

Feature	Details
Target Type	High-speed aerial targets (including UAVs)
Operational Range	~25–30 km
Altitude Capability	High-altitude combat zones like Ladakh
Weather Adaptability	Performs in sub-zero temperatures , low air pressure
Indigenization	Fully Indian system – radar, launcher, missile



UPSC Relevance:
•GS Paper III – Defence technology, indigenization in defence, strategic security. **Prelims:** Akash, Akash Prime, DRDO, missile ranges. **Mains:** Defence preparedness in extreme geographies; role of DRDO in self-reliance



HOT Question:
"How do systems like Akash Prime strengthen India's defence posture in high-altitude border regions such as Ladakh and Arunachal Pradesh?"



13. Exercise Drone Prahar



The Indian Army conducted **Exercise Drone Prahar** at **Rayang military station, Arunachal Pradesh**, to test battlefield drone integration under **realistic high-altitude conditions** near the Line of Actual Control (LAC).



Purpose: Validated drones for **ISR (Intelligence, Surveillance, Reconnaissance)**, **sensor-to-shooter coordination**, and **precision targeting**

Location: Hilly terrain of East Siang district, Arunachal Pradesh

Tech Features:

- **Airspace Deconfliction:** Coordinated safe multi-drone ops
- **Secure Links:** Real-time, encrypted communication
- **Unified Protocols:** Standardised operating systems for joint drone use



HOT Question

How does the integration of drone warfare enhance India's mountain combat capabilities along the LAC?



UPSC Relevance:

GS Paper III, **Security:** Modern warfare, use of drones in tactical combat.

Defence Technology: Indigenisation & integration of emerging technologies.

India-China Border Security: Preparedness in sensitive LAC zones.

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14. MALE Drones (Medium Altitude Long Endurance UAVs)



The Indian government has **fast-tracked the procurement of indigenously developed MALE drones** for strategic **surveillance operations**



MALE drones are **Unmanned Aerial Vehicles (UAVs)** capable of flying at **medium altitudes** and remaining airborne for **long durations** (up to 30 hours).

Altitude Range: Typically operate between **10,000 – 35,000 feet**.

Functions: **ISR:** Intelligence, Surveillance & Reconnaissance

Combat roles (weaponised variants)

Border monitoring and **persistent tracking**

Disaster relief and **maritime patrol**

Examples in India: **TAPAS BH-201** (Tactical Airborne Platform for Aerial Surveillance), **Rustom series**, **Archer**

**** (All developed by DRDO's Aeronautical Development Establishment - ADE)**



UPSC Relevance:

GS Paper III – Defence

Technology, Internal Security

Prelims – Defence equipment and DRDO technologies



HOT Question:

"How can indigenous drone technology like MALE UAVs enhance India's border security and reduce dependency on foreign surveillance systems?"

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15. Advanced Towed Artillery Gun System (ATAGS)



The Ministry of Defence has announced that the indigenously developed Advanced Towed **Artillery Gun System (ATAGS)** will replace older, smaller-calibre artillery guns in the Indian Army.



Feature	Description
Developed By	DRDO–ARDE (Armament Research and Development Establishment), Pune
Type	155 mm, 52-calibre towed howitzer
Firing Range	Up to 48 km
Project Initiation	2013

Unique Capabilities:

- ✓ All-electric drive – reduces maintenance.
- 🚚 High mobility and quick deployment capability
- 🔌 Auxiliary power mode for standalone operation
- 🎯 Night direct-fire capability for enhanced combat readiness
- 📡 Advanced communication system and digital control
- 🏆 Six-round magazine (vs. standard three-round in most systems)

Strategic Importance:

Benefit	Explanation
Modernization Push	Replaces ageing artillery with cutting-edge indigenous technology
Indigenous Defence Capability	Boosts Aatmanirbhar Bharat and defence exports
Enhanced Combat Effectiveness	Long-range precision fire improves battlefield dominance



UPSC Relevance: GS Paper III – Defence, Indigenisation of Technology. Prelims: ATAGS, DRDO, ARDE, ACCCS, C4I. Mains: India’s defence preparedness, role of indigenous R&D in military modernisation



HOT Question: "How does ATAGS reflect India’s strides in indigenous defence production, and what role does it play in modernising artillery warfare?"

16. Astra Missile



DRDO and the **Indian Air Force** successfully conducted the flight test of the **Astra Beyond Visual Range Air-to-Air Missile (BVRAAM)** with an **indigenously developed Radio Frequency (RF) seeker**, launched from a **Su-30 Mk-I** aircraft.



What is the Astra Missile?
Type: Indigenous Beyond Visual Range Air-to-Air Missile (BVRAAM)
Developer: Defence Research and Development Organisation (DRDO)
Platform: Integrated with Su-30 Mk-I, and planned for other fighters like Tejas Mk-1A and Mirage-2000
Target: Destroys highly manoeuvrable, supersonic enemy aircraft at long range

Feature	Details
Range	Over 100 km (depends on altitude and launch conditions)
Guidance System	Advanced indigenous RF seeker for terminal homing
Operation	All-weather, day-and-night capability
Speed	Supersonic
Technology	Mid-course inertial guidance with terminal RF homing
Indigenization	Major step in reducing dependence on foreign missile tech



UPSC Relevance:
•GS Paper III – Science and Technology (Indigenization of defence), Internal Security. **Prelims:** Astra, BVRAAM, DRDO projects. **Mains:** Importance of indigenization in defence; aerial superiority technologies



HOT Question “ How does the successful integration of an indigenous RF seeker in air-to-air missiles like Astra contribute to India’s defence autonomy and strategic deterrence? ”



JULY 2025

ECONOMY

1. Woolah Tea (Bagless Tea)
2. PM Dhan-Dhaanya Krishi Yojana (PM-DDKY)
3. Financial Fraud Risk Indicator (FRI)
4. National Cooperative Policy 2025
5. 11th India Maize Summit 2025
6. Japonica Rice
7. UPI in Namibia
8. Catastrophe Bonds (Cat Bonds)
9. One Nation, One Grid, One Tariff
10. Global Findex 2025
11. Union Budget 2025–26 Gender Budgeting
12. Employment Linked Incentive (ELI) Scheme
13. Consumer Price Index (CPI) for AL/RL
14. CPI hitting 6-year low of 2.10%
15. Remote Work in India
16. E-Truck Incentive Scheme
17. Global Public Debt (GPD Vs. GDP)
18. Seaweed Cultivation in India
19. Bills of Lading Bill, 2025
20. Shadow Bank
21. Global Capability Centre (GCC)
22. World Bank's Spring 2025 Poverty & Equity
23. Household Income Survey
24. Unified Pension Scheme (UPS)
25. Double Taxation Avoidance Agreement (DTAA)
26. Surveillance Pricing



1. WOOLAH TEA (Bagless Tea)



Assam-based startup **Woolah Tea (TTLT India Pvt Ltd)** has secured a **20-year global patent for its bagless tea technology**, becoming the world's first to compress whole-leaf tea into an **eco-friendly, plastic-free "tea dip"**



Significance & Implications

- Validates **homegrown innovation** in India's **D2C (direct-to-consumer) sector**, especially from the Northeast.
 - Emphasizes **IP creation**, sustainability, and rural value chains aligned with **Atmanirbhar Bharat** goals.
- Offers potential for **licensing, exports**, and premium branding in the global tea market.



UPSC Relevance

GS Paper 2 – Governance (Startup Ecosystem, Rural Development)
GS Paper 3 – Economy (Agri-Entrepreneurship, D2C Innovation)
GS Paper 3 – Environment (Plastic-Free Innovation, Sustainable Packaging)



HOT Question:

“How can innovations like Woolah Tea’s bagless technology promote sustainability, intellectual property culture, and rural entrepreneurship in India’s tea industry?”

2. PM Dhan-Dhaanya Krishi Yojana (PM-DDKY): India’s Mega Agri-Convergence Scheme



The **Union Cabinet approved the PM-DDKY**, a **₹24,000 crore/year central scheme** to integrate 36 agricultural initiatives and **revamp farm productivity** in 100 low-performing districts.

Type: Central Sector Scheme (100% centrally funded)

Objective: Boost **agricultural productivity, self-reliance**, and **rural livelihoods** via value addition, institutional credit, and regional convergence

Duration: 6 years

Annual Outlay: ₹24,000 crore

Private Participation: Encourages **PPP model** for tech and investment.



Features



Convergence Strategy:

Element	Details
Schemes Merged	36 schemes across 11 departments
Modelled On	Aspirational Districts Programme (ADP)
Target Areas	100 low-performing agricultural districts
Focus Group	Small and marginal farmers
Selection Criteria	Based on cropping intensity, poor credit access & NABARD data

Implementation Structure:

- District Dhan Dhaanya Samitis:** Prepare and monitor localised agri-plans
- Multi-Tier Committees:** At **district, state, and national levels**
- Central Nodal Officers:** One per district for oversight
- Monthly Reviews:** 117 **Key Performance Indicators (KPIs)** tracked on a **central dashboard**



Tech & Empowerment Tools:

Area	Initiative
GIS Mapping & AI	For agri-advisory and resource planning
Sensor-Based Monitoring	For irrigation, soil, and crop health
Kisan Credit Cards	Expansion to include more small farmers
Krishi Vigyan Kendras (KVKs)	Strengthening for field-level support
Farmer Producer Organisations (FPOs)	Enhanced market linkage and input access

UPSC Relevance

GS Paper 2: Governance, Government Schemes

GS Paper 3: Agriculture, Inclusive Growth, e-Governance

Essay : Topics on rural transformation, convergence in public service delivery

HOT Question:

“How does PM-DDKY reflect the principles of convergence, cooperative federalism, and data-driven governance in rural transformation?”

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3. Financial Fraud Risk Indicator (FRI)



The **Department of Telecommunications (DoT)** launched the **Financial Fraud Risk Indicator (FRI)** in May 2025 to combat rising cyber and financial fraud through telecom misuse.



Launched by: DoT's Digital Intelligence Unit (DIU)

Directed by: RBI — All banks (Scheduled Commercial Banks, Small Finance Banks, Payment Banks, Cooperative Banks) must **integrate FRI**

What is FRI?

Classifies **mobile numbers** into **Medium, High, and Very High** fraud risk categories
Helps banks and financial institutions identify numbers linked to potential fraud

How it Works:

Integrated with **DoT's Digital Intelligence Platform (DIP)** through **API-based real-time exchange**
Enables **live communication between banks and telecom providers**

Support Platforms:

DIP: Centralized secure data-sharing platform to track **telecom misuse in frauds**

I4C's NCRP: *National Cybercrime Reporting Portal* – allows citizens to report **cyber frauds**

DoT's Chakshu: Public can report **fraudulent calls/SMS** to trace scam numbers

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UPSC Relevance

GS Paper III – Cybersecurity, Financial Fraud Prevention, Digital Governance
Prelims: Schemes by RBI/DoT, Cyber Security Tools, Digital Platforms
Mains: Role of technology in improving financial integrity and fraud detection



HOT Question:

How can inter-agency platforms like FRI and DIP promote a proactive cybersecurity ecosystem without infringing on individual privacy rights?

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4. National Cooperative Policy 2025



Ministry of Cooperation launched the **National Cooperative Policy 2025**, aiming to transform cooperatives into engines of **inclusive growth**, based on the **Suresh Prabhu Committee** recommendations.



Feature	Description
Policy Edition	3rd National Cooperative Policy
Main Aim	Create one cooperative in every village
Growth Targets	▲ 30% more cooperatives by 2030, ▲ 3× GDP share by 2034
Review Mechanism	Policy to be legally reviewed every 10 years for relevance and reform

Innovations in Sectoral Expansion:

New Sector	Role of Cooperatives
Green Energy	Solar and biomass cooperatives for rural electrification
Taxi Aggregators	Community-owned mobility platforms (like rural Uber)
Microinsurance	Affordable, community-based risk coverage
Tourism	Village tourism cooperatives to promote eco-tourism



UPSC Relevance

GS Paper 2 – Government Policies & Institutions: Ministry of Cooperation
GS Paper 3 – Inclusive Growth, Rural Development, Cooperatives
Essay/Ethics – Democratic decentralisation & grassroots empowerment



HOT Question:

“Critically examine whether cooperatives can be an alternative model for inclusive growth in India’s rural economy under the 2025 policy framework.”



5. 11th India Maize Summit 2025



The **11th India Maize Summit** was held in **New Delhi**, co-organized by **FICCI** and the **Indian Institute of Maize Research (IIMR)** Ludhiana to discuss the growth, challenges, and innovation in India's **maize sector**.

Known as the **“Queen of Cereals”** due to its versatility in **food, feed, ethanol, and industry**. **Major Cereal Crop** for both **human and livestock consumption**, as well as **biofuel production**.

Factor	Details
Temperature	Optimum: 21–27°C
Rainfall	60–90 cm, well-distributed
Soil Type	Well-drained, nitrogen-rich loamy soils
Season	Primarily Kharif, partially Rabi (irrigated)



Production in India	Status
Growth	CAGR of 4.89% (2012–13 to 2022–23)
Global Rank	5th in production , 4th in area
Leading States	Karnataka, Madhya Pradesh, Maharashtra
Average Yield	Below global average, indicating scope for improvement
Import Status	Now a net importer due to rising ethanol demand

Challenges & Opportunities:

- **Low yield per hectare** compared to global standards
- Growing **ethanol blending targets** driving up domestic demand
- Need for **climate-resilient, high-yielding hybrids**
- Potential for **“Maize Revolution”** akin to Green Revolution

The world’s top producer of maize (corn) is the **United States**, followed by countries like **China, Brazil, Argentina**.



UPSC Relevance GS Paper 3 – Agriculture (Major Crops, Agronomic Conditions, R&D Institutions) GS Paper 3 – Economy (Ethanol Blending, Import Dependence, Food Security)
GS Paper 2 – Governance (ICAR & Agricultural Research)



HOT Question:

“What are the key constraints in India’s maize productivity and how can research institutions like IIMR help achieve self-sufficiency amid rising ethanol demand?”



6. Japonica Rice



Scientists at the **National Institute of Plant Genome Research (NIPGR)** have used **CRISPR-Cas9 gene editing** to improve **phosphate uptake** in **Japonica rice** varieties.

What is Japonica Rice?

A **short-grain, high-starch** rice type mainly grown in **temperate regions** like Japan, Korea, and parts of China. Known for its **sticky texture** and **higher cold tolerance**.

CRISPR-Cas9 Role:

Enabled **precise genome edits** to enhance **phosphorus absorption efficiency**, especially under nutrient-deficient conditions

Why Focus on Phosphorus?

Essential macronutrient for plant growth but **poorly available** in many Indian soils. Improves:

- **Photosynthesis** and energy transfer
- **Root development**
- **Nitrogen fixation** in legumes
- **Flowering and seed formation**



•**UPSC Relevance:** GS Paper III –*Biotechnology, Food Security, Science & Tech in Agriculture*
•**Prelims:** CRISPR-Cas9, Japonica rice, macro vs micronutrients



HOT Question: *How can genome editing technologies like CRISPR contribute to sustainable agriculture and reduce India's dependency on imported fertilizers?*

Feature	Japonica Rice	Indica Rice
Grain Type	Short to medium grain, round and plump	Long, slender grain
Texture (Cooked)	Sticky and soft	Non-sticky, fluffy and separate
Climate Suitability	Temperate climates (cooler regions)	Tropical/subtropical climates (warmer regions)
Major Growing Areas	Japan, Korea, China (north), California, parts of Nepal	India, Bangladesh, Thailand, Philippines, Myanmar
Growth Duration	Short to medium duration	Medium to long duration
Water Requirement	Moderate	High (but more drought-resistant strains exist)
Elevation Suitability	Often grown in uplands or terraces	Usually grown in lowlands and plains
Examples	Koshihikari, Calrose	Basmati, IR64, Sona Masuri
Genetic Group	Belongs to the Temperate Japonica group	Belongs to the Indica group
Usage	Sushi, sticky rice dishes, desserts	Biryani, fried rice, steamed rice



7. UPI in Namibia



Namibia signed a **licensing agreement** to adopt **India's Unified Payments Interface (UPI)** system for **real-time digital payments** during the Indian Prime Minister's visit.

UPI Internationalisation Drive:

- Led by **RBI** and **NPCI International Payments Ltd. (NIPL)**.
- Goal: Expand UPI to **20 countries by 2028-29** (*RBI Annual Report 2023-24*).

Countries Already Using UPI:

- **Bhutan, France, Mauritius, Nepal, Singapore, Sri Lanka, UAE**

Milestones:

- UPI **surpassed Visa** in global transaction **volume**.
- Recognised by the **IMF** as the **world's #1 real-time payment system**.



•**UPSC Relevance:** GS Paper III – Economy, Digital Infrastructure, International Relations
•GS Paper II – Bilateral Relations, India–Africa Cooperation



HOT Question: How does UPI internationalisation support India's digital diplomacy and soft power projection in the Global South?



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8. Catastrophe Bonds (Cat Bonds)



Increased frequency of climate disasters (floods, cyclones, heatwaves) is accelerating the use of **Catastrophe Bonds (Cat Bonds)** to finance disaster risk globally.

What are Cat Bonds?

A **financial instrument** that shifts the **risk of catastrophic events** (like earthquakes or floods) from insurers to investors.

How They Work:

Investors earn **high interest returns**.

If a **predefined disaster** occurs (within bond tenure), **investors lose their principal**.

If no disaster occurs, investors get full returns with interest.

Who Issues Them:

Typically issued by **insurance companies**, **reinsurers**, or **governments**.

Used to **absorb shock** from climate disasters **without depleting core capital**.

Climate Relevance:

Crucial tool in **climate adaptation finance**.

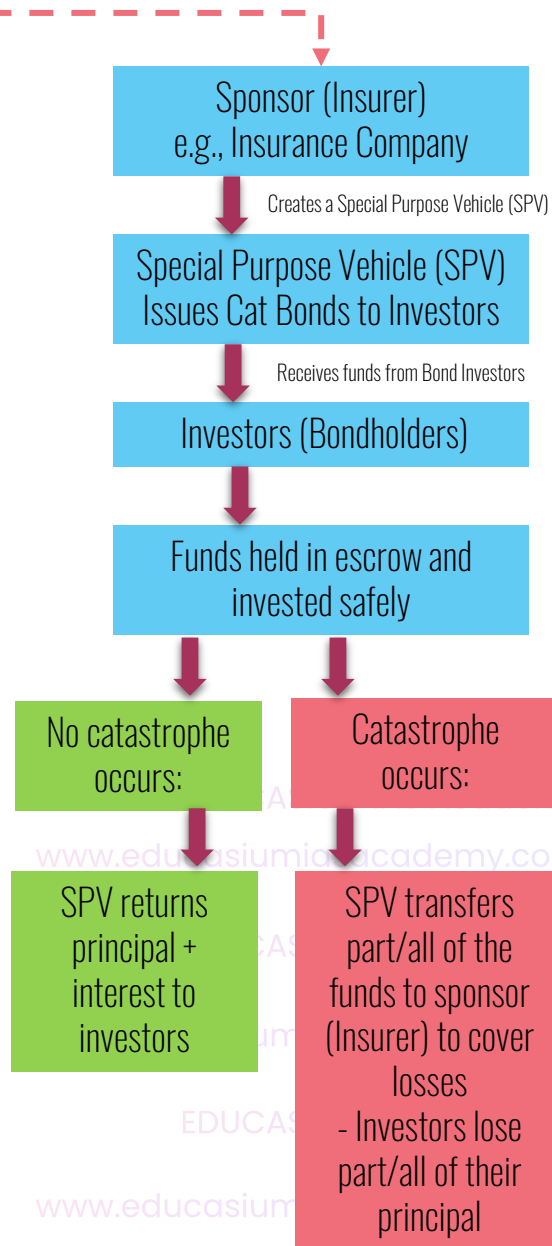
Helps **bridge the protection gap** in vulnerable regions.



UPSC Relevance: GS Paper III – Disaster Management, Environment, Infrastructure, Economy (Capital Markets)
GS Paper II – Climate Finance under Global Agreements



HOT Question: Can catastrophe bonds be integrated into India's climate resilience strategy, especially in cyclone- and flood-prone states?



9. PNGRB’s 2025 Tariff Reform: A Step Toward ‘One Nation, One Grid, One Tariff’



The **Petroleum and Natural Gas Regulatory Board (PNGRB)** approved the **Second Amendment to the Natural Gas Pipeline Tariff Regulations, 2025**, advancing India’s vision of a **unified, inclusive, gas-based economy**.

Key Reforms under the Amendment:

Reform Area	Description
Unified Tariff Zones	Reduced from 3 to 2, simplifying tariff structure and boosting access
CNG/PNG Inclusion	Zone 1 tariff benefit extended nationwide for CNG and PNG (Domestic) users
Efficient Fuel Procurement	Pipeline operators must procure ≥75% of system-use gas via 3-year minimum long-term contracts
Pipeline Development Reserve	Surplus earnings (from >75% pipeline utilisation) to be: → 50% reinvested in infrastructure → 50% passed on to consumers via tariff reduction

Significance

- Promotes **predictable, affordable gas pricing** for consumers and investors.
- Supports India’s **energy transition** goals and **gas-based economy** targets.
- Reduces market fragmentation by **streamlining transportation charges** across regions.
- Encourages **infrastructure investment** via performance-linked reinvestment mechanism.

About PNGRB (Petroleum and Natural Gas Regulatory Board):

Attribute	Details
Constituted	Under PNGRB Act, 2006
HQ	New Delhi, India
Role	Regulate refining, transport and marketing of petroleum and natural gas. (Exploration and Production comes under Ministry of Petroleum and Natural Gas)
Appeal	Appellate Tribunal for Electricity (ATE) under the Electricity Act, 2003



UPSC Relevance: GS Paper 3 – Economy (Energy Sector Reforms, Infrastructure Regulation) GS Paper 2 – Governance (Statutory Regulatory Bodies, Public Policy Implementation)



HOT Question: How does PNGRB’s tariff rationalisation reform align with India’s clean energy goals and improve market efficiency in the natural gas sector?”

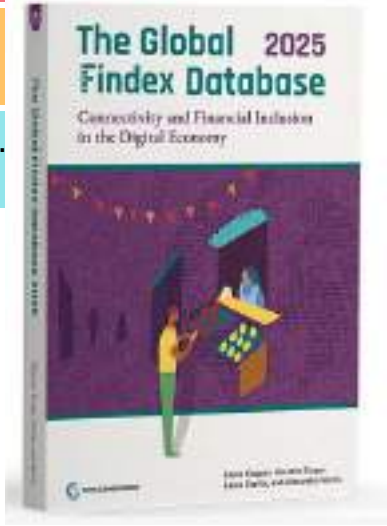


10. Global Findex 2025



The **World Bank’s Global Findex 2025** highlights **India’s financial inclusion growth**, but flags concerns about **account inactivity** and **digital usage lag**.

Account Ownership	Rose from 35% (2011) to 89% (2024) among adults. Shows the impact of Jan Dhan Yojana & Aadhaar-linked accounts.
Inactive Accounts	14% of adults’ accounts inactive — over twice the global average (6%). Indicates dormant usage despite high account penetration.
Mobile money	23.1% of adults use mobile money (wallets, UPI apps).
Gender Rural Parity	89.2% women, 89.9% rural adults have bank accounts. Reflects shrinking gender and rural-urban gaps.
Digital Payments	Only 48.5% made or received digital payments in 2024. Suggests access ≠ usage.
Phone Ownership	66.5% own a phone; only 42% own smartphones. Limits access to app-based digital finance.
Govt Transfers	Use of digital channels increased from 13% (2021) to 24% (2024) for DBT.



UPSC Relevance: GS II: Governance, Financial Inclusion, Gender Empowerment
GS III: Economic Development, Digital Economy, Infrastructure



HOT Question: Why is access to financial infrastructure not translating into active usage, especially among women and rural populations?



11. Gender Budgeting



The **Union Budget 2025–26** allocated a **record ₹4.49 lakh crore** toward **gender budgeting**, nearly **4 times the 2014–15 allocation**, reaffirming India's commitment to **gender-responsive public spending**.

What is Gender Budgeting?

A **fiscal tool** that evaluates how **budgetary policies impact women** and seeks to **reduce gender disparities**. Focuses on **mainstreaming gender priorities** across all policies—not about **separate budgets for women**.

India’s Gender Budgeting Framework:

Component	Description
Started	Introduced in 2005–06 via Gender Budget Statement (GBS)
Part A	Schemes with 100% allocation for women
Part B	Schemes with ≥30% allocation toward women
Part C (2024–25)	Schemes with <30% allocation, ensuring holistic representation
Knowledge Hub	Launched in June 2025 by MoWCD for training, policies, and data

Positive Impacts:

- **Institutionalised tracking** through mandatory GBS in Union Budget.
- **Capacity building** via MoWCD manuals and training modules.
- **Wider adoption by states** leading to **decentralised implementation**.
- Emphasis on **impact-based evaluation** using **sex-disaggregated data**.
- Influenced **policy design** for women’s empowerment.

Challenges

Issue	Description
Implementation Gaps	Schemes often lack gender-sensitive outcome metrics
Uneven Ministry Allocation	Some departments show low gender-budget shares
Data Deficiency	Insufficient sex-disaggregated data hampers impact assessment
Narrow Scheme Focus	Overfocus on welfare ignores sectoral gender gaps (e.g., transport)
Local-Level Awareness	Panchayats & municipalities often lack technical know-how and training



UPSC Relevance: GS Paper 2 – Governance (Gender Empowerment, Budgeting, Policy Implementation)
GS Paper 3 – Economy (Inclusive Growth, Fiscal Planning)



HOT Question: “In what ways can institutionalizing gender budgeting at all levels of governance strengthen inclusive development and reduce structural inequalities?”



12. Employment Linked Incentive (ELI) Scheme



The Union Cabinet approved the **Employment Linked Incentive (ELI) Scheme** under the **Jobs and Skills Package** announced in Budget 2024–25.

The scheme aims to boost formal employment through TWO components:

Part A (Worker Incentives): Offers a **one-time wage subsidy** up to ₹15,000 for **first-time EPFO-registered employees** earning ≤ ₹1 lakh/month. Paid in two instalments (after 6 and 12 months), with a **financial literacy module** required for the second.

Part B (Employer Incentives): Provides up to ₹3,000/month per **new hire** to EPFO-registered employers for **creating formal jobs**. Valid for **2 years** (or **4 years** for manufacturing). Incentives vary by wage slab



UPSC Relevance:

GS Paper 3 – Indian Economy | Employment, Growth & Government Schemes



HOT Question: How can the ELI Scheme contribute to formalisation of the Indian workforce and MSME development?

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13. Consumer Price Index (CPI) for AL/RL



The **Labour Bureau** has updated the **base year for CPI for Agricultural (CPI-AL) and Rural Labourers (CPI-RL)** from **1986-87** to **2019**, aligning inflation data with current consumption patterns.

New Base Year: 2019 = 100 (replacing 1986-87 = 100)

What it Measures: Inflation based on consumption patterns of agricultural and rural labour households.

Compiled by: Labour Bureau, Ministry of Labour & Employment.

Purpose of Update: Reflect modern expenditure habits for better policy targeting.



Share of expenditure to total expenditure) have been revised due to changes in consumption patterns

Use of the Geometric Mean (GM) in place of the Arithmetic Mean (AM), GM moderates price volatility.

Price calculation of PDS items using the **admissibility** concept instead of **availability** as in old series

Revised series covers 34 States/UTs as against 20 States in the old series; prices are collected from 787 sample villages as against 600 villages in the old series

150-200 items are covered as against ~65-106 items in the old series.



UPSC Relevance:

GS Paper III / Prelims :
Inflation, Labour Reforms,
Inclusive Growth



HOT Question: How do changes in the base year of price indices affect inflation targeting and welfare scheme calibration for vulnerable sections like rural labourers?

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14. CPI hitting 6-year low of 2.10% in June 2025

 **CPI Definition:** Measures price change in a basket of consumer goods like food, housing, fuel, etc.



India's **Consumer Price Index (CPI) inflation** dipped to **2.10%**, the **lowest since 2018**, due to a significant fall in **vegetable and edible oil prices**, providing relief to households and possibly prompting a **rate cut by the RBI**.



-  **CPI Inflation (June 2025):** 2.10%
-  **Food Inflation:** Dropped adue to **seasonal supply surplus** and improved logistics
-  **RBI Impact:** May prompt **repo rate cuts** to boost growth as inflation nears the **lower bound** (2%) of RBI's 2–6% target band
-  **Base Effect:** High inflation last year makes this year's numbers appear lower



UPSC Relevance:

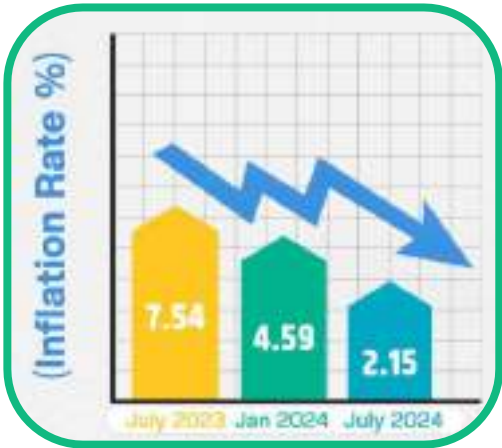
GS Paper III: Indian Economy – Inflation trends, Monetary Policy

Prelims: CPI vs WPI, RBI Inflation Target (2–6% band)



HOT Question:

How does a sharp fall in CPI inflation influence monetary policy decisions, and what are the risks of a prolonged low-inflation environment for a growing economy like India?



15. Remote Work in India: Booming Demand vs. Hidden Barriers



The **2024–25 Global Survey on Work Trends** reveals a "**remote work paradox**" — rising demand for flexibility is hindered by **managerial, cultural, and infrastructure** challenges, especially in India.



Metric (India-Specific):	Status (2024)
Fully Remote Employees	12.7%
Hybrid Workers	28.2%
Future Projection (2025)	60–90 million remote workers expected
Companies Fully Remote	16%
Hybrid Satisfaction	97% (Employees), 98% (Employers)

Arguments For Work From Home (WFH)

- ✔ **Work-Life Balance:** Reduces stress, improves mental health.
- ✔ **Greater Autonomy:** More control over schedule = higher morale.
- ✔ **Increased Efficiency:** Less commute = more time for work.
- ✔ **Higher Job Satisfaction:** Comfort boosts performance.
- ✔ **Inclusive Workforce:** Enables participation of women, caregivers, and persons with disabilities.

Arguments Against Work From Home (WFH)

- ✖ **Health Issues:** Poor home setups lead to musculoskeletal problems.
- ✖ **Weakened Team Culture:** Less bonding, less collaboration.
- ✖ **Oversight Issues:** Managers find it hard to monitor productivity.
- ✖ **Digital Fatigue:** Isolation and blurred boundaries affect mental health.
- ✖ **Innovation Drop:** Less informal interaction = less creativity.



UPSC Relevance:

GS Paper 3: Employment Trends, Digital Economy
GS Paper 2: Inclusive Growth, Social Justice



HOT Question:

“Discuss the paradox of remote work in the Indian labour ecosystem. Can hybrid work offer a sustainable middle ground for the future of employment?”

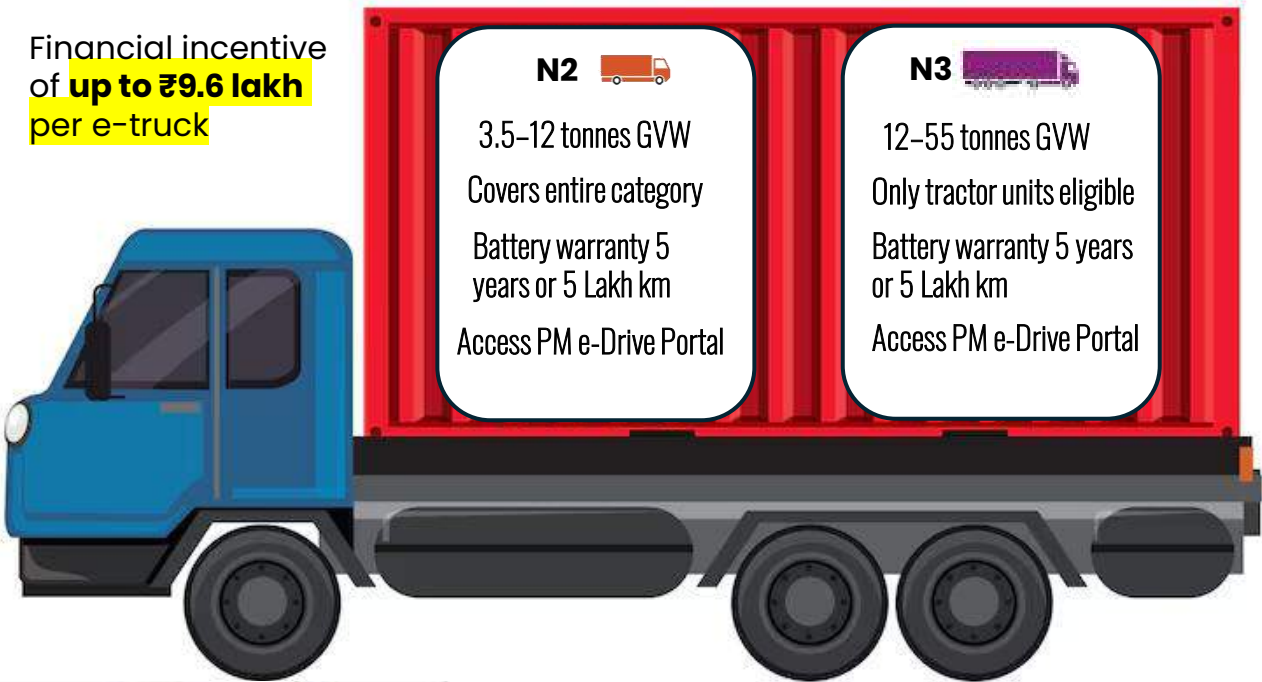


16. e-Truck Incentive Scheme



The **Government of India** launched a new **e-Truck Incentive Scheme** to promote adoption of electric heavy-duty trucks, aiming to curb emissions and improve air quality, especially in urban areas like **Delhi**.

Financial incentive of **up to ₹9.6 lakh** per e-truck



N2

3.5-12 tonnes GVW
Covers entire category
Battery warranty 5 years or 5 Lakh km
Access PM e-Drive Portal

N3

12-55 tonnes GVW
Only tractor units eligible
Battery warranty 5 years or 5 Lakh km
Access PM e-Drive Portal

	M1
	PLG (first registered before March 2001)
	Varies
	M3
	N2, N3
	M1
	M2
	N1 / Class L

UPSC Relevance:

GS Paper III: Environment – Pollution Control, Clean Technology, Climate Change Mitigation

Prelims: Vehicle categories (N2/N3 under CMVR), Government Schemes, PM eDRIVE

HOT Question:

“How can targeted incentives for electric freight vehicles help align India’s climate goals with economic development?”

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17. GPD (Global Public Debt) Vs. GDP (Gross Domestic Product)



According to the **UNCTAD World of Debt Report 2025**, global public debt has surged to an all-time high, posing serious challenges to fiscal stability and development, especially in the Global South.

Global Public Debt Hits \$102 Trillion — Developing Nations Struggle with Rising Interest Burdens

Global Debt Total (2024)



- \$102 trillion, projected to reach 100% of global GDP by the end of the decade
- Developing Countries: Hold < one-third of global debt.
- 61 countries spend more than 10% of revenues on just interest payments
- Consequences: Shrinking fiscal space for healthcare, education, and development. Risk of debt distress and long-term development stagnation



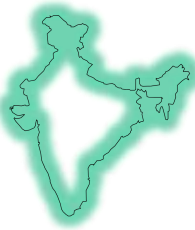
UPSC Relevance:

GS Paper III – Economy: Public Debt, Global Financial Institutions, Sustainable Development
GS Paper II – International Affairs: UN Agencies, Global Inequality



HOT Question:

“How does unsustainable public debt in developing nations hinder the achievement of Sustainable Development Goals (SDGs)?”



As of recent data (2024–25), India’s public debt stands at around 83 to 90% of its GDP.

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18. Seaweed Cultivation in India: A Blue Economy Boost



India has **identified 384 sites across 24,707 hectares** for **seaweed cultivation**, strengthening marine livelihoods and climate resilience under the **Blue Economy framework**.



Seaweed Features	Description
Type	Macroscopic marine algae (Red, Brown, Green varieties)
Structure	Rootless , but performs photosynthesis
Growth Needs	Salinity >30 ppt, clear water, mild currents, depth >1m
Ecological Role	Produces ~50% of Earth's oxygen , absorbs excess N & P nutrients
Growth Rate	Certain species can double biomass in 10–15 days



Major Uses of Seaweeds:

Edible:
Sushi, salads, high in iodine, fibre, antioxidants

Industrial:
Toothpaste, jelly, organic cosmetics

Agriculture:
Liquid bio-stimulants improve soil & yield

Pharmaceutical
Anti-inflammatory, anti-cancer, cardio-protective

Bioenergy:
Processed into bioethanol, biogas

Livelihoods: Low-cost marine employment, esp. for coastal women

Value Chain: Supports **nutraceuticals, bioplastics, organic inputs**

Climate Role: **CO₂ absorption**, lowers ocean acidification

Biodiversity: Provides **nurseries for fish, turtles, invertebrates**

Import Substitution: Reduces carrageenan import (gel from red seaweed)

Tamil Nadu: Contributes **~80% of national production**, esp. Gulf of Mannar

Significance for India



- Seed Material Shortage
- Labour Migration
- Epiphytes, Pathogens
- Climate Vulnerability
- Red Tides (Harmful Algal Blooms)
- Policy Delays in zoning, leasing, and germplasm rules

Initiative	Details
PMMSY Seaweed Funding	₹195 crore (2020–25)
Seaweed Park, Tamil Nadu	₹127 crore allocated
Lakshadweep Cluster	Declared seaweed farming hub
ICAR–CMFRI, Mandapam	Centre of Excellence for seaweed R&D
Priority under PMMSY	Seaweed listed as a focus area for marine diversification



UPSC Relevance:
GS Paper 3: Blue Economy, Livelihoods, Sustainable Agriculture, Climate Mitigation
GS Paper 1/Geography: Marine Resources
GS Paper 2: Government Schemes, Coastal Governance



HOT Question:
“Examine the role of seaweed cultivation in promoting sustainable livelihoods and mitigating climate change. What are the policy and ecological challenges in scaling this sector?”

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19. Bills of Lading Bill, 2025



Bills of Lading Bill 2025: Colonial Shipping Law Repealed to Boost EODB and Global Trade Compliance

Parliament passed the **Bills of Lading Bill, 2025**, replacing the outdated **Indian Bills of Lading Act, 1856**, to modernize India's maritime trade documentation and align it with international norms.

 Purpose:

Replaces colonial-era law with **simplified, structured provisions** to reduce legal ambiguity.

 Legal Modernisation:

Defines the **rights & duties of carriers, shippers, and lawful holders**.

Allows **government flexibility** to issue implementation guidelines.

 Digital Readiness:

Recognizes the significance of **electronic bills of lading (e-B/L)** – paving the way for digital adoption, though not formally legalizing it yet.



Enhances **Ease of Doing Business** by reducing paperwork & litigation in shipping. Aligns Indian law with **global maritime trade norms**, improving trade facilitation. Boosts India's **logistics and port competitiveness** in international commerce.



UPSC Relevance:

GS Paper II – Governance: Legislative Reforms, Trade Facilitation
GS Paper III – Economy: Infrastructure, Logistics, Ease of Doing Business



HOT Question:

“How does digitisation of trade documentation like Bills of Lading contribute to India's logistics efficiency and global trade competitiveness.

Definition of Bill of Lading
A legal document issued by a carrier to a shipper that details the type, quantity, and destination of the goods being transported.



20. Shadow bank



The Finance Minister announced that **Non-Banking Financial Companies (NBFCs)** are **no longer shadow banks**, citing enhanced **regulatory compliance, transparency, and integration into the formal financial system.**

Aspect	Details
Definition	Entities offering financial services outside traditional banks , once loosely regulated.
Past Issues	Characterised by limited transparency, high leverage, and systemic risks.
Current Role	Provide credit to underserved sectors , MSMEs, rural & unbanked segments.
Examples (Global)	Money Market Funds, Hedge Funds, Securitisation, Private Equity, ABS.
Indian NBFCs	Bajaj Finance, Muthoot Finance, LIC Housing Finance, Shriram Finance, etc.



What Changed?

- Stronger RBI Supervision:** NBFCs are now subject to **scale-based regulatory frameworks**, similar to banks.
- Statutory Audits & Reporting:** Mandated regular **disclosure norms**, asset classification, and capital adequacy rules.
- Digital Integration:** NBFCs are integrated with **credit bureaus, account aggregators, and digital lending oversight.**



UPSC Relevance:

GS III – Economy: Banking Sector Reforms, Financial Inclusion, Regulation of NBFCs
Prelims: Definitions & examples of Shadow Banking, NBFC categorization



HOT Question:

“How has RBI’s scale-based regulatory framework contributed to reducing systemic risk in India’s NBFC sector?”



21. Global Capability Centre (GCC)



India Emerges as Global Hub for GCCs – Innovation Beyond Cost Arbitrage

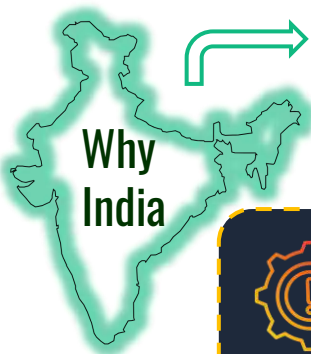
India now hosts **1,580+ Global Capability Centers (GCCs)** and is poised to attract **half of all new GCCs globally by 2030**, driven by **digital talent, cost efficiency, and supportive policies**.

What are GCCs?
Global Capability Centers (also called **Global In-house Centers** or **Captive Centers**) are **offshore subsidiaries** of multinational corporations (MNCs) performing **strategic and tech-enabled functions** such as: **IT Services & R&D, Engineering & Data Analytics, Finance, HR & Cybersecurity**



Highlights

India's Share	Hosts 1,580+ GCCs, contributing 25–30% of global GCC workforce
Top Sectors	Technology, BFSI, Pharmaceuticals, Aerospace
Innovation Focus	Shift from cost-saving to AI, digital engineering, and cybersecurity
Leading Cities	Bengaluru, Hyderabad, Pune, Chennai, NCR
Future Outlook	India expected to house 50% of new GCCs globally by 2030



Why India

- Digital Talent Pool (especially in AI & engineering)
- Cost advantage with high-quality output
- Supportive government policies and stable regulatory environment
- Strong ecosystem for collaboration, innovation, and global service delivery



UPSC Relevance:

GS III – Economy: Employment, Foreign Investment, Tech Infrastructure
Prelims: Concept of Global Capability Centers, Global Capability Center (GCC), Digital Talent Hub, FDI, Innovation Offshoring, Bengaluru–Hyderabad–Pune Tech Triangle, India's IT Ecosystem



HOT Question:

“How can India leverage its dominance in GCCs to become a global leader in emerging tech like AI, semiconductors, and quantum computing?”



Global Capability Centre (GCC): A centralized hub set up by multinational companies to provide specialized services such as IT, finance, HR, or analytics supporting global operations.
Global Innovation Centre: A facility dedicated to research, development, and creation of new products, services, or technologies with a global market focus.
Global Development Centre: A center focused on software development, engineering, and IT product development that supports the company's worldwide technology needs.
Global Delivery Centre: A facility that delivers services and solutions remotely to clients worldwide, often including IT outsourcing and business process services.
Global Business Services (GBS): Integrated services model providing multiple business functions (finance, HR, procurement) on a global scale from a unified platform.

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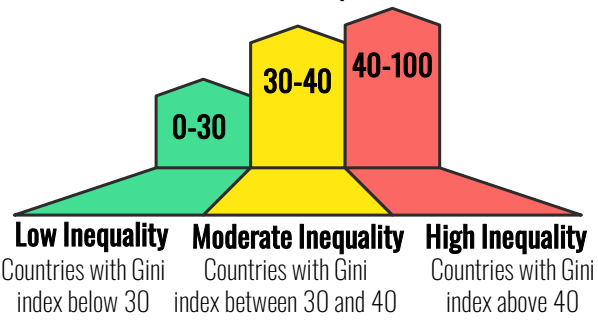
22. World Bank's Spring 2025 Poverty & Equity Brief



India has been **ranked 4th globally** in income equality, as per the Gini Index (2022–23), reflecting major strides in **poverty reduction** and **inclusive growth**.

Indicator	Data
Gini Coefficient	Improved from 28.8 (2011–12) to 25.5 (2022–23)
Global Rank	4th – behind Slovak Republic, Slovenia, and Belarus
Category	Now in the ‘Moderately Low Inequality’ (25–30); nearing Low Inequality status
Comparison	Better than China (35.7) and USA (41.8)

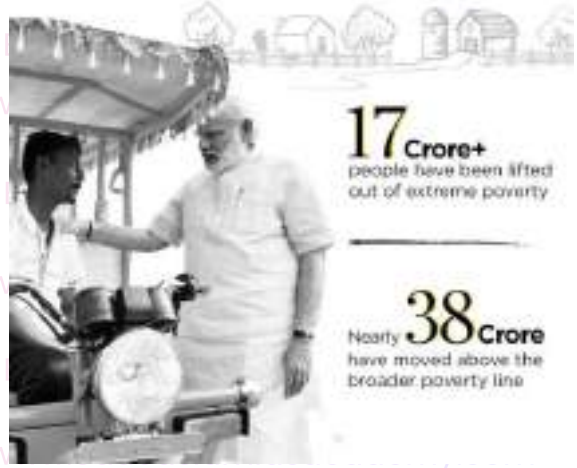
Gini Index and Inequality Levels



Poverty Reduction Highlights:

Threshold	Poverty Rate (2022–23)
Extreme Poverty (<\$2.15/day)	2.3% (↓ from 16.2% in 2011–12)
Moderate Poverty (<\$3.00/day)	5.3%
Total Lifted Out of Poverty	171 million people since 2011–12

The Result?
Millions Lifted From Poverty



UPSC Relevance:
GS III – Indian Economy: Poverty, inequality, inclusive development
GS II – Welfare Schemes: government efforts like MGNREGA, NFSA, DBT
Prelims: Gini Index – measures income inequality (0 = perfect equality; 100 = perfect inequality)



HOT Question:
“What structural reforms and policy interventions enabled India’s significant reduction in income inequality? Can this trend be sustained amid global economic volatility?”



23. Household Income Survey



The National Sample Survey Office (NSSO) will soon conduct a **dedicated income survey**—the **first such effort since 1983–84**—to collect direct household income data, improving the quality of poverty and inequality estimates.

Aspect	Information
Conducted by	NSSO, under Ministry of Statistics and Programme Implementation (MoSPI)
Survey Focus	Captures direct income data (unlike current expenditure-based approach)
Historical Background	Earlier surveys (1950s–1980s) discontinued due to unreliable responses
Expert Committee	8-member panel led by Surjit S. Bhalla to frame methodology
Integration Plan	Proposals to cross-verify with tax records to improve credibility
Complementarity	This survey will not replace Consumption Expenditure Survey but supplement it



UPSC Relevance:

GS III – Indian Economy: Poverty measurement, Inclusive development
GS II – Governance: Role of statistics in policymaking
Prelims: NSSO, MoSPI, types of national surveys



HOT Question:

“What are the challenges in accurately measuring household income in a developing economy like India? How does this move improve policy targeting and social justice delivery?”

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24. Unified Pension Scheme (UPS)



The Finance Ministry has announced that **tax benefits** available under the National Pension System (**NPS**) will now also apply to the Unified Pension System (**UPS**)—enhancing the attractiveness of the new pension model for government employees.

About Unified Pension System (UPS)

Aspect	Details
Nature	Fund-based payout model under NPS
Contributors	Joint contributions from employee and the government
Eligibility	Available after 10 years of service
Pension Benefits	- 50% of last 12 months' average basic pay after 25 years of service

Types of Pension Schemes in India

Scheme Name	Target Group	Features
Unified Pension Scheme (UPS)	Government Employees (Central & States)	Consolidates various legacy pension schemes into one; defined contribution-based with employer and employee contributions; portable across govt. departments
National Pension System (NPS)	All citizens (especially private sector and govt. employees)	Voluntary, defined contribution pension scheme; market-linked returns; flexible withdrawal options; regulated by PFRDA
Employees' Provident Fund Org. (EPFO)	Private sector employees	Provident fund with pension component (Employees' Pension Scheme – EPS); defined contribution with fixed interest rate; compulsory for establishments with 20+ employees
Atal Pension Yojana (APY)	Unorganized sector and informal workers	Government-backed guaranteed minimum pension; voluntary contributions with age-based slabs
Civil Services Pension Scheme (Old Pension Scheme)	Pre-2004 Govt. Employees	Defined benefit pension; full pension after retirement based on last pay drawn; largely replaced by NPS for new employees
Public Provident Fund (PPF)	General public	Long-term savings instrument with tax benefits; not strictly a pension but used for retirement corpus building



UPSC Relevance:

GS II – Governance & Social Justice: Welfare schemes for vulnerable sections
GS III – Economy: Pension reforms, fiscal implications
Prelims: NPS, UPS, Section 80CCD



HOT Question:

“In what ways can the Unified Pension System (UPS) bridge the gap between defined benefit and defined contribution of pension management in India?”

25. Double Taxation Avoidance Agreement (DTAA)



The **Supreme Court of India** ruled that **exclusive possession is not mandatory** for establishing a **Permanent Establishment (PE)** under the **India–UAE Double Taxation Avoidance Agreement (DTAA)** – **even shared or temporary use** of premises **can trigger taxation** in India.

What is DTAA (Double Taxation Avoidance Agreement)?

Aspect	Details
Purpose	Prevents double taxation of income in two countries
Benefits	Reduces tax burden for NRI s, PIO s, OCI s, encourages foreign investment
Coverage	India has signed 94 DTAA s including with UAE, USA, UK, Singapore , etc.
Example	If income is taxed in UAE , DTAA ensures the same income isn't doubly taxed in India

What is a Permanent Establishment (PE)?

Definition	A fixed place of business through which a foreign enterprise carries out business in another country
Examples	Branch office, factory, construction site, project office
New SC Clarification	Even shared, co-working, or temporary use of a premise qualifies as PE if business income arises
Implication	Triggers tax liability in India even without full-time or exclusive use of property



UPSC Relevance:
GS III – Economy: International taxation, FDI, Ease of Doing Business
GS II – International Relations: Bilateral treaties and agreements
Prelims: DTAA, PE, Supreme Court rulings, UAE–India relations



HOT Question:
“How does the broadening of Permanent Establishment definitions affect global tax equity and India’s ability to mobilize domestic revenue from foreign firms?”



26. Surveillance Pricing



New York Faces Lawsuit Over 'Surveillance Pricing'—Retailers Accused of **Data-Based Price Discrimination**

The National Retail Federation has sued New York State, challenging the legality of surveillance pricing laws that regulate how retailers use personal data to set prices.

Term	Explanation
Surveillance Pricing	Also called personalized or dynamic pricing
How it Works	Uses consumer data (e.g. location, device, browsing, shopping history)
Purpose	Adjust product prices based on perceived buying capacity or behaviour
Concerns Raised	Violates data privacy, enables price discrimination, lacks transparency



UPSC Relevance:

GS II Governance Right to Privacy, Digital Consumer Protection
GS III Science & Tech / Economy Algorithmic pricing, Data economy, E-commerce ethics
Essay / Ethics Surveillance Capitalism, Ethical use of data, Corporate accountability, Digital inequality



HOT Question:

“Does personalized pricing based on user data violate the principle of equity in a digital economy? Should governments regulate such practices to ensure fairness and transparency?”



JULY 2025 ENVIRONMENT

1. Forced tagging of nano and biostimulants
2. Model Rules for Tree Felling on Farmlands
3. Pethia dibrugarhensis in Brahmaputra
4. Lyriothemis abrahami
5. ZSI: Animal Discoveries 2024 Report
6. Garcinia kusumae
7. Regional Flyway Initiative
8. First-ever Grassland Bird Census
9. India's Panchamrita Commitments
10. Carbon Leakage
11. Arctic Amplification
12. Sea Level Rise in Sierra Leone
13. Green Climate Fund Approves \$200 Million
14. Island Protection Zone (IPZ)
15. Ecocide
16. Cloud Seeding Trials to Combat Delhi Pollution
17. UNEP Frontiers 2025: "The Weight of Time"
18. Forest Advisory Committee (FAC)
19. Fungal Disease Threatens Endangered Tree
20. Sustainable Aviation Fuel (SAF)
21. KHARAI CAMELS
22. Jellyfish Bloom
23. Hong Kong Convention on Recycling of Ships
24. Microplastics Detected in Human Heart Tissues
25. Black-Headed Caterpillar Disease
26. Botrytis cinerea & Sclerotinia sclerotiorum – Fungi
27. Extended Producer Responsibility
28. Flue Gas Desulphurisation (FGD) systems
29. India Achieves 50% Electricity from Non-Fossil Fuel
30. Ethanol Blending in Petrol (E20)
31. India's Battery Passport System for EVs
32. Tourist Carrying Capacity
33. End-of-Life Vehicles (ELVs) Regulation in India
34. Urban Wind Stilling Effect
35. Environmental Flow (E-flow)
36. Tiger Outside Tiger Reserve Pilot Scheme
37. Rhino DNA Index System (RhODIS India)
38. Gharial and Sloth Bear



1. Forced Tagging of Nano-Fertilisers and Bio stimulants



The **Union Agriculture Minister** has directed all state governments to immediately **halt the forced sale** (tagging) of **nano fertilisers** and **bio stimulants** along with **subsidised conventional fertilisers** like **urea** and **DAP**.



Dealer Malpractice: Dealers were **coercing farmers** to buy nano fertilizers or bio stimulants as a condition for selling subsidized fertilizers.

Farmer Burden:

This practice **violates subsidy norms** and **increases costs** for already distressed farmers.

Legal & Policy Response:

- Governed by the **Fertiliser (Control) Order, 1985** under the **Essential Commodities Act, 1955**.
- **Tagging is illegal:** Legal action will be taken against violators.
- States directed to:
 - **Monitor fertiliser sales**
 - **Test samples** regularly
 - **Educate farmers** about genuine and approved products
- **Fertiliser companies** warned against bundling; must follow **SOPs**



Further Steps:

Only **scientifically validated biostimulants**, approved by bodies like **ICAR**, will be allowed in the market.

Unverified or untested products will be banned from sale.



UPSC Relevance:

GS Paper III – Agriculture: Fertiliser subsidy policy, farmer welfare
GS Paper II – Governance: Implementation of Essential Commodities Act, policy enforcement



HOT Question

How can regulatory lapses in fertiliser distribution affect India's food security and agricultural productivity?

2. Model Rules for Tree Felling on Farmlands & Promotion of Agroforestry



The **Ministry of Environment, Forests & Climate Change (MoEFCC)** has released **Model Rules** to regulate tree felling on agricultural land and boost **agroforestry**.



Objective: Simplify tree-felling approvals, reduce timber imports, and increase tree cover on farmlands.

Model Rules: Voluntary for States/UTs, aim to bring uniformity in tree-felling regulations.

National Timber Management System (NTMS):

- Central digital platform for registering plantations and felling requests.
- Uses auto-verification (species, girth, location) via geotagged photos.

About Agroforestry:

Practice of **integrating trees** with crops/livestock on same land. Governed by **National Agroforestry Policy, 2014**. Covers **~25 million hectares** (~8% of India's area). Promotes **sustainable land use, biodiversity, and climate resilience**.

Felling Permissions:

- For ≤ 10 trees: NOC auto-issued via geotagged images.
- For > 10 trees: Requires field inspection.

Oversight:

- State-level committees under 2016 Wood-Based Industry Guidelines verify applications.
- Divisional Forest Officer ensures proper verification and processing.

Type of Agroforestry Systems

Agrisilviculture	Crops + timber/fuelwood trees
Silvopasture	Trees + grazing land for fodder/shelter
Agrihorticulture	Seasonal crops + fruit trees
Apisilviculture	Flowering trees + beekeeping for pollination
Aqua-forestry	Trees around ponds + fish farming



UPSC Relevance:

GS 3 – Environment & Ecology, GS 1 – Geography (land use patterns), GS 2 – Governance (centre–state relations)



HOT Question

“How can agroforestry support India's goals under the Nationally Determined Contributions (NDCs) and reduce dependence on timber imports?”

3. Discovery of *Pethia dibrugarhensis* in Brahmaputra



Researchers at **ICAR–Central Inland Fisheries Research Institute (CIFRI)** have discovered a **new fish species**, *Pethia dibrugarhensis*, in the **Brahmaputra River near Dibrugarh**, Assam.

Aspect	Details
Taxonomy	Belongs to Cyprinidae family (includes rohu, goldfish, koi); classified as a barb
Habitat	Found in moderately fast-flowing sections of the Brahmaputra River with mud, sand, stones
Coexistence	Lives with other small freshwater fish species
Distinct Features	Has an incomplete lateral line for sensing vibrations- Prominent black blotch on the caudal peduncle- Lacks barbels and humeral marks (rare for barbs)
Caudal Peduncle	Narrow region before the tail fin; important for swimming propulsion
Barbels	Sensory organs used by some fish for detecting food in murky waters – absent in this species
Significance	Enhances knowledge of aquatic biodiversity and the need for conservation of riverine ecosystems



UPSC Relevance: GS Paper 3 – Environment & Ecology: Biodiversity conservation, aquatic species. **GS Paper 3 – Science & Tech:** Taxonomy, zoological research. **GS Paper 1 – Geography:** Brahmaputra River ecosystem, biodiversity of North-East India



HOT Question: How can biodiversity discoveries like *Pethia dibrugarhensis* contribute to the formulation of region-specific conservation strategies in India’s river ecosystems?

4. New Dragonfly Species

Lyriothemis abrahami



A new species of dragonfly, *Lyriothemis abrahami*, has been discovered in the **Western Ghats of Kerala**, highlighting the region’s biodiversity richness.



Belongs to the *Lyriothemis* genus, known for **phytotelma-breeding** (breeding in **water-filled tree hollows**).

Shows **black-and-yellow coloration** and strong sexual dimorphism.

Found in **mid- and low-elevation** moist deciduous and semi-evergreen forests.

Plays a key role as an **apex insect predator** and a **bioindicator** of freshwater ecosystems.



UPSC Relevance: **GS Paper 3:** Environment & Biodiversity, **Prelims:** Endemic species, biodiversity hotspots, Western Ghats, **Mains:** Biodiversity conservation, forest ecology.



HOT Question

“What does the discovery of endemic species like *Lyriothemis abrahami* reveal about the conservation value of India’s Western Ghats?”

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5. ZSI: Animal Discoveries 2024 Report



The **Zoological Survey of India (ZSI)** released its annual report “**Animal Discoveries 2024**”, documenting **683 newly recorded fauna** in India, the **highest ever**.

Fauna Discoveries

Category	Details
Total Fauna Recorded	683 species (459 new to science, 224 new to India)
Previous Record	662 species (2022)
Hotspot Contributors	Western Ghats & Northeast – ~35% of total
Top States	Kerala (101), Karnataka, Arunachal Pradesh
Lowest Discoveries	Chandigarh, Delhi, Haryana, Telangana
Unique Species	Anguiculus dicaprio – a new snake species from Himachal Pradesh, named after Leonardo DiCaprio for his environmental activism

Flora Discoveries (BSI Report)

Category	Details
Top States	Kerala (58), followed by Maharashtra and Uttarakhand
Key Discoveries	Rare orchids Bulbophyllum gopalianum, Gastrodia indica

About Zoological Survey of India (ZSI) and Botanical Survey of India (BSI)

Feature	Zoological Survey of India (ZSI)	Botanical Survey of India (BSI)
Established	1916	1890
Primary Focus	Study & survey of animal species (fauna)	Study & survey of plant species (flora)
Parent Ministry	MoEFCC	MoEFCC
Headquarters	Kolkata, West Bengal	Kolkata, West Bengal
Core Activities	- Faunal surveys and research, taxonomy, classification, assessment and conservation.	- Floristic surveys and research, taxonomy, classification, assessment and conservation.
Key Publications	Fauna of India series, Zoological Records	Flora of India series, Botanical



UPSC Relevance: **GS Paper 3:** Environment & Biodiversity. **Prelims:** Endemic species, biodiversity hotspots, Western Ghats. **Mains:** Biodiversity conservation, forest ecology



HOT Question: “Highlight the significance of faunal and floral discovery reports like those by ZSI and BSI in biodiversity conservation. How can these contribute to India’s global environmental leadership?”

6. New Garcinia Species Discovered in Manas National Park: *Garcinia kusumae*



A new plant species, **Garcinia kusumae**, was discovered in **Manas National Park, Assam**, enriching the **botanical and biocultural diversity** of Northeast India.



- **Garcinia kusumae** belongs to the **Clusiaceae family**—known for **resinous, evergreen trees and shrubs**.
- Locally called **Thoikora** in Assamese, reflecting **traditional ecological knowledge**.
- Fruits are **fleshy, colored**, and contain **juicy arils**, some species known for **nutritional and medicinal uses**.
- This discovery adds to **India’s 33 known Garcinia species**, out of **414 globally identified**.
- **Assam** records the **highest diversity** of **Garcinia** in India, followed by the **Andaman Islands and Western Ghats**.

Ecological Preferences of Garcinia:

Attribute	Details
Distribution	Pantropical – Found in Asia, Africa, Oceania, Americas
Climate	Prefers humid, tropical climates with high rainfall
Soil	Grows in well-drained, organic-rich forest soils
Shade	Thrives under partial canopy cover



UPSC Relevance: GS Paper 3 – Environment (Biodiversity, Protected Areas, Conservation), GS Paper 1 – Geography (Natural Vegetation and Biodiversity Hotspots), GS Paper 2 – Governance (Tribal and Local Knowledge Systems).



HOT Question “How can documenting new species like *Garcinia kusumae* help promote biodiversity conservation and sustainable livelihoods in ecologically sensitive regions?”

7. Regional Flyway Initiative



India has joined the **Regional Flyway Initiative (RFI)** to enhance cooperation for protecting **migratory birds** and their **wetland habitats** across Asia and the Pacific.



What is the Regional Flyway Initiative (RFI)?

Launched by: Asian Development Bank (ADB) in partnership with BirdLife International and the East Asian–Australasian Flyway Partnership (EAAFP).

Objective: Conserve and restore wetlands and ecologically sensitive habitats along bird migratory routes (flyways).

Scope: Protects 50+ million migratory waterbirds and their stopover sites.

What are Flyways?

- **Flyways** are annual **migration corridors** used by birds between breeding and non-breeding regions. **India lies on the Central Asian Flyway (CAF):**
 - Spans from the **Arctic** through **Central Asia** to **South Asia and the Indian Ocean**.
 - Covers 30+ countries and supports 400+ bird species.



• **UPSC Relevance:** GS Paper III – Environment & Biodiversity: *Migratory species protection, wetland conservation, international cooperation.* GS Paper II – International Relations: *India's multilateral environmental commitments.*



HOT Question “How do international conservation frameworks like the RFI strengthen India's role in transboundary biodiversity protection?”



8. First-ever Grassland Bird Census



Kaziranga National Park in Assam conducted India's **first grassland bird census** using the **Acoustic Monitoring Technique**, revolutionizing how elusive bird species are surveyed.

What is the Acoustic Monitoring Technique?

A **non-intrusive method** that uses **sound recordings** to monitor **shy, rare, or well-camouflaged birds**. Especially useful in **dense grassland ecosystems** where direct sightings are difficult.



Timing: Conducted during **breeding season (March–May)**.

Tools Used:

Spectrograms – Visual representations of sound frequencies.

BirdNET – An **AI-powered tool** that identifies bird species from their vocalizations.

Focus Species: Included **10 threatened birds** such as: – *Bengal Florican* (Critically Endangered) – *Black-breasted Parrotbill* (Vulnerable)



•**UPSC Relevance:** GS Paper III – Environment & Ecology:

Innovative biodiversity monitoring, conservation strategies, Kaziranga ecosystem : Prelims: Acoustic monitoring, BirdNET, Bengal Florican, Kaziranga

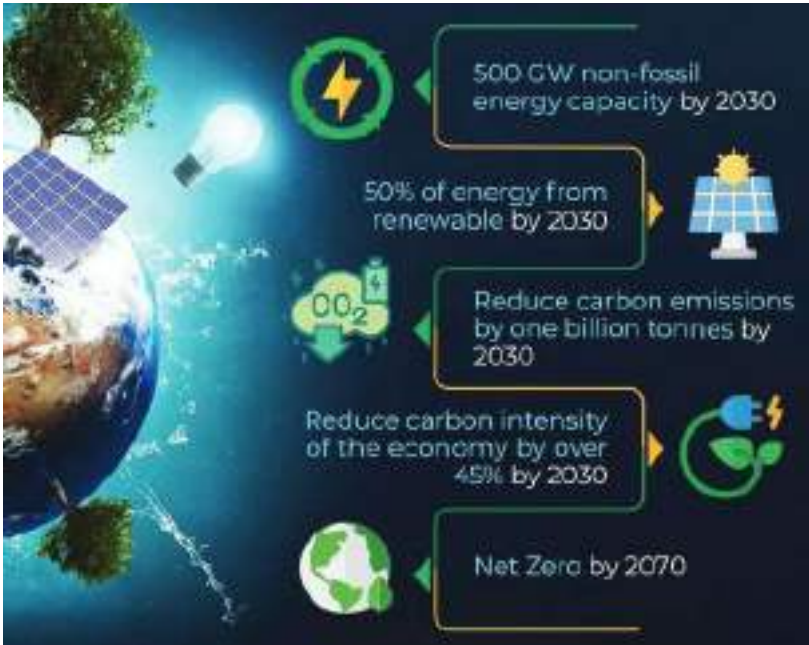


HOT Question “ How does acoustic monitoring enhance biodiversity conservation in protected areas compared to traditional survey methods?

9. India’s Panchamrita Commitments



India reaffirmed its **five-point “Panchamrit” climate pledge** made at COP26 (Glasgow, 2021) as part of its **updated Nationally Determined Contribution (NDC)** under the **Paris Agreement**.



UPSC Relevance: GS III – Environment: *Climate change mitigation, India’s NDCs, renewable energy policy*
•Prelims: *COP26, Paris Agreement, Panchamrit, Emission Intensity*



HOT Question “ How do India’s Panchamrit goals reflect the principle of “common but differentiated responsibilities” under the Paris Agreement?



10. CBAM & Carbon Leakage – EU's Climate Tariff and Its Global Implications



The **Carbon Border Adjustment Mechanism (CBAM)** by the **European Union (EU)** has raised concerns among developing countries like India about **carbon leakage**, competitiveness, and **"green protectionism."**

What is Carbon Leakage?

When companies shift production to countries with **weaker climate policies** to escape carbon costs in their home country, undermining **global climate action**.

What is CBAM?

An **EU climate policy tool**.

Imposes a **carbon tax on imports** of carbon-intensive products (steel, cement, aluminum, fertilizers, hydrogen, electricity) from countries **without equivalent carbon pricing**.

•Goal: Level the playing field and **prevent carbon leakage**.

Example : Company A is a steel manufacturer based in **Country X**, which has **strict carbon regulations and high carbon taxes**. Due to increased costs of complying with these regulations, Company A decides to **relocate its manufacturing plant to Country Y**, which has **looser environmental rules and lower or no carbon taxes**.



•**UPSC Relevance:** GS III – Environment & International Trade Topics: *Climate policy, WTO trade norms, Carbon pricing, India's response to global environmental regulation*



HOT Question "Does CBAM violate the principles of climate equity and common but differentiated responsibilities (CBDR) under international environmental law?"



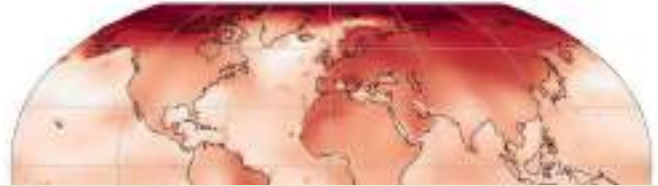
11. Arctic Amplification



🔑 **Arctic Amplification** – The **Arctic Is Warming Faster** Than the Rest of the World. Arctic Amplification is drawing increasing global concern as it accelerates climate change effects globally – from rising sea levels to shifting monsoons.

❄️ What is Arctic Amplification?

The Arctic is warming nearly 4 times faster than the global average. This phenomenon, called Arctic Amplification, results from a series of positive climate feedback loops.



🌐 Global Impacts:

Alters **jet streams** → more extreme weather globally.
Accelerates **sea-level rise** due to Greenland ice melt.
Disrupts **monsoons** and global climate patterns.

🔍 Why It Happens:

•Albedo Effect:

Ice and snow reflect sunlight. When they melt, darker ocean or land absorbs more heat, further accelerating melting.

•Positive Feedback Loop:

Warming → Ice melt → Less reflectivity → More heat absorbed → More warming.

•Water Vapor & Cloud Feedback:

Warm air retains more moisture → more clouds → traps more heat → amplifies warming.

•Ocean Heat Transport:

Ocean currents carry warmer water into the Arctic, raising sea surface temperatures.



UPSC Relevance: GS I – Geography: Climatology, climate zones.

GS III – Environment: Climate change, global warming.

Useful in **Essay** on environment or global commons.



HOT Question “How does Arctic Amplification influence weather patterns in South Asia, particularly the Indian monsoon?”

12. Sea Level Rise in Sierra Leone



Rising **sea levels**, driven by **climate change**, are severely affecting Sierra Leone's **coastal communities**, especially the **Turtle Islands**, including **Nyangai** and **Plantain Islands**.



Turtle Islands Archipelago: Located off the southern coast of Sierra Leone in the Atlantic Ocean.

Nyangai and Plantain Islands: Formerly inhabited by thousands, now rapidly shrinking.

Displacement Risk: Environmental experts warn that the entire archipelago may **disappear within 10–15 years**.

Drivers of Impact:

Thermal Expansion of seawater due to warming.

Melting Glaciers and Ice Sheets (Greenland, Antarctica).

Loss of Coastal Mangroves, increasing erosion vulnerability.

Loss of Livelihoods: Fishing and coastal farming communities displaced.

Cultural Erosion: Indigenous communities may lose ancestral lands and heritage.

Ecosystem Threats: Loss of coastal wetlands and marine biodiversity



UPSC Relevance: **GS Paper 1** – Geography (Climatology, Sea Level Rise)
GS Paper 3 – Environment (Climate Change, Disaster Management)
GS Paper 2 – International Issues (Climate Justice, SIDS)



HOT Question “How do rising sea levels pose an existential threat to Small Island Developing States (SIDS), and what role can international climate finance play in ensuring their resilience?”



13. Green Climate Fund Approves \$200 Million for India Green Finance Facility



The Green Climate Fund (GCF) has approved \$200 million for the India Green Finance Facility (IGFF), marking the first partnership between GCF and the Asian Development Bank (ADB) in India.



IGFF is a **climate finance program** launched jointly by **ADB** and **GCF** to support India's transition to **low-carbon and climate-resilient infrastructure**.

Promotes **climate investments** through **concessional funding** in priority green sectors.

Focus Areas of IGFF:

Sector	Initiative Examples
Clean Energy	Solar parks, battery storage systems
Electric Mobility	Charging infrastructure and e-vehicle financing
Resilient Agriculture	Climate-smart irrigation, crop diversification

About the Green Climate Fund (GCF):

Attribute	Details
Established	2010 under the UNFCCC framework
Headquarters	Incheon, Republic of Korea
Objective	Supports developing nations in achieving NDCs under the Paris Agreement
Governance	Managed by the GCF Board, reports to the COP
Funding Type	Provides grants, loans, guarantees, and equity investments



GREEN CLIMATE FUND



UPSC Relevance: GS Paper 3 – Environment (Climate Finance, Green Infrastructure), GS Paper 2 – International Institutions (ADB, UNFCCC Mechanisms), GS Paper 3 – Economy (Infrastructure and Energy)



HOT Question “How can concessional climate finance mechanisms like the India Green Finance Facility help India achieve its net-zero targets without compromising developmental priorities?”



14. Island Protection Zone (IPZ)



The **Union Environment Ministry** has extended the validity of infrastructure projects approved under the **2011 Island Protection Zone (IPZ)** notification.

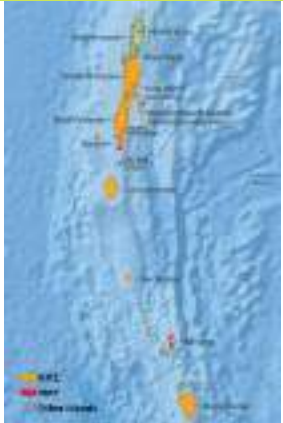
What is the IPZ Notification?

Introduced: 2011

Legal Basis: Issued under the *Environment (Protection) Act, 1986*

Purpose: To regulate developmental activities and protect **fragile island ecosystems** (Andaman & Nicobar Islands and Lakshadweep).

Inspired by: The *Coastal Regulation Zone (CRZ)* notification for mainland coasts, but tailored to island contexts.



Parameter	Previous Regime under IPZ 2011	New Amendment (2025)
Clearance Validity	7 years, with possible 3-year extension	10 years
Extension Window	Up to 3 extra years	1-year extension if applied within validity period
Grace Period for Delay	Not standardized	30–90 days grace with hierarchical approvals
Alignment	IPZ diverged from EIA norms	Now harmonized with EIA Notification 2006

Key Regulatory Features:

1. Island Coastal Regulation Zone (ICRZ): Applies to major islands like *Middle, North, South, and Little Andaman*. Regulates construction and development in designated coastal areas.

2. Integrated Island Management Plans (IIMPs): Apply to **smaller islands** across *Andaman, Nicobar, and Lakshadweep*. Emphasize **sustainable development** while maintaining ecological balance



•**UPSC Relevance:** **GS Paper III – Environment:** Conservation, environmental regulation, sustainable development. Also relevant for **Geography** (Islands of India) and **Disaster Management** (coastal zones, island resilience).



HOT Question “How do frameworks like IPZ and CRZ balance ecological conservation with developmental needs in coastal and island regions?”

Zone Name	Purpose	Declared Under	Nodal Authority
Coastal Regulation Zone (CRZ)	Regulates construction & development within 500m from high tide line	Environment (Protection) Act, 1986	MoEFCC
Island Protection Zone (IPZ)	Regulates development in A&N and Lakshadweep Islands	Environment (Protection) Act, 1986	MoEFCC
Eco-Sensitive Zone (ESZ)	Buffer around national parks/sanctuaries to protect biodiversity	Environment (Protection) Act, 1986	MoEFCC
Environmentally Sensitive Area (ESA)	Broader ecological zones e.g., Western Ghats (as per expert panels)	EPA 1986 via committee reports	MoEFCC
Critically Polluted Areas (CPA)	Industrial clusters with high pollution index	Environment (Protection) Act, 1986	CPCB
Wetland Buffer Zones	Regulate development around wetlands	Wetlands (Conservation & Mgmt) Rules, 2017	MoEFCC
No Development Zone (NDZ)	Typically 200m from shoreline in CRZ-I (ecologically sensitive)	CRZ Notifications	MoEFCC

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15. Ecocide



There is a **growing global push** to recognize **ecocide** as the **fifth international crime** under the **Rome Statute** of the **International Criminal Court (ICC)** – alongside **genocide, war crimes, crimes against humanity, and crimes of aggression.**

What is Ecocide?

“**Unlawful or wanton acts** committed with knowledge that there is a substantial likelihood of **severe and widespread or long-term damage** to the environment.”

Proposed by: Countries like Vanuatu, Maldives, France, and Mexico.

Objective: To **criminalize** large-scale environmental destruction at the global level.



Rome Statute – Overview

•**Adopted:** 1998 | **In Force Since:** 2002

•**Purpose:** Established the **International Criminal Court (ICC)** to prosecute individuals for grave international crimes.



Core Crimes under the Rome Statute:

Crime	Explanation
Genocide	Intentional acts to destroy a national, ethnic, racial, or religious group.
Crimes Against Humanity	Systematic attacks on civilians (e.g., enslavement, torture, apartheid).
War Crimes	Violations of Geneva Conventions (e.g., using child soldiers, attacking civilians).
Crime of Aggression	Unlawful armed force by one state against another, violating UN Charter.



UPSC Relevance: GS II – International Relations & Legal Frameworks
GS III – Environment: Environmental governance, international cooperation.



HOT Question “Should environmental destruction be treated at par with crimes like genocide and war crimes? Justify the inclusion of ecocide under international law.”



16. DGCA Clears Cloud Seeding Trials to Combat Delhi Pollution



The Directorate General of Civil Aviation (DGCA) has approved **cloud seeding trials** to tackle **severe air pollution in Delhi**.



- **Cloud Seeding** is a **weather modification technique** that artificially induces rainfall.
- It involves **dispersing chemicals** like **silver iodide** (for cold clouds) **or sodium chloride** (for warm clouds) into clouds to stimulate condensation and **trigger precipitation**.
- The aim is to **clear airborne pollutants** and improve air quality over the National Capital Region.



UPSC Relevance: GS Paper 3: Environment (Pollution Control Techniques), Science & Tech (Weather Modification)



HOT Question: "Can cloud seeding be a sustainable and ethical solution to India's urban air pollution crisis, or does it pose new environmental risks?"

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17. UNEP Frontiers 2025: "The Weight of Time"



UNEP released its "Frontiers Report 2025" on 10 July 2025, highlighting *early warning signs of emerging environmental threats* and potential *science-backed solutions*. The report is crucial for shaping **global climate policy** and advancing **India's SDG commitments**.



1 Cryosphere Decline & Zombie Microbes

Issue: Thawing of glaciers and permafrost may release ancient, dormant microbes, potentially antibiotic-resistant or pathogenic.

India Link: Melting Himalayan glaciers pose risks to water security and public health.



2 Aging Dams & River Barrier Removal

Issue: Many dams are obsolete—fragmenting ecosystems, harming fish migration, and affecting local communities.

Solution: Selective removal of aging dams can restore river health and biodiversity.



3 Climate Risks to Older Adults

Issue: Older adults (65+) face disproportionate climate risks from heatwaves, floods, and pollution.

Fact: Heat-related deaths in this age group surged by ~85% since 1990s.

Solution: Promote age-friendly, green, and climate-resilient urban planning.



4 Floods Remobilizing Legacy Pollutants

Issue: Floods disturb sediments and release heavy metals (like lead, cadmium) and POPs (e.g., PCBs) into ecosystems and food chains.

Recommendation: Improve flood control, use nature-based solutions, and strengthen pollutant monitoring.



UPSC Relevance: GS III – Water pollution, ecosystem health, disaster resilience, SDG 6 (Water) & 14 (Marine).



HOT Question: "How can India prepare for biosafety and environmental justice challenges posed by climate-induced microbial resurgence and legacy pollutants?"

18. Forest Advisory Committee (FAC)



The **Forest Advisory Committee (FAC)** has recommended **streamlining the forest clearance process** for industrial and infrastructure projects located **adjacent to or near forest land**.

About FAC

Statutory Body under the **Forest (Conservation) Act, 1980**.

• **Mandate:** **Evaluates proposals** seeking forest land diversion for **non-forest use** (e.g., mining, highways, dams).

- Provides **recommendations** to the **Ministry of Environment, Forest and Climate Change (MoEFCC)**.
- **Advisory in nature** — does not grant final approval, but its input is critical in decision-making.



UPSC Relevance: **GS Paper III – Environment & Ecology**

Topics: Forest Conservation Act, Environmental Governance, Infrastructure vs. Ecology Debate.



HOT Question: "Does streamlining forest clearances for development projects compromise environmental justice and ecological sustainability?"

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About *Dipterocarpus bourdillonii*:

Feature	Description
IUCN Status	Critically Endangered (■ Red List)
Habitat	Endemic to Western Ghats rainforest ecosystem
Population	Fewer than 250 mature individuals globally
Ecological Role	Key canopy species, sustains rainforest structure & biodiversity
Economic Use	Valued hardwood for furniture; oleoresin (wood oil) used in medicine & industry



UPSC Relevance: GS Paper 3 – Environment & Ecology, Biodiversity conservation, endangered species, Plant diseases and their impact on ecosystem services.



HOT Question: "How can integrating traditional ecological knowledge and modern phytopathology help in conserving endemic species like *Dipterocarpus bourdillonii* in fragile ecosystems like the Western Ghats?"

20. Sustainable Aviation Fuel (SAF)



Rising aviation emissions (2.5% of global GHG) have intensified the push for **Sustainable Aviation Fuel (SAF)** to enable low-carbon transition in aviation.

ATF (Aviation Turbine Fuel) is conventional jet fuel derived from crude oil

SAF (Sustainable Aviation Fuel) is eco-friendly jet fuel made from renewable sources like waste oils, algae, or agricultural residues.

What is SAF ? : SAF (or **Aviation Biofuel**) is a **drop-in alternative** to conventional **Aviation Turbine Fuel (ATF)**

Sources are



Significance of SAF

Aspect	Benefits
Climate	Reduces GHG emissions by up to 80% over the lifecycle; crucial for carbon neutrality goals
Compatibility	Works in existing aircraft engines and fuel infrastructure without modification
Cleaner Emissions	Produces less particulate matter, reducing soot, NOx, and cloud condensation trails
Energy Security	Reduces India's import dependence on ATF; supports price stability
Social Access	Atmanirbhar SAF production can make air travel more affordable and inclusive

India's Potential

Factor	Details
CORSIA Participation	India is a signatory to CORSIA (Carbon Offsetting and Reduction Scheme for International Aviation) under ICAO.
Global Biofuel Alliance	Launched at G20 Summit 2023, co-led by India to promote SAF & biofuels globally.
National SAF Targets	India targets 5% SAF blending by 2030 and up to 15% by 2040.
Feedstock Availability	India produces nearly 500 million tonnes of agricultural residue annually (MNRE estimate).

Existing Challenges

Issue	Explanation
High Production Cost	SAF is ~2x costlier than ATF.
Infrastructure Gap	Lack of domestic production, storage, and supply chain facilities.
Feedstock Constraints	Seasonal availability and logistics of agri-waste and waste oils.

Way Forward

- **Global Partnerships:** Leverage platforms like **WEF's Skies for Tomorrow** and **ICAO partnerships**.
- **Policy Incentives:** Tax rebates, **green credits**, and **PPP models** to boost SAF production.
- **R&D Investment:** Support academia-industry collaborations in **feedstock innovation** and **conversion tech**.
- **State Support:** Encourage **state-level SAF hubs** near biomass-rich regions.



UPSC Relevance: GS Paper 3: Environment: Emission reduction, climate strategies. Economy: Green industrial transition, Energy Security: Biofuels and sustainability



HOT Question: " Can Sustainable Aviation Fuel (SAF) be the cornerstone of India's low-carbon aviation future, or will high cost and feedstock limitations restrict its viability? Critically examine."

21. KHARAI CAMELS



kharai camels were **rescued from rising sea tides** in Gujarat, drawing attention to their **distinct habitat and the need for targeted conservation efforts**.



About Kharai Camels:

Unique breed that can **swim in the sea** and **graze on mangroves**.

Native to the **Kutch region of Gujarat**.

Name "**Kharai**" comes from "**Khara**" (saline), indicating their **adaptation to saline coastal and desert areas**.

Culturally preserved by **Rabari** and **Fakirani Jat** communities for over **400 years**.

Their **milk** is known for **high nutritional and medicinal value**.



UPSC Relevance: GS Paper III – Environment, Biodiversity, Conservation
Topics: Indigenous Breeds, Biodiversity Hotspots, Traditional Knowledge & Livelihoods.



HOT Question: "How can integrating traditional knowledge with modern conservation practices enhance protection of unique breeds like the Kharai camel?"

22. Jellyfish Blooms in Kerala Backwater



Jellyfish blooms have been reported in **Kerala’s Cochin backwaters**, with unique timing and ecological impacts compared to other Indian coasts.



A **jellyfish bloom** is a **sudden, dense aggregation** triggered by environmental changes. Common in India during **April–May** and **October–December**, but Kerala experiences **extended bloom seasons**.

Key bloom species:

- *Acromitus flagellatus*
- *Blackfordia virginica*
- *Pleurobrachia* sp.
- *Pelagia noctiluca*

Causes of Bloom :

Factor	Impact
Nutrient Enrichment	Runoff-induced eutrophication increases phytoplankton (jellyfish food)
Pollution & Warming	Depletes oxygen, favors jellyfish over fish
Coastal Currents	Currents and tides concentrate jellyfish nearshore
Kerala-Specific Factors	Persistent salinity, low river discharge, tidal mixing sustain blooms

Impacts of Jellyfish Blooms :

- Soft-bodied marine invertebrates (**phylum Cnidaria**), found in oceans and **brackish estuaries**.
- **Drift with currents**, cannot swim against strong flows.
- **Responsive to changes** in temperature, salinity, and nutrients.

Positive Ecological Roles:

- **Control zooplankton** and larval populations.
- Enhance **coastal nutrient cycling** through decay.
- Potential source of **bioactive compounds** for pharmaceuticals.



UPSC Relevance: GS Paper 1 – Geography (Climatology, Oceanography)
GS Paper 3 – Environment (Marine ecology, Biodiversity, Pollution)
GS Paper 3 – Economy (Impact on Fisheries and Tourism)



HOT Question: "How do jellyfish blooms signal ecological imbalance in coastal waters, and what integrated measures are needed for coastal resilience?"



23. Hong Kong convention



The **Hong Kong International Convention (HKC)** for the **safe and eco-friendly recycling of ships** came into effect on **26 June 2025**.



HKC is a global treaty under the **International Maritime Organisation (IMO)**, regulating **end-of-life ship recycling**.

Aims to ensure **worker safety** and **environmental protection** through **standardized international practices**.

Collaborative Framework:

- o **IMO:** Oversees implementation.
- o **ILO:** Ensures labour safety standards.
- o **Basel Convention:** Aligns ship recycling with **hazardous waste management** rules.



Inventory of Hazardous Materials

(IHM): Ships must maintain detailed lists of hazardous substances onboard.

Ship Recycling Plan (SRP): Must be approved by the recycling country's competent authority.

Completion Certificate: Issued within **14 days** post-recycling.

Hazardous Material Restrictions: Lists of **prohibited substances** in ships and recycling yards.

Significance:

- Establishes a **uniform legal framework** for safe and green ship recycling. Supports Circular Economy.
- Enhances **worker safety** and improves global recycling **standards**.
- Offers **trade advantage** to compliant nations by attracting **regulated markets**.



UPSC Relevance: GS Paper 3 – Environment (Pollution control, Waste management). GS Paper 2 – International Relations (Multilateral treaties, Global governance)



HOT Question “In what ways does the Hong Kong Convention reflect global efforts to harmonize environmental safety with economic interests in the shipping industry?”



24. Microplastics Detected in Human Heart Tissues



Recent studies have found **microplastics in the pericardium, myocardium, and arteries**, showing **deep infiltration** into heart tissues and raising serious **cardiovascular health concerns**



What Are Microplastics?

Microplastics are tiny plastic particles (<5 mm) originating from:

- Primary sources: Manufactured for cosmetics, detergents, etc.
- Secondary sources: Breakdown of larger items like bags, bottles, and packaging.
- Common types: PET, PP, PVC, PE, PS – all non-biodegradable, persistent for centuries.

System Affected	Health Impact
Cardiovascular	Causes oxidative stress, inflammation, atherosclerosis, heart attacks, strokes
Hormonal (via EDCs)	Endocrine Disrupting Chemicals (EDCs) interfere with hormones like estrogen, testosterone
Genetic	Linked to DNA damage, mutations, and chronic diseases
Metabolic	Contributes to diabetes, obesity, and reproductive issues

Endocrine Disrupting Chemicals (EDCs):

EDC Type	Found In	Effect
BPA, BPS	Food containers, bottles, thermal paper	Hormone mimicry → cancers, infertility
Phthalates	Toys, cosmetics, medical tubing	Disrupt reproductive health
PFAS	Non-stick cookware, food packaging	Affects metabolism and immunity



UPSC Relevance: GS Paper 3 – Environment (Pollution, Waste Management, Health Impacts) GS Paper 2 – Health and Governance (Preventive Healthcare).



HOT Question “How does microplastic pollution transcend environmental boundaries to become a major public health and economic challenge in India?”

25. Black-Headed Caterpillar Disease



Rising cases of **Black-Headed Caterpillar Disease** affecting **coconut and arecanut palms** across **South India**, raising alarm over **crop loss and pest management challenges**.



About the Disease:

- **Causative Agent:** *Opisina arenosella* (moth species)
- **Hosts:** **Coconut** and **Arecanut trees**
- **Symptoms:**
 - **Yellowing and drying** of leaves (starts from tip)
 - **Silken galleries** seen on the underside of fronds
- **Lifecycle:**
 - Larvae feed on leaflets
 - Pupate within silken galleries
 - Adult moths emerge and repeat cycle



Control Measures:

Mechanical: Prune and destroy infested fronds

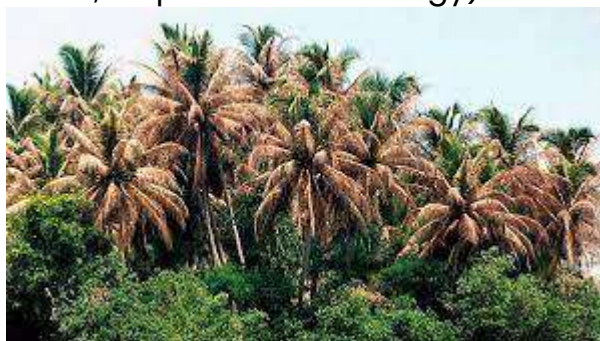
Biological: Release of **parasitoids** like *Goniozus nephantidis*, *Bracon hebetor*

Chemical: **Malathion** (used with caution, as part of IPM strategy)



Region Affected

Widespread in Kerala, Tamil Nadu, and Karnataka



UPSC Relevance: GS Paper III – Environment & Agriculture

Themes: Integrated Pest Management (IPM), Crop Security, Climate-Linked Pest Outbreaks, Agro-biodiversity Threats



HOT Question “How does climate change influence pest outbreaks like the Black-Headed Caterpillar, and what role does IPM play in long-term agricultural sustainability?”



26. Unclonable Fungi Shock Scientists: Dual Role in Wine & Crop Disease



Researchers discovered that certain **ascomycete fungi** like *Botrytis cinerea* and *Sclerotinia sclerotiorum* **cannot be cloned** due to **unusual genetic structures**—their **chromosomes are fragmented across multiple nuclei**, with no single nucleus carrying the entire genome.



Key Fungal Species:

Aspect	<i>Botrytis cinerea</i> (Noble Rot)	(White Mould)
Role	Dual – Damages crops & aids in winemaking	Plant pathogen only
Crops Affected	Grapes, strawberries	Sunflower, soybean, mustard, tomato, lettuce
Disease Caused	Grey Rot (harm), Noble Rot (benefit)	White mould / Sclerotinia stem rot
Favorable Conditions	Humid or dry-misty (type-dependent)	Cool, moist (especially during flowering)
Fungal Group	Ascomycetes (spore-forming in asci)	Ascomycetes



Unique Discovery:

These fungi **cannot be cloned**, disrupting conventional genetic modification methods.

- Opens new research into **multinuclear genetic arrangements** and their **biotechnological potential**.



UPSC Relevance: GS Paper III – Science & Technology, Agriculture
Themes: Biotechnology, Crop Diseases, Climate-Agriculture Nexus, Non-conventional Breeding Challenges



HOT Question “How do organisms with fragmented and multi-nucleate genomes challenge our conventional understanding of genetics and cloning?”

27. EPR for Non-Ferrous Metals



The **MoEFCC** notified **Amendment Rules 2025** introducing **Extended Producer Responsibility (EPR)** for **non-ferrous metals** like **aluminium, zinc, and copper** to enhance recycling and responsible disposal.

What is EPR?

Extended Producer Responsibility is a legal obligation for producers to manage **post-consumer waste** through collection, recycling, or safe disposal of their products.

Scope:

- Applies to: Producers, importers, recyclers, refurbishers, bulk users
- Metals Covered: **Aluminium, Zinc, Copper**
- Products Covered: Cans, foils, wires, cookware, transformers, etc.

Salient Features of EPR Framework:

Component	Key Provision
Recycling Targets	Gradual increase from 10% (2026–27) to 75% (2032–33)
Lifespan-Based Trigger	Targets begin only after product lifespan ends
Mandatory Recycled Input	Schedule XIII mandates minimum % of recycled content in manufacturing
Digital Portal	Managed by CPCB for registration, filings, and scrap tracking
Oversight	CPCB-led Steering Committee to resolve disputes and monitor compliance
State Role	Must provide land and infrastructure for recycling/refurbishment units
EPR Certificates	Tradable certificates issued by CPCB to verified recyclers
Non-Compliance	CPCB may impose Environmental Compensation (penalty)



UPSC Relevance: **GS Paper 3** – Environment (Waste Management, Resource Efficiency), **GS Paper 2** – Government Policy & Regulation, **GS Paper 3** – Economy (Circular Economy, Industry Compliance)



HOT Question “How does Extended Producer Responsibility for non-ferrous metals promote circular economy and sustainable industrialisation in India?”

28. FGD Norms Eased for Thermal Power Plants



The Government has **relaxed Flue Gas Desulphurization (FGD)** installation norms for thermal power plants, based on expert panel advice. The move aims to balance pollution control with cost and energy efficiency, given India's relatively low SO_2 levels.

What is FGD ? Flue Gas Desulphurization (FGD) is a process to remove sulphur dioxide (SO_2) from flue gases emitted by coal-fired power plants. It typically uses alkaline reagents like limestone or lime to neutralize SO_2 .



Flue Gas Pollutants :

- SO_2 (Sulphur dioxide)
- NO_x (Nitrogen oxides)
- CO_2 (Carbon dioxide)
- Particulate matter (PM)
- Carbon monoxide
- Heavy Metals (in traces)

FGD installations Rules		
Total Infrastructure ~600 units across 180 thermal power plants		
Category A 11% Mandatory FGD Installation • Located within 10 km of NCR • Or cities with population > 1 million (200 Census) Deadline: December 30, 2027	Category B 11% Conditional FGD Installation • Located near Critically Polluted Areas (CPA) • Extremely polluted regions/clusters as per CPCB criteria • Or Non-Attainment Cities (NAC) • 131 cities with worst air quality, not meeting NAAQS for 3 years • Subject to EAC recommendation Deadline: December 30, 2027	Category C 78% Fully Exempted • No FGD installation required • Comprises majority of units • Complete exemption from FGD systems No Deadline

Why Were Norms Relaxed?

1. Low Ambient SO_2 : Levels in most Indian regions are $10-20 \mu\text{g}/\text{m}^3$, well below the national standard of $80 \mu\text{g}/\text{m}^3$.

2. Low-Sulphur Indian Coal: Indigenous coal has **naturally low sulphur content**, reducing SO_2 output.

3. Climate Trade-Off: Sulphate aerosols reflect sunlight, possibly providing a **minor cooling effect**, though **not endorsed as climate mitigation by IPCC**.

4. Economic Factors:

1. **High cost** of FGD systems (~₹5-6 crore/MW)
2. **Limited vendors** and implementation delays
3. **Possible increase in electricity tariffs**



UPSC Relevance: GS Paper III – Environment, Energy

Themes: Pollution Control Technologies, Thermal Power & Emissions, Cost-Environment Trade-offs, Climate Mitigation vs Adaptation



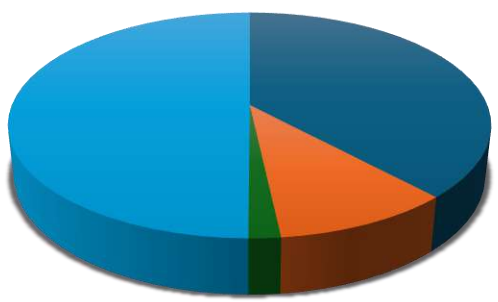
HOT Question “Should economic viability influence the pace of environmental compliance in developing nations? Justify using India’s FGD relaxation as a case study.



29. India Achieves 50% Non-Fossil Power Capacity – 5 Years Ahead of Target



India has surpassed the **50% mark** in installed electricity capacity from **non-fossil fuel sources** (as of **July 2025**), achieving its **Paris Agreement NDC target** well before the 2030 deadline.



Total Installed Capacity	484.82	100%
Renewable Energy	184.62	38.08%
Large Hydro	49.38	10.19%
Nuclear Energy	8.78	1.81%
Fossil Fuels	242.04	49.92%

India’s Paris Agreement NDC Target (COP26):
50% cumulative electric power capacity to come from **non-fossil fuel sources by 2030** **Target achieved in 2025**

Initiative	Key Features
National Solar Mission (NSM)	Part of NAPCC; target of 280 GW solar by 2030; includes rooftop, solar parks, solar pumps.
Wind Energy Development Program	Initiated in 1980s; major states: TN, Gujarat, Maharashtra, Rajasthan; supported by Feed-in Tariffs, Repowering Policy.
Hydro Power Policy (2018)	Declared large hydro (>25 MW) as renewable; introduced Hydro Power Purchase Obligation (HPO).
Green Energy Corridor	Dedicated transmission for renewables; funded by KfW (Germany) & GoI.
PM-KUSUM (2019)	Promotes solar pumps, solarisation of grid pumps, and solar on barren land; empowers farmers.
International Solar Alliance (ISA)	India-led global solar initiative; promotes tech transfer & financial support for tropical countries.
PLI Scheme for Solar PV	Boosts domestic solar panel manufacturing; reduces import dependency.
Renewable Energy Parks	Ultra Mega Parks ≥500 MW; e.g., Khavda Hybrid Park, Gujarat.
FDI & Investment Promotion	100% FDI allowed; India in Top 5 global investors in renewables.
National Bio-Energy Mission	Focus on biomass, waste-to-energy, and bagasse cogeneration; supports rural jobs.



UPSC Relevance: GS Paper III – Environment & Energy
Themes: Renewable Energy, Climate Agreements, Nationally Determined Contributions (NDCs).



HOT Question “How does India’s early achievement of its non-fossil energy target reflect on its role in global climate leadership?”

30. India Achieves E20 Ethanol Blending Target Five Years Early



India has achieved **20% ethanol blending (E20 fuel)** in petrol in **2025**, ahead of its **2030 target**, marking a major step in **fossil fuel substitution**, **carbon reduction**, and **energy security**.

What is Ethanol Blending ?

Ethanol (C₂H₅OH) is a renewable **biofuel** produced from **sugarcane, maize, broken rice**, etc.
E20 = 20% ethanol + 80% petrol
Enhances combustion, reduces emissions

INDIA
HITS 20%
ETHANOL
BLENDING

Target Timeline:

Milestone	Initial Target	Achieved
E10	2022	✓ Achieved
E20	2030	✓ Achieved in 2025



How India Achieved It Early:

- Policy Push:** National Bio-Energy Programme (2022), EBP Programme, Ethanol Roadmap
- Incentives:** Higher ethanol procurement prices
- Diversified Feedstock:** Sugarcane, maize, broken rice
- Infrastructure Upgrades:** OMC tankage, pipelines
- Automobile Industry Collaboration:** E20-ready vehicles

Benefits :

- Reduces oil import bills
- Cuts GHG emissions
- Boosts farmer income
- Supports India's climate & energy goals

Challenges:

- Over-reliance on water-intensive crops (sugarcane)
- Food vs fuel dilemma
- Need for nationwide vehicle compatibility
- Distribution challenges in rural areas

Types of Ethanol:

Generation	Feedstock Source
1G	Food crops (sugarcane, maize)
2G	Agricultural waste (bagasse, bamboo)
3G	Algae (under research)



Policy Support :

- Ethanol Blending Programme (EBP)
- SATAT Scheme (biogas to fuel)
- National Policy on Biofuels (2018, updated 2022)
- NITI Aayog Roadmap (2020–2025)

Global Ethanol Producers (2024 approx.):

Country	Production (billion litres)	Notes
USA	~57–60	From corn
Brazil	~28–30	From sugarcane
India	~7–8	From sugarcane, rice, maize
China	~3–4	Corn, cassava
Canada	~2	Corn, wheat

✦ *Uttar Pradesh leads in production via molasses & sugarcane juice.*



UPSC Relevance: GS III – Environment, Energy, Economy
Prelims Focus: E20, Ethanol generations (1G, 2G, 3G), Biofuel Policies & Roadmaps , Major producers.



HOT Question *“Can large-scale ethanol blending be environmentally sustainable in the long run, given India’s water scarcity and agricultural demands?”*

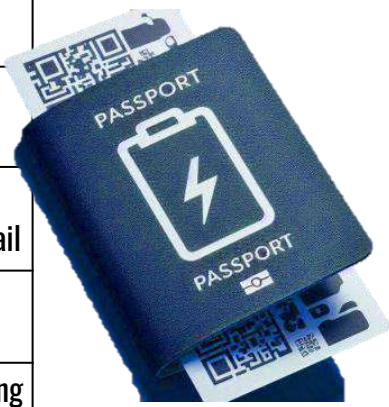


31. India’s Battery Passport System for EVs



India plans to introduce a **Battery Passport** system for electric vehicle (EV) batteries to improve **transparency, traceability, and export readiness** in the EV ecosystem.

Feature	Description
Initiated by	NITI Aayog in collaboration with relevant ministries
What is it?	A digital record embedded as a QR code on EV batteries—similar to an Aadhaar for batteries
Contains Information	Battery’s source, composition, performance, manufacturing year, lifecycle data, and supply chain trail
Functionality	Allows users to scan the battery and access real-time data about safety, compatibility, and residual life
Integration	Supports the upcoming Battery Swapping Policy, helping identify battery compatibility and usage metrics



Significance:

- ✓ **Enhances EV safety** by ensuring proper battery usage and timely replacement
- ✓ Promotes **standardisation and transparency** across manufacturers
- ✓ Facilitates **quality assurance and recycling** tracking
- ✓ Supports **global exports** by aligning with international traceability norms
- ✓ Helps lower EV costs in the long run by improving battery efficiency management
- ✓ Tackles issues of **battery degradation and second-life applications**



UPSC Relevance: GS Paper 3 – Economy & Environment
Topics: Electric Mobility, Green Energy, Sustainable Development, Digital Governance



HOT Question “How does the Battery Passport system strengthen India’s EV ecosystem and align with the principles of a circular economy?”



32. Tourist Carrying Capacity



Uttarakhand initiated its FIRST-EVER assessment of **Tourist Carrying Capacity** in the Nainital district. This move comes in response to escalating pressures from unregulated tourism, vehicular congestion, and rising population density.

Tourist Carrying Capacity Assessment in Nainital, Uttarakhand

What is Carrying Capacity ?

It denotes the **maximum number of individuals** or population that an environment can sustain **without degrading natural resources or ecosystem balance**.

•Influenced by:

- **Biotic factors:** Vegetation cover, water resources, biodiversity
- **Abiotic factors:** Terrain type, climatic conditions, soil stability

Approaches to Assessment:

1.Planetary Boundaries Approach

1. Evaluates local activities within the context of **global environmental limits**.
2. Applied to issues like **climate change, pollution, biodiversity loss, and land degradation**.

2.Biocapacity Overshoot Approach

1. Compares **human ecological demand** with the area's ability to regenerate natural resources.
2. Commonly represented through metrics like **Earth Overshoot Day**, indicating the point at which annual resource consumption exceeds Earth's regenerative capacity.



•**UPSC Relevance:** GS Paper I & III: Geography, Environment, Sustainable Development. Case study use in Mains: Environmental governance, sustainable tourism.



HOT Question "How can hill towns in India achieve a balance between economic gains from tourism and ecological sustainability in the face of growing climate vulnerabilities?"



33. End-of-Life Vehicles (ELVs) Regulation in India



India is ramping up implementation of **ELV scrappage and fuel ban** measures to address **vehicular pollution, road safety**, and promote a **circular economy**. Over **2 crore ELVs** may be out of 30 crore vehicles.



What is an ELV?

An **End-of-Life Vehicle (ELV)** is declared unfit for public roads due to:

- **Age limit** (10 years for diesel, 15 for petrol in NCR)
- **Fitness test failure** (under Automated Testing)
- **Structural damage** (fire, flood, etc.)
- **Court order or voluntary surrender**

Registration cancellation under **CMV Rule 52**

Why ELV Regulation is Critical

Concern	Impact
Pollution	ELVs emit 12× more NOx and PM than BS-VI vehicles
Resource Waste	Informal scrapping causes metal/oil leakage into soil & water
Climate Burden	Recycling cuts CO ₂ emissions by 58%, reduces energy use by 75%
Road Safety	Reduces risk from brake failure, structural wear
Circular Economy	70% of vehicle mass can be recovered through scientific recycling



Fuel Ban on ELVs (CAQM Notification)

Feature	Description
Ban Scope	Diesel vehicles >10 years, Petrol >15 years (NCR)
Start Date	Phase 1: 1 Nov 2025, Full: 1 April 2026
Technology Use	ANPR Cameras at fuel stations to detect ELVs via number plates
Data Linkage	Integrated with VAHAN (vehicle registry by MoRTH)
Penalties	Fuel denial, fines, vehicle seizure under CMV Rules

🔧 Disposal & Scrappage Framework

Component	Description
Informal Sector Share	Over 75% of ELVs handled unscientifically
AIS 129	Automotive Industry Standard for safe dismantling of vehicles (2015)
RVSF	Registered Vehicle Scrapping Facility licensed by MoRTH
2021 Policy	Mandatory fitness test, market-based incentives for phasing out ELVs
EPR Mandate (2025)	Producers must ensure scrappage proportional to market share

📄 Important Definitions

ANPR Camera: Automated system that scans number plates for enforcement.

VAHAN Database: Centralised registry of vehicle ownership, age, and fitness.

EPR (Extended Producer Responsibility): Legal obligation for manufacturers to collect & recycle their ELVs.

CMV Rule 52: Authorises cancellation of registration of unfit vehicles.



UPSC Relevance: GS III Environment, Infrastructure, Pollution, Transport, Waste Management
GS II Governance, Regulatory Framework, Implementation Gaps



HOT Question "Discuss the significance of ELV regulations in addressing urban pollution and fostering a circular economy. What challenges hinder its effective implementation?"

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34. Urban Wind Stilling Effect



Urban Infrastructure Slows Wind, Triggers Air Quality and Climate Concerns

Rapid **urbanization** alters natural wind patterns due to high-rise buildings, paved surfaces, and loss of green spaces.



Causes

- **Construction density** disrupts natural airflow.
- **Surface roughness** from buildings and roads increases wind drag.
- **Loss of vegetation** limits wind corridors.



Consequences

- **Air stagnation**: Traps pollutants and intensifies **Urban Heat Island** effect.
- **Decline in wind energy feasibility** in cities.
- **Reduced accuracy** in weather and climate forecasting models.



UPSC Relevance: GS I – Urbanization

GS III – Environmental Pollution, Renewable Energy, Climate Change



HOT Question "How can sustainable urban planning mitigate the environmental impacts of disrupted wind flow patterns?"

35. Environmental Flow (E-flow)



A meeting was held to review **E-flow in the Ganga River and its tributaries** to maintain river health.

What is Environmental Flow (E-flow)?

Refers to the quantity, timing, and quality of water flow needed to support freshwater ecosystems and livelihoods. Ensures ecological integrity of rivers and estuaries

Why Needed? **Dams, pollution, encroachments** disrupt river balance. E-flow addresses these issues to restore **natural river dynamics**.



Benefits

- Supports fish populations and aquatic biodiversity
- Improves water quality and groundwater recharge
- Aids livelihoods dependent on river systems
- Enables sustainable water use and management



HOT Question Can E-flow regulation balance development needs and ecological sustainability in river basin management?



36. Tiger Outside Tiger Reserve Pilot Scheme



New Tiger Conflict Mitigation Scheme Launched in 10 States. A new **pilot scheme**, funded by **CAMPA**, has been approved to reduce **Human-Tiger conflicts**, especially outside protected areas, following **382 human deaths between 2020 and 2024**.

About the Scheme

- Jointly run by **NTCA** and **State Wildlife Wardens**.
- Covers **80 forest divisions** across **10 conflict-prone states**.
- Backed by **one-year CAMPA funding**.

Objectives

- **Real-time tiger tracking** using technology.
- **Quick response teams** for intervention.
- Collaboration with **veterinary support** and **civil society**.
- Focus on **preventive strategies** and **awareness** to reduce conflict.



UPSC Relevance: GS III – Environment & Ecology, Biodiversity Conservation, Wildlife Protection, CAMPA & NTCA roles



HOT Question *How can technology-driven wildlife conflict mitigation balance conservation goals with human safety?*

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37. Rhino DNA Index System (RhoDIS India)



Assam Begins DNA Profiling of Rhino Horns to Tackle Poaching and Boost Conservation



The **Assam Forest Department** has launched DNA profiling of **2,573 rhino horn samples** under the **RhoDIS India** programme, marking a major step in wildlife crime investigation and genetic conservation of the Indian rhino.

What is RhoDIS India ?

Rhino DNA Index System (RhoDIS) creates unique DNA profiles for individual rhinos.

Started in **2016** by **MoEFCC**, in collaboration with **WII**, select state forest departments, and **WWF India**.

Adapted from South Africa's **RhODIS** system developed by University of Pretoria.

How It Works

- DNA extracted from **horns, tissue, dung, or blood**.
- Stored at **Wildlife Institute of India (WII)** in a national forensic database.
- Links seized horns to poached rhinos → strengthens **legal prosecution**.
- Helps monitor **genetic diversity**, plan **translocation**, and manage **rhino populations**.



UPSC Relevance: GS III – Environment & Ecology

Prelims – RhODIS, Indian Rhinoceros, Schedule I species, CITES
Appendix I, Wildlife forensic tools



HOT Question *How can forensic technologies like RhoDIS improve enforcement and policymaking in wildlife conservation?*

38. Gharial and Sloth Bear



Gharial and **Sloth Bear** have been **recommended for inclusion** under the **Species Recovery Programme** of the **Centrally Sponsored Scheme for Integrated Development of Wildlife Habitats (CSS-IDWH)**.

About the Recommendation

- Recommendation made by **Standing Committee of National Board for Wildlife (SC-NBWL)**.
- NBWL is formed under the **Wildlife (Protection) Act, 1972**.
- It advises on **wildlife conservation** and **forest protection**.



Aspect	Sloth Bear	Gharial
Conservation Status		
IUCN Status	Vulnerable	Critically Endangered
WPA, 1972	Schedule I	Schedule I
CITES	Appendix I	Appendix I
Key Characteristics		
Habitat	Native to India, Sri Lanka, Nepal. Found in 5 bio-geographic zones.	Native to Indian subcontinent; found in rivers like Chambal, Ganga, etc.
Physical Traits	Small bear with shaggy coat	Long, narrow snout; suited for catching fish
Feeding Habit	Feeds on termites and ants	Piscivorous – feeds mainly on fish
Social Behaviour	Solitary, mostly nocturnal	Gregarious – males are solitary, females stay with young
Reproductive Note	Bears live in dens or burrows, care for cubs	Nests on sandy banks; male has a bulbous snout (“ghara”) used in mating calls

Centrally Sponsored Scheme – Integrated Development of Wildlife Habitats (CSS - IDWH)

- What is it?

Launched in 2008 by the Ministry of Environment, Forest and Climate Change (MoEFCC).

Aims to provide financial and technical support to States/UTs for wildlife conservation.

- Objectives

Conservation of threatened species (e.g. tiger, elephant, gharial, sloth bear).

Protection and development of National Parks, Wildlife Sanctuaries, and other Protected Areas.

Support for community reserves, eco-development, and human-wildlife conflict mitigation.

Promote habitat restoration, species recovery, and biodiversity awareness.

Key Components

1. Recovery of Critically Endangered Species and their Habitats
E.g. projects for Gharial, Sloth Bear, Hangul, etc.
2. Protected Area Development Infrastructure, patrolling, and staff support.
3. Support to Community Reserves & Conservation Reserves
4. Eco-development activities in buffer zones.



UPSC Relevance: GS-III: Environment & Ecology, Wildlife protection laws, Government schemes for conservation, Biodiversity and endangered species

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JULY 2025

SCI & TECH

1. CROPIC
2. AlphaGenome
3. Machine Vision-Based Inspection System (MVIS)
4. Ram Air Turbine (RAT)
5. Mitochondrial Donation Treatment (MDT) / MRT
6. Biomolecular Emulator (BioEmu)
7. BITCHAT & Bluetooth Mesh Networking
8. Alternmagnets Discovery
9. Face AUTH
10. CDSCO (Central Drugs Standard Control Organization)
11. India's Semiconductor Startups
12. India's First National Biobank
13. First Tribal Genome Sequencing Project
14. WHO Pandemic Agreement
15. Hydrogen Powered Trains
16. WHO's '3 by 35' Initiative
17. Shinkansen Technology
18. Glass Grid Rapid Technology – Road Innovation
19. MRgFUS
20. Helicobacter pylori
21. Supersolid State of Light
22. Quantum Noise
23. Quantum Magnetometer
24. Terbium
25. Gravitational Wave Detection Network
26. NISAR – Observation Radar Mission
27. ISRO–Axiom–4 Mission
28. 3I/ATLAS – Interstellar Comet
29. IRNSS / NavIC
30. Coronal Mass Ejection (CME)
31. Starlink Final Clearance in India
32. Global Atomic Clock Comparison
33. India's Tetravalent Dengue Vaccine 'DengiALL'



1. CROPIC



The Ministry of Agriculture launched the **CROPIC** (*Collection of Real Time Observations & Photo of Crops*) App Launched to to enable **real-time, tech-driven crop monitoring** under the **Pradhan Mantri Fasal Bima Yojana (PMFBY)**.

Aspect	Details
Full Form	Collection of Real Time Observations & Photo of Crops
Purpose	Digitize crop monitoring through geotagged images and real-time data
Functionality	Farmers upload photos 4–5 times during the crop cycle via the mobile app
Technology Backbone	AI-enabled cloud platform analyses and visualizes crop conditions
Funding Source	Fund for Innovation and Technology (FIAT) under PMFBY
Integration	Linked with crop insurance mechanisms and yield assessment models



UPSC Relevance: GS III Agriculture, Technology in Governance Digital agriculture, Precision farming, PMFBY modernization
Prelims : Government Schemes, PMFBY, FIAT, Agritech platforms



HOT Question “How does real-time, AI-enabled monitoring under schemes like CROPIC enhance transparency and accountability in crop insurance programs like PMFBY?”



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EPIC UPSC Classes offers a **high-quality recorded video course**, designed for self-paced learning (self study/Preparation).

2. ALPHAGENOME



DeepMind unveiled **AlphaGenome**, an advanced AI model to predict the health impact of **genetic mutations**, especially in non-coding regions of DNA.

What It Does:

- Analyzes long DNA sequences to understand the effect of mutations.
- Focuses on **non-coding DNA** — the regulatory zones that control gene expression, not protein creation.
- Predicts how mutations affect **gene expression** and **protein binding**.

Built On : Successor to earlier models like **Enformer** (for gene expression prediction) and **AlphaMissense** (which classified harmful coding mutations).

Key Concepts Simplified :

Genome: Complete genetic material of an organism.

Non-coding DNA: Doesn't produce proteins but regulates gene activity (like gene "on/off" switches).

Mutation: Permanent change in the DNA; can be harmless or cause diseases like cancer or inherited disorders.



UPSC Relevance: GS Paper III – Science and Technology

This development is significant in the context of genomic research, AI in healthcare, personalized medicine, and ethical use of biotechnology. It also relates to SDG 3 – Good Health and Well-being.



HOT Question "How can AI models like AlphaGenome transform preventive healthcare and the diagnosis of genetic diseases in India's public health ecosystem?"

3. Machine Vision Inspection System (MVIS)



Indian Railways signed an MoU with DFCCIL to roll out the **Machine Vision Inspection System (MVIS)** across key rail networks to boost safety.

What is MVIS ?



A high-tech system powered by **Artificial Intelligence (AI)** and **Machine Learning (ML)**.

Uses high-resolution cameras to scan the **under-gear of moving trains**

How it Works :

- Detects loose, broken, or missing parts using image analysis.
- Sends **real-time alerts** to engineers for immediate corrective action.
- Enables **preventive maintenance** and reduces accident risks.



UPSC Relevance: GS Paper III
– Infrastructure, Science & Tech in Transport Sector.
Relevant for topics like **AI applications in public services, smart infrastructure, and transport safety reforms** in India.



HOT Question “How can AI-based systems like MVIS transform rail safety and efficiency, and what challenges could emerge in scaling them across India’s vast railway network?”



4. Ram Air Turbine (RAT)

Life-saving Windmill in the Sky



Safety in the Skies: Ram Air Turbine (RAT) & AAIB

RAT deployment and investigations by the **Aircraft Accident Investigation Bureau (AAIB)** have drawn attention following recent aviation incidents in India.



Ram Air Turbine (RAT) What is it ?

A **small wind turbine** fitted on aircraft that **deploys automatically** during emergencies.

Function :

- Uses **airflow** to spin and **generate power**
- Supplies **hydraulic or electrical energy** when **both engines or power systems fail**
- Ensures continuity of **critical flight controls and instruments**

Used in : Engine failure, total electrical loss, or hydraulic system failure.



Aircraft Accident Investigation Bureau (AAIB): Aviation Watchdog

What it is : The central agency under the **Ministry of Civil Aviation** investigating civil aircraft accidents in India.

Key Functions : Conducts **independent probes** into aviation accidents and incidents. Issues **safety recommendations** to improve aviation standards. Operates in line with **ICAO Annex 13** standards

Legal Status:

Established: 2011 : **Status:** *Executive body, not a statutory body*

Regulated by: Aircraft (Investigation of Accidents & Incidents) Rules, 2017



UPSC Relevance: GS Paper III – Science and Technology / Internal Security – Disaster Management. Relevant for topics like aerospace safety, emergency systems, and non-statutory bodies in aviation governance.



HOT Question: “How do emergency technologies like the Ram Air Turbine contribute to air safety, and what institutional challenges exist in aviation accident investigations in India?”



5. Mitochondrial Donation Treatment (MDT) / Mitochondrial Replacement Therapy (MRT)



At least **eight babies** have been born in the **UK** using **MDT**, a technique to prevent mitochondrial diseases.



MDT is a **fertility intervention** to **prevent transmission of faulty mitochondrial DNA** from mother to child.

It leads to the creation of so-called "**three-parent babies**":

- **Nuclear DNA** from mother and father
- **Mitochondrial DNA** from a female donor

The embryo contains **~99.8% nuclear DNA** from biological parents and **~0.1–0.2% mitochondrial DNA** from the donor.

Techniques Under MDT

Method	When Applied	How It Works
Maternal Spindle Transfer (MST)	Before fertilization	Mother's chromosomes transferred into donor egg; then fertilized
Pronuclear Transfer (PNT)	After fertilization	Pronuclei from defective embryo inserted into donor embryo with healthy mitochondria

Mitochondrial Diseases

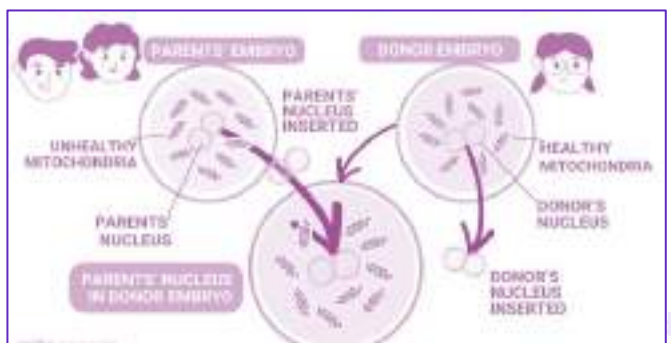
Caused by faulty mitochondria affecting **energy production in cells**.

Lead to disorders like **muscular dystrophy, liver, heart, and brain diseases**.

Two types:

- **Nuclear DNA defects** (from both parents)
- **Mitochondrial DNA defects** (from mother only)

Currently, **no cure** exists; only symptomatic treatment available.



Country	Status
UK	First to regulate MRT in 2015
Australia	Followed with approval in 2021

UPSC Relevance: GS Paper III –Science and Tech → Biotechnology, Health. Ethics & Society → Three-parent babies raise bioethical concerns. Prelims- Mitochondria=powerhouse of the cell; maternal inheritance of mtDNA.

HOT Question “How does Mitochondrial Replacement Therapy balance medical advancement with ethical considerations on parentage and genetics?”

6. Biomolecular Emulator (BioEmu)



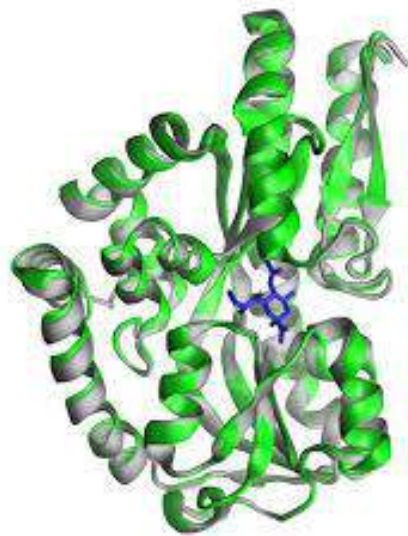
A cutting-edge AI system **BioEmu-1** has been launched to **accurately predict protein structures** and their **flexibility** under **real biological conditions**, enhancing drug discovery and biomedical research.

About BioEmu - 1

What it is : A **deep learning model** designed to simulate **how proteins fold and behave** in biological environments.

Key Capabilities:

- Predicts **multiple conformations** (shapes) of a single protein
- Models **protein dynamics**—how structures shift with time and function
- **Trained on:** AlphaFold database, a repository of known protein structures
- **Speed:** Can process **thousands of predictions per hour** on a GPU
- **Cost-effective:** Reduces lab time and resource needs for protein analysis



Why it Matters :

Biomedical Impact: Helps in **drug discovery**, **enzyme design**, and **disease mechanism study**

Scientific Advancement: Goes beyond static prediction—models real-time **flexibility** of proteins

Technology Leap: Brings together **AI, biology**, and **big data** in life sciences



UPSC Relevance: GS Paper III – Science and Tech → Biotechnology, AI in Health. Useful for questions on AI applications in biology, protein structure prediction, and computational drug design.



HOT Question “How are AI tools like BioEmu-1 transforming the traditional approach to drug development and protein research in biotechnology?”



7. Bluetooth Mesh Networking & ‘Bitchat’ App by Twitter Co-founder



Twitter Co-founder introduced an early version of ‘Bitchat’, a **mobile messaging** app based on **Bluetooth Mesh Networking** (BNM), enabling offline peer-to-peer communication.

Feature	Description
Bitchat App	Messaging platform based on Bluetooth Mesh, requires no internet or SIM, enabling encrypted, private communication.
Technology Used	Bluetooth Mesh Networking (BNM) – allows many-to-many message relaying via nearby Bluetooth-enabled devices.

What is Bluetooth Mesh Networking (BNM)?

A short-range, low-power wireless communication network where devices relay messages across a decentralized mesh of connected nodes.

Working Mechanism:

- Devices form a multi-hop mesh instead of direct one-to-one pairing.
- Messages "hop" across nearby devices, reaching distant users even if not in direct range.

Analogy: Like a human chain passing a message person-to-person until it reaches the target.

Advantages

Benefit	Explanation
Offline Communication	Useful in internet blackouts, remote areas, disasters, and military conflicts.
Data Privacy	No registration or central server; messages stored only on user devices, encrypted.
Smart City Applications	Useful for smart lighting, air quality monitoring, and IoT coordination.
Cost-Effective	No need for cell towers, Wi-Fi, or new hardware.

- Limitations**
- **Latency:** Message delivery may be delayed.
 - **Battery Usage:** Continuous Bluetooth use drains power.
 - **Scalability Issues:** Requires complex network coordination.
 - **Nascent Tech:** Still in development stages for wide-scale deployment.



UPSC Relevance: GS Paper III – Science and Tech → (Communication Networks, Emerging Tech). Prelims – Bluetooth Mesh Networking, Offline Messaging Apps, Disaster Tech. Ethics/GS 4 – Tech and Privacy Concerns



HOT Question “Can Bluetooth Mesh Networking help bridge the digital divide in remote areas and conflict zones? Discuss its potential and limitations.”



8. Alternmagnets Discovery



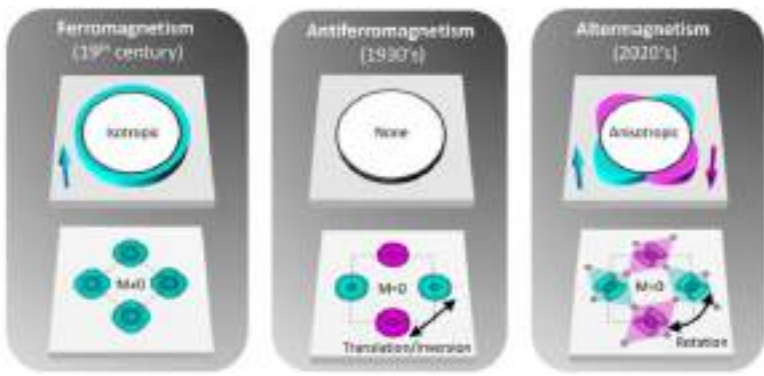
Indian scientists at S.N. Bose National Centre for Basic Sciences discovered Alternmagnets, a new class of magnetic materials with breakthrough **potential in spintronics and quantum computing.**

What are Alternmagnets ?

Alternmagnets are a novel magnetic material that combine the best of ferromagnets and antiferromagnets.

- Ferromagnets** – Spins align → net magnetism
- Antiferromagnets** – Spins cancel out → no net magnetism
- Alternmagnets** – Spins alternate but still show internal spin polarization due to crystal symmetry

Material Used in Discovery:
Chromium Antimonide (CrSb) – exhibits the strongest spin-splitting among all known alternmagnets



Key Features:

- No net magnetism but still influence electron spin
- Allows control over spin without magnetic fields
- Ideal for low-energy, high-speed electronic applications

Feature	Benefit
Spintronics Compatibility	Utilizes electron spin for efficient, low-energy data transfer
DDCP Property	Direction-specific conductivity improves thermal and electrical control
Material Sustainability	Made from non-toxic, stable elements
Reduced Heat Generation	Lowers device heating during high-speed processing

Emerging Applications of Alternmagnets :

- Spintronics Devices** – Next-gen memory and logic systems
- Quantum Computing** – Quantum bits using spin states
- Magnetic Memory Storage** – Fast, energy-efficient data retention
- Low-Power Electronics** – Reduced power consumption and heat



UPSC Relevance: GS Paper III – Science and Tech → – New materials, Spintronics, Quantum applications. Can be asked under Breakthrough Indian Discoveries or Emerging Materials in Electronics.



HOT Question “How can the discovery of Alter magnets redefine India’s role in the global semiconductor and quantum technology landscape?”



9. FACEAUTH



Himachal Pradesh has become the **first** Indian state to implement **Face Authentication (FaceAuth)** for ration distribution under the Public Distribution System (PDS).



What is FaceAuth ?

Developed by UIDAI as an additional Aadhaar authentication method

Other modes: **OTP, fingerprint, iris**

FaceAuth: Uses 1:1 live image matching with the Aadhaar-registered photo

Ensures contactless, quick, and inclusive authentication – especially for elderly or those with worn fingerprints



Benefits for PDS:

Reduces identity fraud and ensures targeted beneficiary delivery

Useful in hilly/rural areas where biometric machines may face issues

Improves inclusivity for people with fingerprint/iris scan difficulties



UPSC Relevance: GS II – Welfare schemes for vulnerable sections. GS III – Technology in governance, E-Governance, Aadhaar applications.



HOT Question: “How does Aadhaar-based Face Authentication enhance digital inclusivity while also raising privacy concerns?”



10. CDSCO Recommends Safe Disposal of 17 Drugs by Flushing



The **Central Drugs Standard Control Organisation (CDSCO)** has recommended **flushing** 17 harmful drugs (e.g., **Fentanyl, Tramadol, Diazepam**) to prevent accidental ingestion by **pets, children, and vulnerable individuals**.



What is CDSCO ?

Full Form: *Central Drugs Standard Control Organisation*

Nodal Agency for **drug regulation** in India

Works under the **Ministry of Health & Family Welfare**

Governed by the **Drugs and Cosmetics Act, 1940**



Key Functions:

- Regulates **import, manufacture, distribution, and sale** of drugs
- Grants **clinical trial approvals** and **new drug permissions**
- Recommends **withdrawal/banning** of unsafe or misused drugs and cosmetics



Why Flushing?

- Some drugs are **highly potent or addictive**, even in small doses
- Improper disposal (in trash or recycling) could lead to **misuse** or **accidental poisoning**



UPSC Relevance: GS II – Health sector governance, Statutory & Regulatory Bodies. GS III – Public Health, Environmental and Waste Management concerns



HOT Question “How can India balance pharmaceutical access with the risks of drug overuse, misuse, and improper disposal?”



11. India's Semiconductor Startups: Powered by Design & Policy Push



India's semiconductor ecosystem is gaining momentum through **MeitY-led initiatives** like the **Design Linked Incentive (DLI) Scheme** and **Chips to Startup (C2S)**, aiming to build chip design capabilities and reduce import dependence.

Aspect	Description
Semiconductors	Materials with conductivity between conductors & insulators; essential for modern electronics
DLI Scheme	Offers financial & infrastructural support to chip design startups
Chips to Startup	Focuses on academic-industry collaboration, workforce training & IP creation
Startup Momentum	Indian firms like Netrasemi, Mindgrove are gaining VC traction



Growth Drivers: **Rising Demand:** Surge in **IoT, automotive electronics**, and **mobile devices**

- Skilled Talent Pool:** VLSI & ECE engineers available domestically
- Policy Boost:** DLI, C2S, PLI for electronics manufacturing
- Geopolitics:** China+1 strategy positions India as a global **semiconductor alternative**

Issue	Explanation
Capital Intensive	Fabs require multi-billion-dollar investments
Infrastructure Needs	Demands 24x7 power, water, and clean rooms
Environmental Impact	Uses toxic materials like arsenic, antimony, phosphorus
Import Dependence	Most raw materials like silicon wafers are imported



UPSC Relevance: GS Paper 3 – Indian Economy: Infrastructure & industrial growth, Make in India. GS Paper 2 – Government Policies: Role of MeitY, strategic tech partnerships. Essay/GS3 – Digital India & strategic autonomy.



HOT Question "Can India achieve semiconductor self-reliance through design-led models rather than fab-led strategies? Evaluate."



12. India’s First National Biobank & Longitudinal Health Study at CSIR–IGIB



India inaugurated **its first National Biobank and Longitudinal Population Study** at CSIR–Institute of Genomics and Integrative Biology (IGIB), New Delhi, marking a milestone in precision medicine and population health research.



- Forms the core platform of the **Phenome India Project**, a long-term health study by the Ministry of Science and Technology.
- Tracks 10,000 individuals across India to analyse how genes, lifestyle, and environment influence health outcomes.
- The **National Biobank stores genomic, clinical, and lifestyle data** representing India’s ethnic and regional diversity.
- **Managed by CSIR–IGIB**, a premier institute in genomics, molecular medicine, and bioinformatics.

Purpose	Description
Health Monitoring	Tracks individuals over time to enable personalised treatment
Tech-Driven Therapies	Supports development of AI-based tools and CRISPR gene-editing solutions
Disease Research	Facilitates studies on rare diseases, cancer, and CVDs
Data Infrastructure	Builds central repository for evidence-based healthcare innovation

What is a Longitudinal Population Study ?

A long-term health research method that monitors the same group of people over years to observe how diseases develop, progress, and respond to lifestyle and treatment changes.

Significance: First-of-its-kind initiative for population-scale precision medicine in India.

Lays groundwork for preventive healthcare, policy innovation, and ethnically informed therapies.

Promotes data-driven healthcare aligned with global initiatives like the UK Biobank and All of Us (USA).



UPSC Relevance: GS Paper 2 – Health & Governance (Public Health Infrastructure, Innovation). GS Paper 3 – Science & Tech (Genomics, AI in Medicine, Biobanks). GS Paper 3 – Economy (Innovation in Health Sector).



HOT Question: “How can population-scale biobanks and longitudinal studies transform India’s approach to preventive healthcare and medical research?”



13. 🧬 Gujarat Launches India's First Tribal Genome Sequencing Project



Gujarat became the **first Indian state to launch a Tribal Genome Sequencing Project** to address healthcare and research gaps among tribal communities.



- **Goal:** Enable precision healthcare for tribal groups by mapping genetic predispositions to diseases like sickle cell anaemia, thalassaemia, and hereditary cancers.
- **Scope:** Covers 17 districts, collecting 2,000 diverse samples for Whole Genome Sequencing (WGS).
- **Technology:** Uses Illumina NovaSeq 6000, with dual-stage anonymisation for data privacy.
- **Unique Samples:** Includes trio samples (individual + parents) and microbiome analysis (stool) to trace hereditary and gut health traits.
- **Additional Metrics:** Records BMI, BP, sugar levels, addictions, and medical histories to enhance genetic interpretations.
- **Broader Impact:** Aims to bridge the representation gap in the Genome India Project by enriching national genetic datasets.



UPSC Relevance: GS Paper 2 & 3: Health, Science & Tech, Tribal Welfare.
Prelims: Genome sequencing, Sickle Cell Anaemia, Genome India Project.
Mains: Inclusive health tech, tribal marginalisation in science, data ethics



HOT Question: "How can genomic research bridge health inequities in tribal populations, and what safeguards are needed to ensure ethical use of genetic data?"

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14. WHO Adopts First-Ever Global Pandemic Treaty to Boost Preparedness



World Health Assembly adopted the first WHO Pandemic Agreement, supported by 124 countries (11 abstained; USA did not vote).

What Is the WHO Pandemic Agreement?

A binding international accord under Article 19 of the WHO Constitution

Aims to enhance global coordination in pandemic prevention, preparedness, and response (PPPR)

Does NOT give WHO power to override national sovereignty or impose laws



PABS System: Pathogen Access and Benefit Sharing mechanism

Mandates sharing of genetic data, vaccines, diagnostics, and therapeutics

20% of pandemic supply to be channelled via WHO: 10% donated, 10% at affordable cost

Focuses on equity, solidarity, transparency, and accountability

Urges countries to align with One Health (human-animal-environment)

Encourages investments in health infrastructure, surveillance, and R&D



UPSC Relevance: GS II – International Relations: WHO, global treaties, public health diplomacy. GS III – Disaster Management: Pandemic preparedness frameworks. Ethics: Issues of equity, global solidarity, and health justice



HOT Question “Does the WHO Pandemic Agreement strike a balance between national sovereignty and global health equity?”



15. 🚂 Hydrogen-Powered Trains: India's Green Leap in Rail Transport



Indian Railways to deploy 35 hydrogen-powered trains under the "Hydrogen for Heritage" initiative as part of the National Green Hydrogen Mission.



Powered by a **1,200 HP hydrogen engine**, world's most powerful **hydrogen propulsion** system.

Uses **GREEN HYDROGEN**, emitting only water vapor (zero direct CO₂ emissions).

Each train = CO₂ savings equivalent to removing 400 diesel cars from roads annually.

Benefits of Hydrogen Fuel:

- Higher energy density than lithium batteries.
- Clean, efficient fuel source with minimal emissions.
- Better range & refuelling speed compared to battery-powered systems.
- Helps India shift toward cleaner public mobility.

Key Challenges:

Most hydrogen is grey (from fossil fuels), not truly green.
Electrolyser infrastructure for green hydrogen is still underdeveloped.
Storage & transport of hydrogen remains technologically demanding and expensive.

🔧 Way Forward (as per Indian Railways):

Expand routes to mainline applications.
Develop domestic hydrogen supply chains, including: Electrolysers, Storage tanks, Refuelling stations



UPSC Relevance: GS III – Environment & Energy: National Green Hydrogen Mission, Sustainable Mobility, Science & Tech: Fuel cell technology, hydrogen economy GS II – Government Initiatives: Public transport reforms and green policy.



HOT Question "Can hydrogen become the cornerstone of India's energy transition strategy despite its current production challenges?"



16. 🚫 WHO's '3 by 35' Initiative: Taxing Harm for Global Health Gains



WHO launched the '3 by 35' initiative to raise prices of tobacco, alcohol, and sugary drinks by 50% through health taxes over the next decade to combat non-communicable diseases (NCDs).

Objective : Raise prices by 50% using targeted health taxes by 2035.



- Could mobilize \$1 trillion in global public revenues.
- Aims to reduce consumption of products linked to NCDs, which cause 75% of global deaths.
- Involves governments, civil society, and academia as stakeholders.

What Are Health Taxes? Levies on harmful products such as:

Tobacco

Alcohol

Sugary beverages

Recommended by WHO as cost-effective to prevent obesity and lifestyle diseases.



UPSC Relevance: GS II – Health Policy: WHO guidelines, public health interventions. GS III – Economy: Fiscal policy tools for behavioural change, taxation. Essay/Ethics: Balancing public health with individual freedom and corporate interests.



HOT Question “How can health taxes strike a balance between public health goals and economic equity, especially for low-income populations?”

17. 🚄 Shinkansen Technology to Power Mumbai–Ahmedabad Bullet Train

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India and Japan to deploy the next-gen E10 Shinkansen trains in the Mumbai–Ahmedabad Bullet Train Project and across Japan.

⚙️ What is Shinkansen ?

Japan's flagship high-speed rail system, operating since 1964. Known globally for zero fatal accidents, punctuality, and cutting-edge safety.

Crash Avoidance: Dedicated tracks (no public crossings)

Automatic Train Control (ATC): Constant speed monitoring and control

Aerodynamic Design: Reduced noise pollution, High energy efficiency, Enhanced ride comfort



HOT Question “How can adoption of Shinkansen technology shape India's urban and regional development, and what challenges may arise in its localisation?”



18. Glass Grid Rapid Technology – Road Innovation by IIT Madras



NHAI, in collaboration with IIT Madras, tested Glass Grid Technology on the Bengaluru–Chennai Expressway to reduce cracking in highways.

Feature	Impact
Crack Prevention	Strengthens base layers; stops crack spread
Safety Boost	Smooth roads reduce skidding & control loss risks
Durability	Resists wear, lasts up to 3x longer than regular roads
Cost Efficient	Cuts long-term maintenance and repair costs
Versatile Use	Highways, airport runways, parking lots



What Is Glass Grid Technology?

A fibreglass mesh coated with elastomeric polymer is inserted between asphalt layers to:

- Reinforce pavements
- Prevent reflective cracking from traffic load & temperature changes

Challenge	Details
High Initial Cost	Costlier than traditional bitumen-based methods
Manpower Shortage	Needs trained professionals for proper application
Limited Climate Data	Field-tested in few zones; needs validation for India-wide use
Lack of Standards	No dedicated BIS/IRC norms yet for codified deployment



UPSC Relevance: GS Paper 3 – Infrastructure & Technology. Prelims: Innovation in road construction. Mains: Role of R&D (IITs) in public infrastructure modernization



HOT Question “Can the integration of technologies like Glass Grid accelerate India’s infrastructure quality without compromising cost-efficiency?”



19. 🧠 MRgFUS Approved in India for Non-Invasive Treatment of Tremors



MRgFUS (Magnetic Resonance-guided Focused Ultrasound) has been approved by **CDSCO** for treating **Essential Tremor (ET)** and **Tremor-Dominant Parkinson's Disease (TD-PD)** in India.



What is MRgFUS ?

MRgFUS is a **non-invasive neurosurgical procedure** that uses **focused ultrasound beams** guided by **MRI imaging**.

- Targets the **ventral intermediate nucleus (VIM)** of the **thalamus** with precision.



Mechanism: Creates a **small lesion** in the thalamus using ultrasound.

- Disrupts **abnormal cerebello-thalamic pathways**.
- Results in **significant reduction in tremor severity** without open surgery.

Significance:

- Offers an **alternative to deep brain stimulation**, avoiding surgical risks and anesthesia.
- Enhances **quality of life** for patients with drug-resistant tremors.
- Reflects growing role of **minimally invasive, image-guided medical technologies** in neurological care.



UPSC Relevance: GS Paper 3 – Science & Technology (Biotechnology, Medical Technology). GS Paper 2 – Governance (Health Sector Reforms, Regulatory Approvals)



HOT Question: "How can non-invasive medical technologies like MRgFUS revolutionize treatment for neurodegenerative disorders in India's public health landscape?"





According to the International Agency for Research on Cancer (IARC), nearly 75% of stomach cancer cases among individuals born between 2008 and 2017 may be caused by *Helicobacter pylori* infection by 2101.

Key Details	Details
Organism	Helicobacter pylori – a gram-negative, flagellated, helical bacterium
Habitat	Colonizes human stomach lining, survives in mucus layer
Survival Mechanism	Produces urease, converting urea into ammonia to neutralize gastric acid
Transmission	Oral and faecal–oral routes via contaminated food, water, or saliva
Prevalence	High in Asia, Africa, and South America due to poor sanitation
Diseases Caused	Gastritis, peptic ulcers, MALT lymphoma, and stomach cancer
Carcinogenicity	Classified as a Group I carcinogen by IARC
Virulence Factor	cagA gene disrupts DNA repair and triggers chronic inflammation



GS Paper 2: Health, Government Policies on Infectious Diseases. GS Paper 3: Science & Tech – Microbiology, Public Health. Prelims Tags: H. pylori, IARC, Group I Carcinogen, MALT lymphoma.



HOT Question: “How do microbial infections like *Helicobacter pylori* challenge global cancer prevention efforts, especially in developing countries?”

21.💡 Supersolid State of Light Created Using Polaritons: A Quantum Breakthrough



Scientists have created a supersolid state of light by manipulating polaritons—hybrid light–matter particles—marking a significant advance in quantum physics and photonics.



Supersolid: A **quantum phase of matter** combining **crystal-like order** with **fluid-like motion**. Exhibits **macroscopic quantum coherence**, where all particles behave **as a single quantum entity**. Typically achieved **near absolute zero** (~-273°C) under controlled **quantum setups**. This is the **first time** such a state has been achieved using **light**, not just atoms or matter.

Why Light Can't Form Solids Naturally:

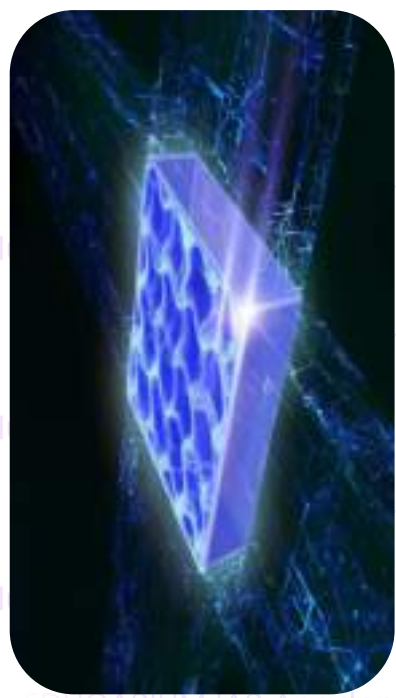
Property	Limitation
Massless Photons	Can't remain still → can't form a lattice
No Mutual Interaction	Photons do not interact with each other naturally
Constant Motion	Light always travels at speed c, can't form a solid structure
Needs Mediation	Light interacts only when coupled with matter (e.g., polaritons)

About Polaritons:

Formed by **coupling photons with matter particles** (like electrons or excitons) in **quantum optical cavities**. Allow light to **inherit some properties of matter**, such as **mass and mutual interaction**, enabling **supersolid formation**.

Key Characteristics of Supersolid Light:

Stable yet dynamic structure: lattice remains intact while particle density shifts.
Quantum coherence: Behaves as one **unified wave function**.
Breakthrough for **macroscopic quantum physics** using **light**, not just atoms.



Potential Applications:

Field	Application
Quantum Computing	Enables stable, controllable optical qubits
Optical Circuits	Efficient, low-loss light-based logic components
Secure Communication	Supports quantum encryption and tamper-proof data transfer
Precision Metrology	Allows ultra-sensitive measurements in sensing and time-keeping
Fundamental Physics	Aids research on exotic quantum phases and light–matter interactions



UPSC Relevance: GS Paper 3 – Science & Technology (Quantum Technology, Photonics). GS Paper 3 – Emerging Technologies in Computing and Communication.



HOT Question “How can breakthroughs like supersolid light and polaritons reshape the future of quantum computing and secure communication technologies?”

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22. Quantum Noise: A Key Obstacle in Quantum Computing and AI Systems



New breakthroughs are being made to reduce quantum noise in quantum processors and communication devices, improving system reliability and performance.

What is Quantum Noise ?

Random fluctuations in quantum systems arising from:
Heisenberg's Uncertainty Principle
Interaction with the external environment
Leads to errors in qubits, disrupting quantum computation and communication.



Types of Quantum Noise:

Dephasing Noise: Destroys phase coherence between quantum states.

Amplitude Damping: Causes loss of energy in qubits.

Bit-flip / Phase-flip Errors: Random alterations of quantum information.

Why It Matters:

Limits scalability and practicality of quantum computing.
Affects quantum cryptography, quantum sensing, and precision AI systems.
Hinders performance in quantum-enhanced technologies.



Mitigation Techniques:

Quantum Error Correction Codes: Encode qubits redundantly to detect and fix errors.

Decoherence-Free Subspaces: Isolate qubits from external disturbances.

Noise-Resilient Algorithms: Algorithms designed to tolerate noise.



UPSC Relevance: GS III – Science & Tech: Quantum computing, AI, and encryption. Prelims: Terms like dephasing, bit-flip, quantum error correction. Mains: Role of noise in limiting emerging tech; potential in national security, climate, and space.



HOT Question “What role does quantum noise play in national cyber defence strategy, and how can India leverage global partnerships to build noise-tolerant quantum systems?”



23. India Develops Quantum Magnetometer using RDSNS at RRI



The Raman Research Institute (RRI), Bengaluru developed an advanced quantum magnetometer based on Raman-Driven Spin Noise Spectroscopy (RDSNS) under the National Quaum Mission by the Department of Science and Technology (DST).

What is a Magnetometer?

A device used to detect and measure magnetic fields (strength and direction).

Common applications in geology, archaeology, space science, neuroimaging, and mineral exploration.

Advanced types include SERF and Optically Pumped Atomic Magnetometers that measure tiny atomic magnetic signals.



Key Details:

Feature	Description
Technology Used	RDSNS (Raman-Driven Spin Noise Spectroscopy) using Rubidium atoms
Research Body	RRI, founded by C.V. Raman in 1948
Program	National Quantum Mission, DST

How Does RDSNS Work?

RDSNS magnetometers use laser light to detect random spin movements inside Rubidium atoms.

They don't disturb the atoms, unlike traditional methods.

Measure magnetic fields directly, without shielding or complex setups.

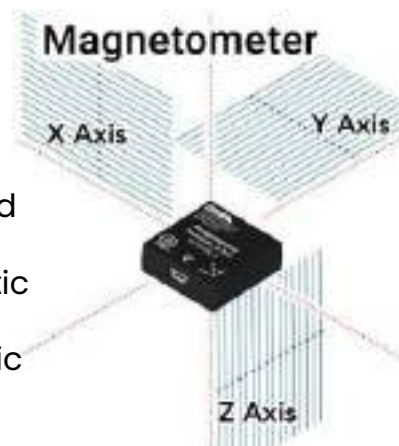


Benefit/ Advantages	Explanation
High Sensitivity	Detects extremely weak magnetic signals across a wide frequency range.
Instant Readings	Useful in dynamic settings to track rapid magnetic changes.
Compact and Portable	Suitable for clinical, outdoor, and industrial environments.
No Shielding Needed	Overcomes a major limitation of older magnetometers.



Applications:

-  Neuroimaging – Alternative to bulky MRI machines.
-  Mineral/Oil Exploration – Detects underground magnetic anomalies.
-  Space Missions – Lightweight tool for magnetic mapping in space.
-  Industrial Monitoring – Tracks electromagnetic variations in machinery.



UPSC Relevance: GS Paper 3 – Science & Tech (Quantum Technologies, Sensors). Prelims – RDSNS, Magnetometers, National Quantum Mission, RRI. Mains – Application of Quantum Tech in Governance and Industry.



HOT Question: “Discuss how India’s indigenous development of quantum sensors under the National Quantum Mission can transform fields like healthcare, space, and disaster management”

24. Terbium-Based Glowing Paper Sensor for Liver Cancer Detection



Scientists at IISc developed a glowing paper sensor using Terbium to detect liver cancer early by sensing the β -glucuronidase enzyme, a key biomarker.

About Terbium **Type:** Rare earth element; part of the lanthanide series.

Appearance: Soft, silvery metal.

Sources: Extracted from: **Monazite, Bastnaesite**

Euxenite ($\geq 1\%$ terbium content)

Applications of Terbium

Solid-State Devices: Used in electronic components.

Lighting: Fluorescent green phosphor in low-energy lamps, LEDs, and mercury vapor lamps.

Medical Field: X-ray safety screens, Laser devices, Emerging biomedical sensors (e.g., cancer diagnostics)



HOT Question “How can rare-earth elements like Terbium aid India in building strategic autonomy in both clean energy and healthcare technologies?”



25. 🌟 India Joins the Global Hunt for Cosmic Ripples with LIGO-India



India is set to become part of the Global Gravitational Wave Detection Network with the LIGO-India project, scheduled to be operational by 2030, enhancing global capacity to detect cosmic events.

🌐 Global Gravitational Wave Network

Detector	Country	Status
LIGO	USA	Operational
Virgo	Italy	Operational
KAGRA	Japan	Operational
LIGO-India	India	Under construction



🔭 Significance of LIGO - India

- Improves triangulation and localization of gravitational wave sources.
- Strengthens India's position in frontline astrophysics research.
- Promotes STEM infrastructure, international collaboration, and cutting-edge innovation.



UPSC Relevance: GS III – Science & Technology: Applications of space tech, international collaborations in science. Prelims: Gravitational waves, LIGO, Einstein’s theories. Mains: India’s role in global scientific initiatives.



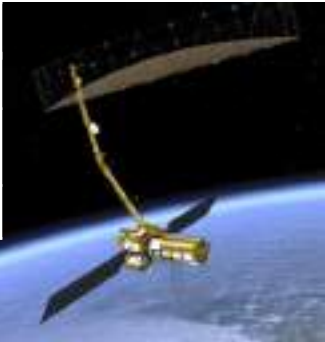
HOT Question: “How does India’s participation in projects like LIGO-India reflect its transition from science follower to global science contributor?”

26. 🌍 NISAR Set to Launch: NASA-ISRO’s \$1.5 Billion Earth-Observation Radar Mission



NISAR (NASA-ISRO Synthetic Aperture Radar) satellite launched aboard GSLV F16 from Sriharikota, marking the first NASA-ISRO Earth-observation mission.

Feature	L-Band SAR (NASA)	S-Band SAR (ISRO)
Wavelength	~24 cm	~10 cm
Capability	Penetrates vegetation, tracks subsurface	Surface deformation & hazard mapping
Key Focus	Ice sheets, biomass, tectonics	Landslides, volcanoes, infrastructure

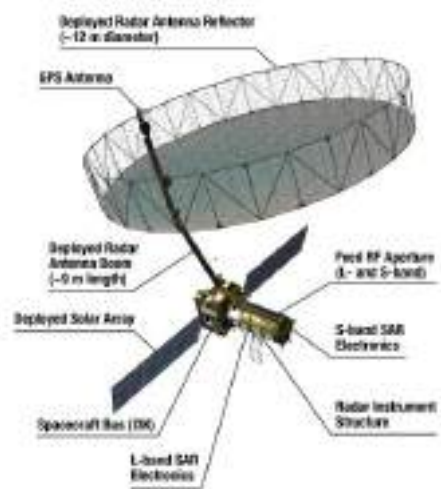


Key Details:

- **Mission Duration:** 3 years
- **Orbit:** Sun-synchronous, 747 km altitude, 12-day revisit cycle
- **Weight:** 2800 kg
- **Cost:** \$1.5 billion
- **Uniqueness:** World’s first dual-band SAR satellite (L-band by NASA, S-band by ISRO)
- **Radar Antenna:** 12-meter deployable reflector for wide-area, high-resolution imaging

Applications of NISAR:

- **Tectonic Monitoring:** Detects minute ground shifts
- **Disaster Management:** Earthquakes, landslides, floods, volcanoes
- **Cryosphere Tracking:** Ice loss, glacier retreat, sea-level impact
- **Agriculture & Forestry:** Deforestation, crop health, soil moisture
- **All-Weather Imaging:** Works in dark/cloudy conditions unlike optical satellites



UPSC Relevance: GS Paper 3: Science & Technology, Disaster Management, Environment. Prelims: SAR, GSLV, Earth Observation Satellites, L/S Band. Mains: Role of satellite tech in climate monitoring and disaster preparedness



HOT Question “How does NISAR’s dual-band radar enhance disaster preparedness and environmental monitoring compared to traditional Earth-observation satellites?”



27. 🚀 ISRO–Axiom–4 Mission



ISRO invested over ₹500 crore in the **Axiom–4 mission (2024)** to train an Indian astronaut aboard the **International Space Station (ISS)** as part of **Gaganyaan preparations**.

ISRO's Gains from Axiom – 4



Benefit	Details
Cost Efficiency	₹500 crore proved cheaper than building full-scale domestic training infra
Operational Training	Astronaut trained in manual docking, microgravity, and emergency handling
Scientific Validation	Conducted 7 microgravity experiments relevant to Gaganyaan payloads
Control & Coordination	Improved crew-ground communication and anomaly response
Safety Protocols	Detected Falcon-9 oxidiser leak pre-launch—showing robust safety checks
Training Standards	Adopted NASA's protocols, improving astronaut readiness for Gaganyaan

⚠️ Concerns and Criticism

Issue	Explanation
High Cost	₹500 crore seen as disproportionate to tangible returns
Delayed Disclosure	ISRO didn't reveal full mission objectives until much later
Weak Public Engagement	Lack of timely updates vs NASA led to poor public visibility
Symbolic Gap	Mission failed to ignite nationalistic pride or excitement for Gaganyaan



UPSC Relevance: GS Paper III – Science & Technology: Space missions, indigenous capacity building. Governance: Strategic investments in public-sector innovation. Ethics Case Study: Public accountability in large-scale scientific funding



HOT Question: "How should India balance cost, communication, and national pride in executing high-stakes space missions like Gaganyaan?"



28. 🌠 3I/ATLAS – Interstellar Comet



NASA-funded ATLAS telescope detected **3I/ATLAS**, the **third known interstellar object** entering our solar system, after 1I/‘Oumuamua (2017) and 2I/Borisov (2019).



Features

Feature	Description
Name	Initially C/2025 N1 (ATLAS); renamed 3I/ATLAS by the Minor Planet Center (MPC)
Origin	Interstellar – originating outside our solar system
Discovery Site	ATLAS telescope, Rio Hurtado, Chile
Nature	A comet, not an asteroid – confirmed by its icy nucleus
Tail & Coma	Displays a faint tail and coma – not visible to the naked eye
Orbit	Hyperbolic trajectory, confirming it won't return, unlike periodic comets
Perihelion Distance	Will pass 1.4 AU (about 210 million km) from the Sun, inside Mars' orbit

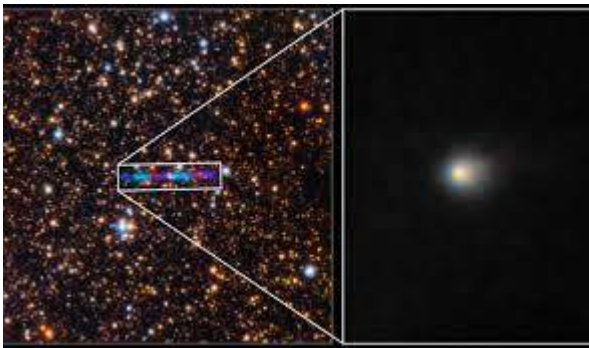
Important Concepts:

Coma: A fuzzy cloud of gas/dust around the comet's nucleus, formed as it nears the Sun.

Hyperbolic Orbit: Path indicating the object is unbound to the Sun's gravity – a signature of interstellar objects.

Perihelion: The closest point to the Sun in the object's orbit.

Aphelion: The farthest point from the Sun.



UPSC Relevance: GS I– Geography (Space Technology): Celestial bodies, cometary science, space observation systems. **GS III – Science & Tech:** Interstellar exploration, advancements in telescope technologies.



HOT Question "How does the detection of interstellar objects like 3I/ATLAS reshape our understanding of the origin and evolution of planetary systems beyond the solar system?"



29. 🚀 India Boosts Navigation Sovereignty with Next-Gen NavIC Satellites



ISRO is launching three advanced **NavIC** satellites to enhance India's independent navigation system, expanding its strategic and civilian positioning capabilities.

🌐 What is NavIC (IRNSS)?

Indian Regional Navigation Satellite System (IRNSS); branded as **NavIC (Navigation with Indian Constellation)**.

Developed by: **ISRO**

Coverage: India and up to 1,500 km beyond its borders.

- Purpose:**
- Provide accurate positioning data
 - Support military and strategic applications
 - Assist in disaster management, marine navigation, agriculture, and fleet tracking

🚀 **Services Offered:** Standard Positioning Service (SPS): Free, for general public use.

Restricted Service (RS): Encrypted, for strategic agencies and defence.

🌐 Other Global Navigation Systems:

Country	System
India	NavIC (IRNSS)
USA	GPS
Russia	GLONASS
EU	Galileo
China	BeiDou
Japan	QZSS



UPSC Relevance: Prelims: NavIC features, comparison with GPS, IRNSS coverage. GS III: Indigenization of technology, space technology, and national security. Essay/Ethics: Role of technological autonomy in strategic sovereignty.

HOT Question "How does developing an indigenous navigation system like NavIC enhance India's technological sovereignty and reduce strategic dependency?"

30. 🌞 Solar Eruption Triggers Geomagnetic Storms, Disrupts GPS and Satellites



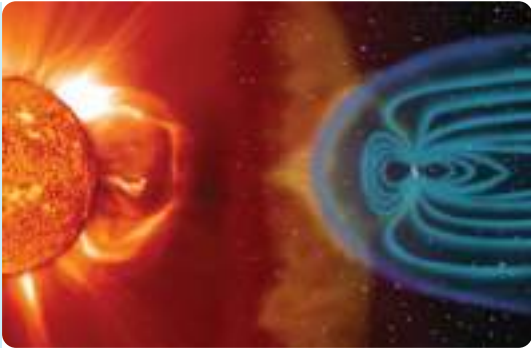
A powerful **Coronal Mass Ejection (CME)** from the Sun caused **geomagnetic storms** on Earth, affecting **GPS, satellites**, and creating spectacular **auroras** near the poles.

⚡ What is a CME ?

A **Coronal Mass Ejection** is a massive cloud of **charged particles** (plasma) ejected from the Sun's **outer atmosphere (corona)**.

•**Different from Solar Flares:**

- *Solar Flares* = bursts of **radiation and light**
- *CMEs* = blasts of **magnetised plasma** that take hours or days to reach Earth



🌍 Impact on Earth:

Effect	Explanation
Geomagnetic Storms	Disrupt Earth’s magnetic field → GPS issues, radio blackouts
Satellite Damage	Can damage satellite electronics and disrupt navigation orbits
Auroras	Trigger bright Northern/Southern Lights due to charged particles in poles
Power Grid Failures	Surge currents in transmission lines → blackouts and transformer damage
Radiation Hazard	Threat to astronauts and high-altitude aircraft due to increased radiation



UPSC Relevance: GS Paper I – Geography: Geomagnetic storms, solar-terrestrial interaction. GS Paper III – Science & Tech: Space weather, satellite vulnerability. Prelims: Solar phenomena (CME vs Solar flare), magnetosphere, auroras.



HOT Question *"How can frequent solar events like CMEs affect global satellite-based systems and national security infrastructure in a digital age?"*





Impact on Earth

Highly unlikely. Electricity and communication networks are affected.
Polar lights appear at the poles.

How CME's arise

They are created by magnetic fields twisting against each other in the convection zone.



Magnetic field lines protruding from the Sun.



Coronal Loops

The loops reorganise and the plasma tubes detach. The plasma trapped there causes strong radiation.

What is a CME?

Out cast matter ejected by the Sun at 2000km/s.



Up to 10 billion tonnes of material can be emitted here.



CORONAL MASS EJECTION

Frequency

The frequency is linked to solar activity and sunspot frequency. It varies between 0.2 to 6 CME's daily.



31. 🛰️ Starlink Gets Final Clearance for Satellite Communication in India



Starlink Satellite Communications received final authorisation from IN-SPACe to offer satellite-based internet services in India using its Low Earth Orbit (LEO) constellation.



Authorising Agency: IN-SPACe (Indian National Space Promotion and Authorisation Center)

Constellation Approved: Starlink Gen1

- o Comprises 4,408 LEO satellites
- o Orbit altitude: 540–570 km
- o Total data throughput capacity over India: ~600 Gbps

Authorisation Validity: 5 years or until the end of Starlink Gen1 constellation life, whichever is earlier.

Operational Requirement: Final rollout requires additional regulatory clearances from relevant government departments.

About Starlink

- A satellite internet venture by SpaceX, aimed at providing high-speed, low-latency broadband to underserved and remote regions.
- Operates in LEO to reduce latency compared to traditional Geostationary (GEO) satellite services.

About IN-SPACe:

- A central regulatory body under Department of Space (DoS).
- Facilitates private sector participation in India’s space economy.
- Grants authorisations for commercial space activities.



UPSC Relevance: GS 3: Science & Technology – Developments in space technology and their applications. GS 2: Government policies & regulatory bodies (IN-SPACe, Digital India, connectivity infrastructure).



HOT Question "How does private satellite internet like Starlink support India’s digital inclusion goals, and what challenges does it pose for regulatory and national security frameworks?"



32. ⌚ Redefining the Second – Global Atomic Clock Comparison



The world’s most precise comparison of atomic clocks has been completed, initiating steps to **redefine the SI unit of time—the second**—by 2030.

Feature	Details
Current Definition	Based on Caesium-133 (Cs) atomic clocks – 9,192,631,770 microwave transitions = 1 second
Accuracy	Cs clocks are accurate to ~1 second in 300 million years
Limitations	Not precise enough for evolving needs like GPS, quantum communication, and radio astronomy

Need for Redefinition:

- **Technological Advancement:** Precision of modern tech now exceeds Caesium clocks’ capabilities
- **Optical Clocks:** Use atoms like **strontium, ytterbium** operating at **hundreds of trillions Hz**
- **Stability:** Can lose **<1 second in 15 billion years**, i.e., age of the universe
- **Measurement Precision:** Up to **18 decimal places** of accuracy



The Path Forward

Step	Detail
By 2030	Optical atomic clocks expected to become global timekeeping standard
Coordination Body	Redefinition to be led by BIPM (International Bureau of Weights and Measures)
India’s Role	National Physical Laboratory (NPL), Delhi maintains five Cs clocks as the national time standard



UPSC Relevance: GS Paper 3 – Science & Technology – Developments in Science and Technology and their applications. Prelims Tags: Caesium Clock, Optical Clock, BIPM, NPL India, SI Units.



HOT Question “How does redefining the SI unit of time reflect the evolving needs of scientific and technological progress?”



33. 🦟 India's Tetravalent Dengue Vaccine 'DengiALL' Crosses 50% Enrollment in Phase 3



ICMR announced that **DengiALL**, India's first tetravalent dengue vaccine candidate, has reached the 50% enrollment milestone in its Phase 3 clinical trials.

Agency	Role
ICMR	Facilitates clinical research and public health trials in India
CDSCO (under DCGI)	Approves, monitors, and regulates drug/vaccine trials
NIH (USA)	U.S. agency for biomedical research; licensed formulation to India

DengiALL Vaccine :

- Developed by Panacea Biotec under license from the U.S. NIH (National Institutes of Health).
- **Tetravalent formulation:** Includes **all four live-attenuated dengue virus serotypes, enhancing cross-protection.**
- Trial oversight by ICMR; regulatory clearance by CDSCO under DCGI.

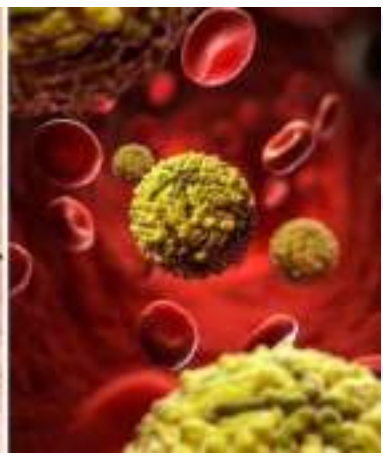
About Dengue Virus:

- Caused by the **Dengue virus**, a **Flavivirus**, spread by **Aedes mosquitoes** (especially *Aedes aegypti*).

Also called "**breakbone fever**" due to severe **joint/muscle pain**.



Aspect	Details
Transmission	Via infected Aedes mosquito bites; also transplacental
Symptoms	High fever, vomiting, rash, pain in joints/muscles, retro-orbital pain
Treatment	No specific cure; supportive therapy used to manage symptoms



Complications of Dengue:

Condition	Description
Severe Dengue	Plasma leakage, internal bleeding (blood in vomit, stool, gums)
Dengue Shock Syndrome	Rapid drop in blood pressure → organ failure
Thrombocytopenia	Low platelet count due to bone marrow suppression & immune destruction

Significance of DengiALL :

First indigenous vaccine candidate to reach late-stage trials.
Aims to reduce dengue mortality and morbidity across India.
Critical in light of seasonal outbreaks and climate-driven vector expansion.
Strengthens India’s vaccine R&D ecosystem and global health partnerships.



UPSC Relevance: GS 2 – Health (Public Health Policy, ICMR, Clinical Trials), International Relations (India–US Scientific Collaboration).
GS 3 – Science & Tech (Biotechnology, Vaccine Development).



HOT Question “What role do indigenous vaccine innovations like DengiALL play in strengthening India’s public health resilience and global health leadership?”



JULY 2025

HISTORY ART & CULTURE

1. 13th Century Buddhist Monastery Inscription
2. One District, One Cuisine – Culinary Diplomacy
3. Zonal Cultural Centres (ZCCs)
4. Indian Knowledge System
5. Maratha Military Landscapes
6. Daojali Hading: Evidence of Early Metalworking
7. Bodhgaya Temple Act
8. Keezhadi Excavations
9. Behdeinkhlam Festival
10. Dalai Lama

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1. 13th Century Buddhist Monastery Inscription Discovered in Tamil Nadu



A **13th-century stone inscription** was discovered in **Krishnagiri District, Tamil Nadu**, marking the **first-ever epigraphic evidence of a Buddhist monastery** in the state.



- Records a **trader's endowment** to a **Buddha Vihar** located in **Kadaikootur (Kadagathur)**.
- Mentions "**Buddha Devan**" and features **two Buddhist symbols**:
 - **Chakra (Wheel of Dharma)**
 - **Stupa**
- Indicates the **presence and patronage of Buddhism** in Tamil Nadu during the **13th century**, especially by the **trading community**.

Historical Context – Anaimangalam Copper Plates (Leiden Plates):

- Earliest reference to a **Buddhist monastery in South India**.
- Records **Rajaraja Chola I's grant** of **Anaimangalam village** to **Chudamani Vihara**, located in **Nagapattinam**.
- The vihara was built by **Mara Vijayatunga Varman** of **Sri Vijaya** in memory of his father, **Sri Chudamani Varman**.
- Known as the **Leiden Plates**, preserved at **Leiden University, Netherlands**.
- The charter is **bilingual**:
 - o **Sanskrit** for genealogical and religious details
 - o **Tamil** for administrative content.



Significance:

- Highlights the **spread of Buddhism** into **interior Tamil Nadu**, beyond coastal areas.
- Indicates the **influence of maritime trade routes**, especially **Sri Vijaya's** role in Tamil Buddhist architecture.
- Provides vital data for reconstructing **religious pluralism** and **economic patronage** in **medieval South India**.



UPSC Relevance:

GS Paper 1 – History (Indian Culture, Religion, Art & Architecture) GS Paper 1 – Geography (Cultural Spread via Trade)
GS Paper 2 – International Relations (India–Southeast Asia History)



HOT Question “How do archaeological discoveries like the Krishnagiri inscription reshape our understanding of Buddhism's regional footprint and its connection with trade in medieval South India?”



2. One District, One Cuisine – Culinary Diplomacy



Uttar Pradesh has proposed the **One District, One Cuisine (ODOC)** scheme, inspired by its successful **ODOP model**, after **Lucknow** was recognised as a **UNESCO Creative City of Gastronomy (2023)**.

UNESCO Creative City of Gastronomy



City	Year Recognised	Highlights
Hyderabad	2019	Hyderabadi cuisine, culinary innovation
Lucknow	2023	Nawabi cuisine, indigenous ingredients

- ◆ Part of the **UNESCO Creative Cities Network (UCCN)**
- ◆ Recognises use of culinary heritage to drive **sustainable urban development**
- ◆ Benefits: Global recognition, tourism boost, cultural diplomacy



One District, One Cuisine (ODOC) – Key Features



Aspect	Details
Objective	Promote culinary tourism and preserve regional food heritage
Model Inspiration	Based on One District One Product (ODOP) strategy
Implementation	Through food festivals, social media, local eateries, and branding
Coverage	Each district to showcase a signature traditional dish

Benefits of ODOC Scheme



- **Tourism Development:** Boosts gastronomic and heritage-based tourism
- **Cultural Preservation:** Revives dying local recipes and cooking techniques
- **District Branding:** Strengthens identity and visibility of each district
- **Market Integration:** Connects rural producers and cooks to urban food markets



UPSC Relevance:

GS Paper I – Indian Culture: Intangible heritage (culinary traditions).
GS Paper III – Economy: Rural development, tourism, livelihood promotion.



HOT Question

“How can cultural initiatives like One District, One Cuisine promote both economic decentralisation and identity preservation in India?”

3. Zonal Cultural Centres (ZCCs).



The Government reviewed the functioning and progress of **7 Zonal Cultural Centres (ZCCs)**.

Zonal Cultural Centres (ZCCs)

- **Autonomous bodies** under the **Ministry of Culture**.
- Non Statutory bodies registered as Societies.
- Aim: To **preserve and promote folk, tribal, and vanishing art forms**.

They act as hubs for: **Cultural exchange, Youth engagement in traditional arts, Preservation of regional identities.**

ZCCs Headquarters Locations

1. Patiala, Punjab
2. Nagpur, Maharashtra
3. Udaipur, Rajasthan
4. Prayagraj, Uttar Pradesh
5. Kolkata, West Bengal
6. Dimapur, Nagaland
7. Thanjavur, Tamil Nadu



UPSC Relevance: GS Paper I – Art & Culture: Government initiatives for cultural preservation, Institutional mechanisms for folk and tribal art promotion.

Prelims: Location of ZCC headquarters, Autonomous bodies under the Ministry of Culture.



HOT Question

“How do Zonal Cultural Centres contribute to preserving India’s intangible cultural heritage in the face of globalization?”

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4. Indian Knowledge System



What is the Indian Knowledge System (IKS)?

A millennia-old intellectual tradition encompassing:

Science: Ayurveda, Astronomy (Surya Siddhanta), Mathematics (Zero, Decimal system)

Arts: Natya Shastra, Classical Music

Philosophy & Ethics

Education: Ancient universities like **Takshashila, Nalanda, Vikramashila, Odantapuri, Vallabhi**

Preserved in classical languages: Sanskrit, Tamil, Pali, Prakrit

Global Reach: Attracted scholars from **China, Korea, Tibet, Persia** centuries ago.

Why Safeguard IKS?

Decolonization of Knowledge:

Correcting the **systematic undervaluation** of IKS under colonial and Eurocentric academic frameworks.

Prevent Misappropriation:

Example: **U.S. patent attempt on Haldi (turmeric)** showed global misuse of traditional Indian knowledge.

Cultural Identity:

IKS is central to India's **soft power, civilizational continuity, and academic self-reliance**.

Integration into Modern Curricula:

NEP 2020 promotes mainstreaming IKS in Indian education.



Institutional Support

• **IKS Division**, under **Ministry of Education**, works to document, research, and promote Indian knowledge traditions.

• **Collaborations with IITs, IISc, universities** to integrate IKS with modern research.



UPSC Relevance: GS I - Indian Heritage & Culture : Indigenous knowledge traditions, Ancient universities, Indian philosophy.

GS II - Governance & Education: NEP 2020 and integration of IKS.

GS III - Intellectual Property : Patent issues, traditional knowledge protection.



HOT Question

"How can integrating the Indian Knowledge System into modern education help build India's soft power and intellectual independence?"

5. Maratha Military Landscapes



'**Maratha Military Landscapes**' has been added as **India's 44th site** on the **UNESCO World Heritage List**.

This enhances India's global ranking to **6th globally** and **2nd in Asia-Pacific** for the number of World Heritage Sites.

About Maratha Military Landscapes

- Represents a **Strategic Military Heritage** from the **17th–19th centuries CE**.
- Comprises a **network of 12 forts** demonstrating **military innovation, geographical adaptation, and architectural ingenuity**.



Significance:

- Reflects deep understanding of **geography and strategic defence planning**.
- Showcases **living cultural tradition, unique architecture, and technology** tied to historic events.

Geographical Spread

- Located across **Maharashtra** and **Tamil Nadu**.

- **Key forts:**

Maharashtra: Salher, Shivneri, Lohgad, Khanderi, Raigad, Rajgad, Pratapgad, Suvarnadurg, Panhala, Vijaydurg, Sindhudurg.

Tamil Nadu: Gingee Fort.



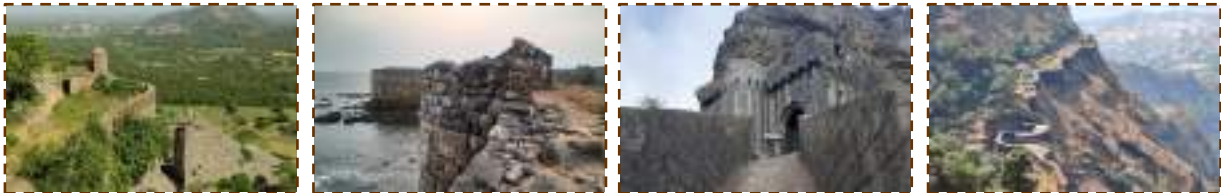
Implementing Agency

Archaeological Survey of India (ASI) is the **nodal agency** for World Heritage-related matters in India



UNESCO Selection Criteria (Simplified)

- Site must have **Outstanding Universal Value**.
- Should meet at least **one of ten selection criteria**.
- Must be nominated by a **signatory to the World Heritage Convention**.
- Evaluated by bodies like **ICOMOS** and **IUCN**.



Fort Name	State	Key Feature
Raigad	Maharashtra	Capital of Shivaji; site of coronation as Chhatrapati (1674)
Rajgad	Maharashtra	Shivaji's first capital for 26 years; Treaty of Purandar (1665)
Shivneri	Maharashtra	Birthplace of Shivaji Maharaj
Pratapgad	Maharashtra	Site of Battle with Afzal Khan (1659)
Salher	Maharashtra	Highest fort in the Sahyadris; Battle of Salher (1672) vs. Mughals
Lohgad	Maharashtra	Withstood 13 British attacks; renowned for strong defenses
Suvarnadurg	Maharashtra	Naval base of Kanhoji Angre, located in the Arabian Sea
Panhala	Maharashtra	Site of Battle of Pavan Khind (1660); important defensive fort
Vijaydurg	Maharashtra	Expanded by Shivaji; major naval base
Sindhudurg	Maharashtra	Sea fort built on Kurte Island (1668); hidden entrances
Khanderi	Maharashtra	Sea fort on Konkan Coast; also called Kanhoji Angre Island
Gingee	Tamil Nadu	Also known as Senji Fort; called Troy of the East



UPSC Relevance:
GS Paper I: Art & Architecture, Culture, Heritage Sites.
GS Paper II: Federalism – ASI, UNESCO roles



HOT Question “Discuss how the Maratha Military Landscapes reflect a unique blend of hill-top architecture, regional adaptation, and maritime defence strategies in pre-modern India.”



6. Daojali Hading: Evidence of Early Metalworking



Archaeologists discovered **iron slag** and a **furnace** at the **Daojali Hading site (Assam)**, suggesting **early metalworking activities**, previously unknown for this site.

Daojali Hading

- **Location:** Dima Hasao district, Assam (North Cachar Hills).
- **Earlier Significance:** Known as a **Neolithic site**, dated around **2nd millennium BCE**.
- **Artefacts previously found:**
 - **Polished double-shouldered celts**
 - **Cord-marked pottery**
 - **Grinding stones, mortars, pestles**
 - **Double-edged celts**



New Findings (2024)

- **Iron Slag:** Indicative of **iron smelting or forging** activities.
- **Furnace remains:** Points to **metallurgical operations**.
- **Significance:** This suggests the site might have extended into the **early Iron Age/Metal Age**.

Next Steps

Radiocarbon Dating of organic remains required to establish the **timeline** of iron use.

Stratigraphic analysis to confirm if iron objects coexist with Neolithic tools or are from a later phase.

Why It Matters

- **Revises Chronology:** Could shift the classification from purely Neolithic to **Neolithic–Iron Age**.
- **Regional Significance:** Adds evidence of **early metallurgy in Northeast India**, previously underrepresented.

Cultural Continuity: Suggests gradual transition from **stone-based tools to metal use** in the region.



UPSC Relevance: GS I-Ancient History: Neolithic & Iron Age cultures in India.

Prelims: Archaeological Sites of India.

Mains: Discuss the significance of recent archaeological findings in Northeast India.



HOT Question: “How do recent findings at Daojali Hading challenge the conventional understanding of the cultural evolution in Northeast India?”

7. Bodhgaya Temple Act



Controversy reignited over religious representation and temple control. Buddhist groups demand amendments to the act : Ensure Buddhist majority control of the Mahabodhi Temple. Align with UNESCO norms for world heritage site governance. Protect religious autonomy and minority rights.

Bodhgaya Temple Act

- **Enacted in 1949** by the Government of Bihar.
- Governs the **management of the Mahabodhi Temple** in Bodh Gaya – the site where **Gautama Buddha attained enlightenment**.
- Establishes the **Bodhgaya Temple Management Committee (BTMC)**.

Key Provisions of the Act

Provision	Details
Committee Composition	9 members: 5 Hindus (including the DM as Chair) and 4 Buddhists
Chairmanship	The District Magistrate (Hindu) is the ex-officio Chairperson
Control Structure	Hindus maintain majority control , despite it being a Buddhist site

Constitutional & International Context

- **Articles 25–28:** Freedom of religion and management of religious affairs.
- **UNESCO Guidelines:** Stress involvement of communities with **cultural/religious ties** in managing heritage sites.
- **Minority Rights:** Questions raised about Hindu-majority control over a **Buddhist religious site**.



UPSC Relevance:

- GS I: Art & Culture** – Buddhist heritage sites, temple governance.
- GS II: Polity** – Fundamental Rights (Article 25–28), Minority rights.
- GS IV: Ethics** – Heritage management, cultural autonomy.



HOT Question “Does the Bodhgaya Temple Act violate the spirit of religious autonomy and cultural ownership? Justify with constitutional and ethical reasoning.”



8. Keezhadi Excavations – Sangam Era Urban Settlement in Tamil Nadu



Recent excavations at **Keezhadi (Keeladi)** in **Sivagangai district, Tamil Nadu**, suggest the presence of an **advanced urban civilisation** dating back to the **5th–8th century BCE**, predating many North Indian urban centres.

Location:

- Near **Madurai**, on the **Vaigai River** bank in Tamil Nadu.

Civilisation Period:

- Dates back to **Sangam Age** (Early Historic Period), challenging the narrative that urbanism began only in **Gangetic plains**.



Archaeological Evidence:



Urban Planning:

- **Brick structures**, well-planned **drainage system**, **industrial furnaces**

Material Culture:

- **Graffiti-marked pottery**, **black-and-red ware**, **red slipped ware**, **terracotta hopscotch**, **earthen snake figurines**



Inscriptions:

- **Tamil-Brahmi script** on **potsherds**



Trade Evidence:

- **Carnelian beads**, **quartz crystal weights**, and imported goods indicating **regional and international trade**



Industry:

- **Weaving** (spindle whorls, copper needles),
- **Dyeing and glass industry**,
- **Gold, copper articles**, and **semi-precious stones**



UPSC Relevance:

GS Paper 1 – Art & Culture, Ancient Indian History.

GS Paper 2 – Regional development, Tamil Nadu history.

Prelims Tags – Archaeological Sites, Urbanisation in Ancient India, Sangam Age.



HOT Question: “How do the findings at Keezhadi alter our understanding of early urbanisation and script development in peninsular India?”

9. Behdeinkhlam Festival – Meghalaya



Recently celebrated in **Meghalaya**, showcasing cultural and spiritual traditions of the **Pnars (Jaintias)**.

About the Festival

• **Meaning:** “Driving away the plague” – aims at **spiritual cleansing, community healing, and disease prevention**.

• **Region/Community:** Celebrated by the **Pnars (Jaintia tribe)** of the **Jaintia Hills**.

• **Timing:** Held **annually in July**, after the sowing season.



• **Beating rooftops** with bamboo poles by young men – symbolizes **expelling evil spirits and illnesses**.

• **Procession of “raths” (structures made of wood and bamboo)** immersed in sacred pools.

Traditional Games

• **Dat-lawakor** – resembles **football**, played in the muddy fields.

• **Iatan-Bhang** – a form of **tug-of-war**, showcasing strength and unity.



UPSC Relevance:

GS Paper I – Art and Culture : Tribal festivals of North-East India.

Essay / Ethics – Themes of community participation, resilience, and cultural preservation.



HOT Question: “How do tribal festivals like Behdeinkhlam serve as tools for cultural continuity and social cohesion in Northeast India?”

10. Dalai Lama



The upcoming **90th birthday** of the **14th Dalai Lama** and a major **3-day Buddhist gathering** in McLeod Ganj have reignited the global debate over **his succession and reincarnation**.

Aspect	Details
Meaning	"Dalai Lama" means Ocean of Wisdom , title given by Altan Khan (Mongol ruler)
Spiritual Role	Reincarnation of Avalokiteshvara (Bodhisattva of Compassion)
Tradition	Follows the Gelug school of Tibetan Buddhism
Current Leader	14th Dalai Lama – Tenzin Gyatso , fled to India in 1959
Political Shift	Formed Central Tibetan Administration (CTA) in Dharamshala
Resigned Political Role	In 2011 , power transferred to elected Sikyong (President)
Recognition	Nobel Peace Prize, 1989

Reincarnation & Succession Process

Concept	Description
Tulku System	Belief that lamas reincarnate in a spiritual lineage
Samsara	Cycle of rebirth based on karma
Golden Urn	Qing dynasty edict (1793) for choosing lamas when multiple claimants exist
Authority	Recognized by senior monastic and political leaders



China’s Position on Dalai Lama’s Succession

Issue	China’s Stance
Reincarnation Control	Must follow Order No. 5 (2007)–Chinese law governs reincarnations
Golden Urn Usage	Mandates selection via Golden Urn from Qing-era decree
Panchen Lama Control	China rejected Lama's choice & appointed its own Panchen Lama
Next Dalai Lama’s Birth	Must be born within Chinese territory , per China





Panchen Lama – Key Role

- **Second highest** in Tibetan Buddhist hierarchy.
- Traditionally plays a role in recognizing the **Dalai Lama's reincarnation**.
- **Dalai Lama's chosen Panchen Lama** has been **missing since 1995**; China promotes own appointee.



UPSC Relevance:

GS Paper II – International Relations : India–China, Tibet issue.

GS Paper I – Culture : Buddhism, religious leadership.



HOT Question: *“How does the Dalai Lama succession issue reflect the larger contest between cultural sovereignty and state control?”*

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GEOGRAPHY

DISASTER Management

1. Polar Anticyclone
2. Earthquake Swarms
3. Mud Volcano – In
4. True Polar Wander (TPW)
5. Tokara Village
6. NDRF's First-Ever Cadaver Dog Unit
7. Industrial Accident in MCC Unit Highlights Chemical
8. Safety Lapses
9. C-FLOOD Portal for Village-Level Flood Forecasting
10. SACHET (India's SMS-Based Alert System)

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1. South America’s Rare Snowfall Linked to Polar Anticyclone Surge



Snowfall was recorded in Chile’s Atacama Desert—one of the driest places on Earth—due to a **strong polar anticyclone** (Antarctic high) that pushed cold air unusually far north into **South America**.

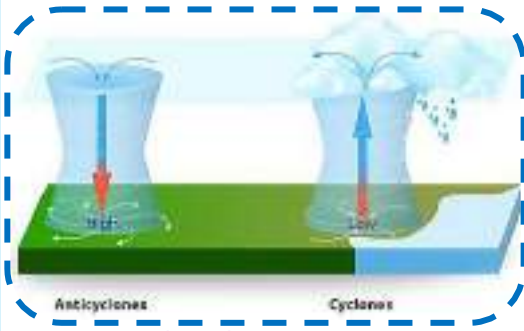
Polar Anticyclone

- A **cold-core high-pressure system** forming over **polar regions** due to **sinking dense, cold air**.
- Prominent during **winter** due to radiative heat loss at the surface.
- Produces **clear skies, fog, frost, and intense night-time cooling**.
- Moves **equatorward and eastward** in winter, affecting lower latitudes with **cold waves** and **weather instability**.

Key Feature	Description
Formation	Surface cooling → cold air sinks → high surface pressure
Effect	Stable conditions, but can lead to cold wave intrusions
Seasonal Movement	Moves equatorward in winter; causes cool, dry weather in summer
Interaction	Forms cold fronts along polar fronts, triggering storms or temp drops
Examples	Siberian High, Canadian High, Antarctic High

Impacts on South America:

- **Antarctic High** brought **cold air northward**, causing **rare snowfall in Chile’s Atacama Desert**.
- Demonstrates how **extreme polar systems** can impact subtropical and desert climates. Highlights influence of **changing atmospheric circulation** under climate variability.



India’s Connection to Polar Anticyclones:

Influence Area	Impact on India
Siberian High	Drives cold waves into northern India during winter
Stable Air	Enhances fog formation over the Indo-Gangetic plains
Western Disturbances	Guided by polar systems, affecting Northwest India and Western Himalayas



UPSC Relevance:

- GS Paper 1 – **Geography** (Climatology, Atmospheric Circulation)
- GS Paper 3 – **Environment** (Extreme Weather, Climate Change Impacts)
- GS Paper 1 – **Indian Geography** (Weather Systems, Winter Patterns)



HOT Question “How do polar anticyclones influence global and regional weather anomalies, and what lessons can India draw for managing winter climate extremes?”

2. Earthquake Swarms



A massive lava eruption in Iceland followed a **series of earthquake swarms**, underlining the island nation's high **seismic and volcanic vulnerability**.

Earthquake Swarms

- A **cluster of numerous small earthquakes** occurring in a **short span**.
- **No single dominant quake** (unlike a mainshock–aftershock pattern).
- **May last weeks**, sometimes producing **thousands of tremors**.
- Often **non-destructive but** may **precede volcanic eruptions**.



Where Do They Occur?

Commonly seen in:

- **Volcanic zones** (e.g., Iceland, Japan)
- **Hydrothermal areas** (e.g., Yellowstone in the US)
- **Active geothermal regions** (e.g., Andaman–Nicobar in India)

Why is Iceland Prone to Earthquakes?

- Located on **Mid-Atlantic Ridge** – a **divergent tectonic boundary** between the North American and Eurasian plates.
- Sits atop a **mantle plume (hotspot)** → causes intense **volcanic activity**.
- This **double interaction** (ridge + plume) makes Iceland a unique **geodynamic hotspot**.



UPSC Relevance:

- GS Paper 1 – **Physical Geography** (Geomorphology, Earthquakes, Volcanoes).
- GS Paper 3 – **Disaster Management**.



HOT Question “How do earthquake swarms differ from typical tectonic quakes, and what do they reveal about Earth's subsurface dynamics?”

3. Mud Volcano



Wandan Mud Volcano Eruption in Taiwan Highlights Geophysical Hazards of Mud Volcanoes



- **Mud volcanoes** emit **mud, water, and gases** like **methane, CO₂, and nitrogen, not lava.**
- Formed due to **subsurface gas pressure**, not **magmatic activity.**
- Some mud volcanoes erupt continuously; others do so periodically.
- Though **less explosive**, they can cause **fires** when **methane gas ignites.**

Causes of Fire from Mud Volcanoes:

- **Ignition of hydrocarbon gases** (e.g., methane) from surface heat or human activity.
- **Frictional heating** in subsurface fractures.
- **Electric discharges** in gas clouds triggering combustion.



Types of Mud Volcanoes	Characteristics
Cold Mud Volcanoes	Emit cool mud and gases; no geothermal heating.
Hot Mud Volcanoes	Warmer emissions; linked to subduction zones and geothermal activity.
Island Volcanoes	Form temporary offshore mud islands.
Onshore Cone Domes	Dome-shaped features in sedimentary basins rich in petroleum.

Mud volcanoes also occur in **Baratang Island** (Andaman& Nicobar)

Mud Volcanoes vs Regular Volcanoes

Feature	Mud Volcanoes	Regular Volcanoes
Material Ejected	Mud and gas	Lava and ash
Heat Source	Surface/subsurface gases	Magma from Earth's mantle
Explosiveness	Low	High (violent eruptions)
Depth Origin	Shallow crust	Deep crust and mantle
Hazards	Fire, gas release, land subsidence	Lava flows, pyroclastic material, earthquakes



UPSC Relevance:

- GS Paper 1 – **Geography** (Geomorphology, Landforms).
- GS Paper 3 –**Environment & Disaster Management.**



HOT Question “How do mud volcanoes, despite being less violent than regular volcanoes, pose significant environmental and geohazard risks?”

4. True Polar Wander (TPW)



A recent study found that **human-made dams** have **shifted Earth's rotational axis by over 1 metre** since 1835 due to a phenomenon known as **True Polar Wander (TPW)**.

True Polar Wander (TPW)?

- TPW is the **movement** of Earth's entire **solid outer shell** (crust + mantle) around the liquid outer core.
- This is not the same as tectonic drift or magnetic pole shift. It occurs to **maintain rotational stability** when mass is redistributed on the planet's surface.



Glacial melting and ice sheet retreat



Tectonic shifts, mantle convection, and oceanic redistribution of mass



Natural Causes of TPW

- Glacial melting and ice sheet retreat (e.g., Greenland, Antarctica)
- Tectonic shifts, mantle convection, and oceanic redistribution of mass

How Human-Made Dams Contribute to TPW

- Large reservoirs trap huge volumes of water that would otherwise remain distributed in oceans.
- This causes a shift of mass inland, particularly in heavily dammed regions (e.g., China, India).
- The resulting imbalance causes a reorientation of the Earth's axis, contributing to TPW.



Large reservoirs trap huge volumes of water that would otherwise remain distributed in oceans



This causes a shift of mass inland, particularly in heavily dammed regions



UPSC Relevance:

GS Paper 1-**Geography**: Geophysical phenomena (Earth's interior, movements). **GS Paper 3** – Environmental Impact Assessment (EIA), Sustainable Development.



HOT Question "To what extent do human engineering activities alter planetary-scale systems like Earth's rotation and climate balance?" (Discuss with reference to dams, carbon emissions, and geoengineering.)

5. Tokara Islands



Over **1,000 earthquakes** have struck the **Tokara Islands**, southern Japan, within a short span—raising alarms in one of the world's most seismically active zones.



•Location:

•Tokara Islands – a **volcanic archipelago** between **Kyushu** and **Amami Islands**.

•Toshima:

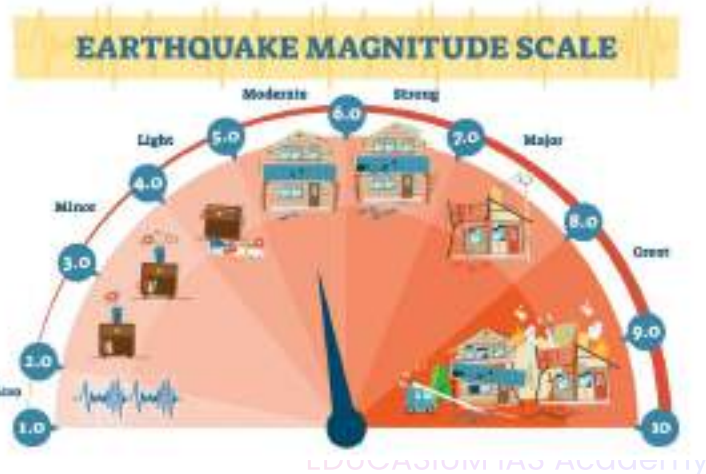
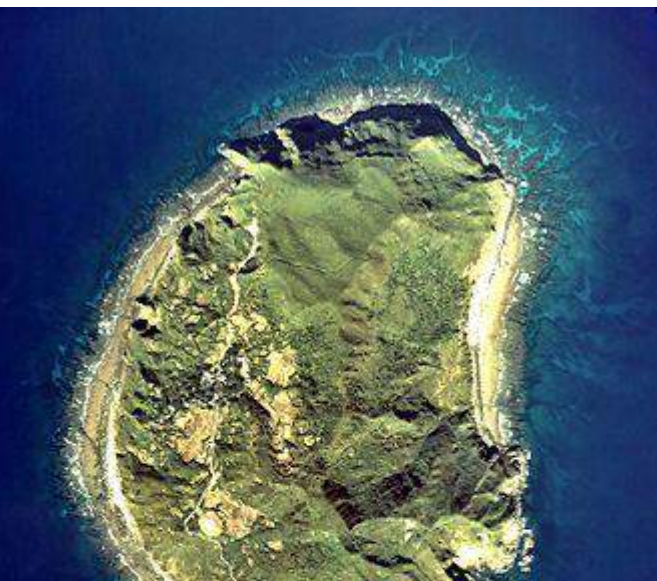
•Japan's **longest village** (in terms of area) lies in the Tokara region.

•Seismic Risk:

•Part of the **Pacific Ring of Fire**, where **four tectonic plates** (Pacific, Philippine Sea, Eurasian, and North American) converge.

•Phenomenon:

•The region experienced an **earthquake swarm**—a series of **small to moderate quakes** without a dominant shock.



UPSC Relevance:

- GS Paper I – Geography:** Earthquakes, Plate Tectonics, and Disaster-prone zones
- GS Paper III – Disaster Management, Early Warning Systems.**



HOT Question “How do tectonic interactions in the Pacific Ring of Fire affect the frequency and magnitude of natural disasters in East Asia?”

1. NDRF’s First–Ever Cadaver Dog Unit



National Disaster Response Force (NDRF) will soon deploy **cadaver dog units** trained to locate **human remains** in post-disaster zones—enhancing humanitarian response and closure for victims' families.

Key Highlights

Feature	Details
Training Bases	Arakkonam (TN) & Ghaziabad (UP)
Dog Breeds	Belgian Malinois & Labrador Retrievers
Training Method	Use of synthetic odour substitutes to avoid ethical/logistical issues
Operational Impact	Fills the long-standing gap in body recovery post-disasters
Strategic Shift	Moves NDRF from solely life-saving to also providing post-mortem relief



Challenges & Limitations

Issue	Details
Complex Training	Simulated scent training is difficult; no established SOPs in India yet
Environmental Factors	Detection success depends on terrain, weather, and odour interference
Ethical Dilemma	Use of actual human remains for training raises legal and moral concerns
Effectiveness	Needs post-deployment data to assess success rate and reliability



UPSC Relevance:
GS Paper III – Disaster Management, Internal Security. Prelims: First cadaver dog unit by NDRF. **Ethics & Essay:** Humane response, closure for families, ethical innovation in service delivery.



HOT Question “How can technology and animal intelligence be ethically integrated into disaster response frameworks in India?”

2. Industrial Accident in MCC Unit Highlights Chemical Safety Lapses



A **fatal industrial accident** occurred at a **Microcrystalline Cellulose (MCC)** manufacturing unit in **Hyderabad**, exposing **deficiencies in dust hazard and chemical safety protocols**.



- **MCC** is a **purified, plant-based polymer**, usually derived from **refined wood pulp**.
- It is **non-toxic, chemically stable, not absorbed by the body**, and used extensively across industries.
- Known for its **smooth powder flow**, it **deforms plastically** under pressure, aiding in **inter-particle bonding** during manufacturing.
- **Dust hazards** from fine particles can pose **explosion and inhalation risks**, especially in **confined industrial settings** without proper controls.

Applications of MCC:

Sector	Use Case
Pharmaceuticals	Binder, filler, disintegrant in tablets for dose uniformity
Food Industry	Bulking agent, emulsifier, anti-caking agent in processed foods
Cosmetics	Enhances texture and suspension in creams and powders
Printing	Acts as biodegradable binder in 3D printing and additive manufacturing
Industrial	Used in bio-composites, paints, and filters

Significance

- Raises concerns over **occupational safety** in **chemical manufacturing** units.
- Highlights the need for **dust explosion mitigation, ventilation systems**, and **regular safety audits**.
- Emphasizes the importance of aligning **industrial expansion** with **worker safety standards** and **environmental compliance**.



UPSC Relevance:
GS Paper 2 – Governance (Labour Rights, Regulatory Oversight).
GS Paper 3 – Disaster Management, Industrial Safety, Science & Tech (Industrial Applications of Polymers).



HOT Question: “How can India’s industrial policy balance innovation and expansion with stronger occupational health and chemical safety enforcement?”

3. C-FLOOD Portal Launched for Village-Level Flood Forecasting



The **Ministry of Jal Shakti** launched the **C-FLOOD (Comprehensive Flood Forecasting and Early Warning System)** portal to provide **village-level flood forecasts** using advanced modelling and real-time data.



- Developed under the **National Supercomputing Mission (NSM)**, jointly led by **MeitY, DST**, and **Ministry of Jal Shakti**.
- Built by **C-DAC Pune**, with support from **CWC** and **NRSC**.
- Initially covers **Mahanadi, Godavari, and Tapi** river basins.
- Integrates **satellite data** and **ground-based sensors** for enhanced accuracy.
- Employs **2D hydrodynamic modelling** using **high-performance computing (HPC)** to simulate flood spread and depth.



Technological Features:

Component	Function
2D Hydrodynamic Model	Simulates horizontal flood flow using terrain, rainfall, and discharge data
High-Performance Computing (HPC)	Enables rapid and accurate flood simulations
Village-level Mapping	Generates micro-level flood maps linked to disaster response systems

Significance

- Enables **early warning** and **evidence-based flood management** at the **grassroots level**.
- Improves **disaster preparedness**, especially in **vulnerable flood-prone regions**.
- Advances use of **AI and HPC** in climate resilience infrastructure.
- Promotes **inter-agency coordination** through integration of multiple data sources.



UPSC Relevance:

GS Paper 2 – Governance (e-Governance, Public Policy Implementation).
GS Paper 3 – Disaster Management, Environment.



HOT Question “How can advanced technologies like hydrodynamic modelling and HPC improve India's disaster preparedness in the face of climate change?”

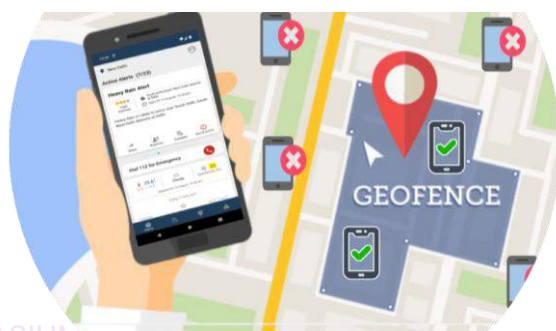
4. SACHET (India's SMS-Based Alert System)



India operationalized both **Common Alerting Protocol (CAP)** and **Cell Broadcast (CB) System** systems nationwide to improve disaster **early warning systems**, especially ahead of monsoon and cyclone seasons.

Common Alerting Protocol (CAP) System

- **Launched by:** National Disaster Management Authority (NDMA)
- **Developed by:** Centre for Development of Telematics (C-DOT)
- **Based on:** Common Alerting Protocol (CAP) recommended by International Telecommunication Union (ITU)
- **Coverage:** Functional in **all 36 States/UTs**
- **Function:** Sends **geo-targeted SMS alerts** to individuals in specific locations
- **Used for:** Cyclones, floods, storms



Cell Broadcast (CB) System

- **Also Developed by:** C-DOT
- **Function:** Sends alerts to **all mobile phones** in a geographical area, **irrespective of phone numbers**
- **Faster than SMS** and does not rely on network congestion
- **Used for:** Rapid-onset disasters like **tsunamis, earthquakes, lightning, and toxic gas leaks**



UPSC Relevance:

GS Paper 1 – Geography (Cyclones, Earthquakes).

GS Paper 2 – eGovernance (Use of ICT for disaster preparedness).

GS Paper 3 – Disaster Management.



HOT Question “How do systems like CAP and Cell Broadcast enhance India's disaster resilience, and what challenges remain in last-mile connectivity and public responsiveness?”

JULY 2025

HEALTH & Nutrition

1. Palm Oil and Health Concerns
2. Codex Alimentarius Commission (CAC)
3. SOFI 2025: Triple Burden of Malnutrition
4. Trans Fat
5. Silent Salt Consumption Epidemic
6. WASH (Water, Sanitation, Hygiene)
7. Good Health & Well-Being Index (SDG 3)
8. India's Zero-Dose Crisis: Need for Immunisation
9. Arboviral Diseases
10. Australian Bat Lyssavirus (ABLV)

SOCIAL ISSUES Miscellaneous

1. Setubandha Scholar Scheme
2. Eat Right India Initiative
3. ADEETIE Scheme
4. India's Youngest Female Grandmaster
5. National Sports Policy 2025
6. Hatti Tribe Polyandrous Marriage (Jajda)
7. TALASH Scheme for Tribal Students



1. Palm Oil and Health Concerns



Rising health concerns over **high saturated fat content** in **palm oil**, despite its widespread use in processed foods.

Key Feature	Details
Source	Extracted from the fruit of <i>Elaeis guineensis</i> (oil palm tree)
Fat Composition	~50% Saturated Fatty Acids (SFA) – mainly palmitic acid~40% Monounsaturated fats~10% Polyunsaturated fats
Applications	Used in biscuits, snacks, ice creams, chocolates, noodles for texture and shelf-life
Advantages	- o Cheaper than sunflower/soybean oil - o Naturally semi-solid – no trans fats - o Oxidation-resistant – long shelf life - o Neutral taste – does not alter food flavour



ICMR Guidelines on Edible Fats :

- ✓ **Daily Fat Intake:** 20–50g per person
- ✓ **Blended Oils:** Mix oils low in SFA and rich in **PUFA/MUFA**
- ✓ **Best Fat Sources:** Nuts, seeds, fish, seafood, eggs – not refined oils
- ⊘ **No Reheating:** Especially for **PUFA-rich oils** – forms **toxic oxidised compounds**.



UPSC Relevance: **GS Paper 2 & 3** – Health & Nutrition, Food Security, Consumer Awareness, Environmental Ethics (palm oil plantations also cause deforestation). **Essay/Case Studies** – Link palm oil to *NCDs, sustainable food practices, and global food trade*.



HOT Question:

“Should India regulate the use of palm oil in processed foods, or focus on public awareness and dietary diversification?”



2. Codex Alimentarius Commission (CAC)



India's role in **developing global standards for millets** was acknowledged at the **88th Session of the Executive Committee of the Codex Alimentarius Commission (CAC)** held at **FAO Headquarters, Rome**.

Significance for India

- **Boosts India's millet diplomacy** under the International Year of Millets (2023).
- **Strengthens export potential** for Indian millets by aligning with global food standards.
- Enhances India's soft power in global food security and nutrition policy.



Codex Alimentarius Commission (CAC)

Established: 1963

By: Food and Agriculture Organization (FAO) and World Health Organization (WHO)

Purpose: To implement the **Joint FAO/WHO Food Standards Programme**.

Function: Sets international **food safety** and **quality standards**. Facilitates **fair practices in food trade**.

Membership: 189 (188 countries + **European Union**)



UPSC Relevance:

GS Paper II – International Bodies, Agreements affecting India's interests
GS Paper III – Food Security, Agricultural Exports, Nutrition, and Millets



HOT Question:

"How does India's leadership in developing millet standards reflect its broader goals of agricultural diplomacy and food security leadership?"



3. SOFI 2025: India Faces Triple Burden of Malnutrition Despite Drop in Undernourishment



The **UN's State of Food Security and Nutrition in the World (SOFI) 2025 report** has flagged **persistent child wasting, stunting, and anaemia** in India, despite improvements in undernourishment levels.



Wasting:

- India has the **world's highest child wasting rate** at **18.7%** (~21 million children).
- NFHS-5** reports 19.3% of children under-5 wasted (7.7% severely wasted).

Stunting:

- 37.4 million** Indian children are stunted.
- Prevalence: **35.5%**, far above the **South Asian average** of 21.8%.
- India remains a **global hotspot** despite being "on course" trend-wise.

Anaemia:

- 53.7%** of Indian women (15–49) are anaemic (~203 million).
- NFHS-5: **57%** of women and **67%** of children under 5 are anaemic.
- India ranks **4th globally**, with the **highest anaemia burden in Asia**.

Undernourishment:

- 172 million undernourished Indians (down from 243 million in 2004).
- India contributes **12% of global undernourished**; ranks 7th in prevalence.



UPSC Relevance:

GS Paper 2 – Health, Welfare Schemes, SDGs

GS Paper 3 – Nutrition, Human Development, Food Security



HOT Question: “Despite economic growth, India continues to face high levels of child malnutrition. How can policy shift from calorie-based to nutrient-based interventions to combat this triple burden?”



4. Trans Fat



The **United Nations** has called for a **global ban on industrially produced trans fats** by **2025**, citing major health risks. Many countries, including India, have already taken steps toward eliminating these harmful fats from food.

What are Trans Fats?

- **Trans fats** are **unsaturated fatty acids** produced industrially through **partial hydrogenation of vegetable oils**.
- Commonly found in **packaged foods, bakery items, frozen snacks, and street foods**.

They increase **"bad" LDL cholesterol**, reduce **"good" HDL**, and are linked to **heart disease, stroke, and type 2 diabetes**

UN Initiative Highlights

Goal: Eliminate **industrial trans fats globally** by **2025** under **WHO's REPLACE action framework**.

WHO urges countries to **enact mandatory limits of 2g/100g fat** in food and **ban partially hydrogenated oils**.

Five billion people remain unprotected by binding regulations.



India's Action

- Regulatory Body: FSSAI

Action Taken:

- 2021: Limit reduced to 3% trans fats in oils/fats.
- 2022: Limit reduced further to 2%—aligning with WHO standards.
- Campaigns: "Eat Right India" and "Trans Fat-Free Logo" for awareness.
- Target: Make India trans fat-free in line with UN Sustainable Development Goals (SDGs).



UPSC Relevance: GS-II (Governance / Health): India's food safety standards, FSSAI regulations, and public health policy. **GS-III (Science & Tech):** Understanding **trans fat chemistry**, health impacts, and nutrition regulations.



HOT Question: "How does India's regulatory approach to eliminating trans fats align with the global REPLACE framework, and what challenges remain in ensuring compliance?"



5. Silent Salt Consumption Epidemic



Rising health concerns due to **excessive salt intake** in India exceeding **WHO's recommended limit**, prompting awareness campaigns and policy discussions.

WHO Recommendation:

< 5g/day of salt intake.

Current Consumption in India:

- Urban areas: ~9.2g/day
- Rural areas: ~5.6g/day

Health Risks of Excess Sodium:

- Hypertension (leading risk factor for cardiovascular disease)
- Stroke
- Heart disease
- Kidney disorders



Solutions & Interventions

•Low-Sodium Salt Substitutes:

Replace **sodium chloride** with **potassium chloride** or **magnesium salts**.

•Awareness Campaign:

#PinchForAChange and "Community-Led Salt Reduction" initiative.

Focus on food reformulation, front-of-pack labeling, and behavioural change.

•Policy Need:

National guidelines for salt intake reduction, similar to **trans fat elimination**.



•**UPSC Relevance: GS Paper II** – Government Schemes on Health, Public Policy. **GS Paper III** – **Public Health, Science and Tech** (nutrition & food tech), SDGs (Goal 3 – Good Health and Well-being). **Prelims** – WHO Guidelines, salt substitutes, #PinchForAChange campaign



HOT Question: "Excess salt consumption is a silent public health crisis. Evaluate how behaviour change, food policy, and technology can work together to tackle this issue in India."



6. WASH (Water, Sanitation, Hygiene)



WHO and UNICEF released an updated **WASH tracker** for health facilities across 100+ countries.
Linked to **2023 UN General Assembly Resolution** on **WASH, waste, and electricity** in healthcare.

WASH = Water, Sanitation, and Hygiene.

Aims to ensure:

- o Access to safe drinking water
- o Improved sanitation facilities
- o Basic hygiene standards



Major Global Initiatives

Protocol on Water and Health:

Only **international legal agreement** for sustainable water management and disease control.

- o **Supported by** WHO/Europe and UN Economic Commission.

UN Resolution (2010):

Recognized **safe water and sanitation as human rights**.

Importance of WASH

- Supports **SDG 3** (health) & **SDG 6** (water and sanitation for all).
- Reduces **infections** (cholera, diarrhea, sepsis, etc.) in **children (1–59 months)**.
- Prevents **school dropouts**, especially of **girls**.

Protects human rights — safe water & sanitation seen as fundamental.

Major National Initiatives

Swachh Bharat Mission (SBM): Eliminate open defecation.

Jal Jeevan Mission (2019): Tap water to every rural home. Currently, ~**80.15%** coverage.

Namami Gange: Clean and conserve **Ganga River**.



•**UPSC Relevance: GS Paper II** (Governance, Welfare schemes), **GS Paper III** (Health, Environment), **Essay Paper - Public Health Infrastructure, SDG Implementation, Right to Water and Sanitation, India's progress in rural development.**



HOT Question: “WASH is not just about infrastructure but about dignity and survival. In the context of public health, critically evaluate India’s performance and challenges in achieving WASH-related SDG targets.”



7. Good Health & Well-Being Index (SDG 3)



NITI Aayog released the *SDG 3: Good Health & Well-Being Index* (2023–24) as part of the **SDG India Index**.

Aspect	Description
Objective	Measures progress toward SDG 3 – Ensure healthy lives and promote well-being for all
Index Type	Composite Index using a 0–100 scoring system
Indicators (11 total)	Mortality rates (IMR, MMR), immunisation coverage, disease incidence (e.g., TB), suicide rate, life expectancy, institutional delivery, and others
Data Source	Based on national surveys and administrative datasets
Top Performers	🥇 Gujarat (Score: 90) 🥈 Maharashtra 🥉 Uttarakhand



UPSC Relevance:
GS Paper 2 – Governance, Health Sector
GS Paper 3 – Sustainable Development Goals, Human Development



HOT Question: “How can India’s performance in SDG 3 indicators guide policy priorities in public health and inclusive development?”



8. India's Zero-Dose Crisis

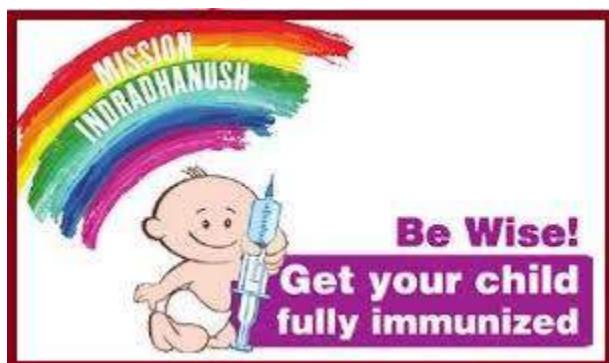


A **UNICEF–WHO report** raised concerns over India's "zero-dose" children—those who **miss all routine childhood vaccinations**, placing them at high risk of preventable diseases

Zero - Dose Children?

Children who **haven't received even the first dose** of **DPT (diphtheria, pertussis, tetanus)** vaccine by age one.

Considered a **marker of extreme vaccine and healthcare exclusion**.



India's Scenario

India has the highest number of zero-dose children globally (~1.6 million as per 2023 data).

Despite progress under **Mission Indradhanush**, gaps persist in:

- o **Urban slums**
- o **Remote tribal regions**
- o **Conflict-affected or migrant areas**

Global Linkage

- Supports SDG 3.2: End preventable deaths of newborns and under-5s by 2030.
- GAVI (Global Alliance for Vaccines and Immunisation) assists India technically and financially.

Reasons

1. **Socio-economic barriers** – Poverty, low maternal education, misinformation.
2. **Geographical exclusion** – Inaccessibility in hilly, forested, or insurgency-hit regions.
3. **Migrant population** – Untracked children due to mobility.
4. **COVID-19 pandemic** – Disrupted immunisation supply chains and routine services.



UPSC Relevance:

GS Paper 2 – Health, Welfare Schemes, Governance. **GS Paper 3** – Science & Technology (Health), SDGs.



HOT Question: "In the era of digital health infrastructure, why does India continue to face high zero-dose burden? Suggest systemic reforms to ensure last-mile immunisation delivery."



9. WHO Guidelines on Arboviral Diseases



WHO released its first integrated clinical guidelines for managing Dengue, Chikungunya, Zika, and Yellow Fever, in response to their growing global threat.

Arboviral Diseases

Diseases caused by viruses transmitted by arthropods, mainly Aedes mosquitoes.

Major Diseases Covered:

Dengue, Chikungunya, Zika, Yellow Fever.



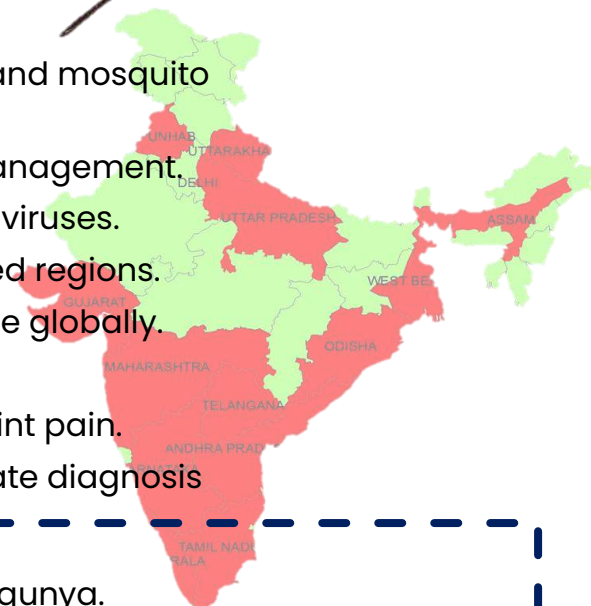
Reason for Rising Cases:

- Climate change → warmer climates expand mosquito habitats.
- Urbanisation → poor waste and water management.
- Global travel/mobility → faster spread of viruses.
- Lack of vector control in densely populated regions.

At-Risk Population: Over 5.6 billion people globally.

Diagnosis Challenges:

- Similar early symptoms like fever, rash, joint pain.
- Co-infections are common and complicate diagnosis



Indic-Specific Relevance

- India is endemic to Dengue and Chikungunya.
- Increasing urban floods, stagnant water boost mosquito breeding.
- High burden states: Kerala, Tamil Nadu, Maharashtra, Delhi, West Bengal.

What WHO's New Guidelines Recommend

Unified Case Management:

- Integrated approach for detection, testing, and treatment.
- Early Identification of severe cases and warning signs.
- Strengthening Surveillance and laboratory systems.

Community Participation:

- Public awareness and vector-control measures



HOT Question:

"How does climate change amplify the threat of arboviral diseases? Evaluate India's preparedness to handle outbreaks of multiple mosquito-borne diseases."



10. Australian Bat Lyssavirus (ABLV)



A man in Australia died from a rare rabies-like infection caused by the **Australian Bat Lyssavirus (ABLV)** after being bitten by a bat.

Virus Type:

ABLV is a **rare RNA virus** from the **Lyssavirus genus**, closely related to the **Rabies virus**.

Geographic Distribution:

Found **only in Australia**.

Host Species:

Flying foxes (fruit bats)

Microbats (e.g., yellow-bellied sheath-tail)

(Genetic variants exist in species but cause the same disease.)



Mode of Transmission:

Bite or scratch from an infected bat

Contact with saliva on mucous membranes (eyes, nose, mouth)

Symptoms:

Initial: **Fever, headache, malaise**

Later: **Paralysis, delirium, coma, and death**

Prevention:

- o **Avoid contact with bats**
- o **Pre-exposure rabies vaccination** for those working with bats
- o Immediate **post-exposure prophylaxis (PEP)** after exposure

Treatment:

- o **No effective cure** after symptoms begin
- o Death is almost always certain once clinical symptoms manifest



UPSC Relevance:

GS Paper 2 – Health, International Disease Surveillance.

GS Paper 3 – Science & Tech (Virology, Emerging Zoonoses), Disaster preparedness.



HOT Question: “How do zoonotic diseases like ABLV highlight the importance of One Health approach in public health management?”



1. Setubandha Scholar Scheme



The **Government of India** launched the **Setubandha Scholar Scheme** to integrate **traditional knowledge from Gurukuls** into the mainstream academic system by offering formal **postgraduate and doctoral degrees**.

Objective:

Mainstream **Indic traditional knowledge systems (IKS)** through formal academic recognition.



- Enables **postgraduate (MA/MSc)** and **Ph.D. degrees** for students trained in gurukuls.
- Students can pursue higher education in **top institutions like IITs**.
- Focuses on disciplines like **Vedas, Ayurveda, Jyotish, Shastra, Yoga, Sanskrit grammar**, and other IKS fields.
- Offers generous **research fellowships** up to **₹65,000 per month**.

Significance

Bridges the gap between traditional and modern education systems.
Empowers **gurukul-trained scholars** with **recognised academic credentials**.
Strengthens India's **intellectual decolonisation** and revival of **indigenous knowledge**.
Promotes India's **soft power and cultural diplomacy**.

Implementing Body:

Indian Knowledge System (IKS)

Under **Central Sanskrit University**,

Ministry of Education, Government of India.



UPSC Relevance: **GS Paper 2** – Education policy, Ministry of Education initiatives, Cultural preservation. **GS Paper 1** – Indian culture, traditional institutions. **Essay** – Revival of indigenous Knowledge. **Prelims** – Government schemes on education and heritage.



HOT Question: “To what extent can the integration of traditional knowledge systems into modern academia contribute to India's educational and cultural renaissance?”



2. Eat Right India Initiative



FSSAI's *Eat Right India* gains renewed importance amid rising **non-communicable diseases, unsafe food practices, and unsustainable consumption patterns**, aligning with **POSHAN Abhiyaan** and the **Sustainable Development Goals (SDGs)**.

Key Details:

Aspect	Description
Launched	2018 by FSSAI (Food Safety and Standards Authority of India)
Integrated Themes	Nutrition, Food Safety, and Sustainability
Pillars	1. Eat Safe – Ensuring food safety across the supply chain 2. Eat Healthy – Promoting balanced diets 3. Eat Sustainable – Eco-conscious food practices

Why It Matters:

- NCDs Rising:** Linked to diets rich in **salt, sugar, and fat** (e.g., heart disease, diabetes).
- Food Contamination:** Unsafe food with **chemical residues, microplastics, and adulterants** affects the poor most.

Urbanisation Effects: High processed food consumption demands tighter regulations and **awareness**

Initiative	Details
Stop Obesity Campaign	Targets 10% reduction in salt and oil consumption.
Microplastics Research Project	Jointly by CSIR, ICAR, BITS Pilani to study nano-contaminants in food.
Digital Governance Tools	- FoSCoS: Food Safety Compliance System (licensing & compliance) - Food Safety Connect App: Citizen grievances - Food Safety on Wheels: Mobile food testing & awareness
POSHAN Tracker & Jaivik Bharat	Tools for beneficiary monitoring and promoting organic produce.

Stakeholder Ecosystem:

- Government Ministries:** Health, Women & Child Development (WCD), Urban Affairs.
- Private Sector:** CSR initiatives.
- Others:** Academia, NGOs, Training Partners, Citizens.
- Approach:** *Whole-of-Government and Whole-of-Society* collaboration.



Way Forward:

- **Regulate & Educate:** Expand **hygiene ratings**, strengthen **public campaigns** like “Aaj Se Thoda Kam.”
- **Urban–Rural Convergence:** Extend Eat Right to **Smart Cities** and link with **rural health programs**.
- **SBCC:** Use **Social and Behaviour Change Communication** to promote healthy food habits.

Tech Integration: Use **AI for food testing**, improve training, and monitor high-risk zones



UPSC Relevance: **GS Paper 2** –Government Policies, Health, Nutrition. **GS Paper 3** – Food Security, Biotechnology, Environmental Sustainability. **Essay** – Behavioural Change, Collaborative Governance.



HOT Question: “How does the Eat Right India initiative exemplify a preventive healthcare model and align with India’s nutrition-security and sustainability goals?”



3. ADEETIE Scheme



A-DEE-TIE stands for: **Accelerated Development and Deployment of Efficient, Economical Technologies for Energy Transition and Innovation in India**

Objective

To promote **indigenous R&D** and **deployment of affordable, efficient, and clean energy technologies** for achieving **net-zero** emissions and energy self-reliance



Focus Areas:

- o **Energy storage**
- o **Green hydrogen**
- o **Carbon capture and utilization**
- o **Advanced biofuels**
- o **Solar photovoltaic tech**
- o **Electric mobility**

Collaborative Approach:

- o Encourages **public-private partnerships** and academia-industry collaboration.

Support Mechanisms:

- o R&D funding, pilot projects, and scale-up support.



UPSC Relevance:

GS Paper 2 – Women Empowerment and Youth in Global Arenas.
GS Paper 1 – Indian Culture (Sports and Personalities).



HOT Question: “How does Divya Deshmukh’s victory reflect the rise of Indian women in global competitive sports and the role of institutional support in nurturing such talent?”



4. India's Youngest Female Grandmaster



19-year-old Divya Deshmukh won the **2025 FIDE Women's World Cup**, becoming **India's 4th female Grandmaster (GM)** and marking a historic moment for Indian chess.

All – Indian Final:

Divya defeated **Koneru Humpy**, India's first female GM, in the **World Cup final**, showcasing India's growing **women's chess dominance**.

Youngest GM:

Divya now holds the title of **India's youngest woman Grandmaster**, requiring:

- o **3 GM norms**
- o **A FIDE rating of 2500+**



India's Female Grandmasters

Koneru Humpy
Harika Dronavalli
R. Vaishali
Divya Deshmukh (88th Indian GM)



UPSC Relevance:

GS Paper 2 – Women Empowerment and Youth in Global Arenas.
GS Paper 1 – Indian Culture (Sports and Personalities).



HOT Question: "How does Divya Deshmukh's victory reflect the rise of Indian women in global competitive sports and the role of institutional support in nurturing such talent?"



5. National Sports Policy 2025



The **Union Cabinet approved** the **National Sports Policy 2025**, aiming for a **complete overhaul of India's sports ecosystem** by linking sports with education, economy, and national pride.

Pillar	Focus Areas
Global Sporting Excellence	Structured talent pathways, modern infra, science-backed training, league culture
Economic Development	Promote sports tourism, manufacturing, CSR, PPP, and startup ecosystem
Social Development	Inclusion, community sports, traditional sports revival, career linkages
People's Movement	Mass fitness, awareness campaigns, open access to facilities
Education Linkage	Integrate with NEP 2020, school-based talent nurturing, trained educators

Strategic Framework for Implementation

- Governance Reforms:** Legal & regulatory frameworks for transparency, accountability
- Private Sector Role:** Leverage **CSR** and **PPP** partnerships
- Technology Integration:** Use of **AI, data analytics**, wearables for athlete tracking
- Monitoring:** Establish **National Monitoring Framework** with KPIs and milestones
- State Alignment:** NSP as **model policy** for States/UTs
- Whole-of-Government:** Cross-ministerial convergence for inclusive execution

Evolution of India's Sports Policy

Period	Key Developments
1947–1980s	Focus on basic needs; 1951 Asian Games, AICS (1954), low sports funding
1982	Asiad sparked need for structure → Dept. of Sports formed, NSP 1984 drafted
1991–2000	Economic reforms → 1997 Draft NSP (not implemented)
Post-2000	Ministry of Youth Affairs and Sports created; NSP 2001 launched
2011 Onwards	NSDC 2011, TOPS 2014, Khelo India 2017, Fit India 2019
2024–2025	Draft Governance Bill, New NSP 2025 amid 2036 Olympic bid revival



UPSC Relevance: **GS Paper 2** – Governance, Government Policies, Role of Civil Services, Cooperative Federalism. **GS Paper 3** – Economy (PPP, Startup Ecosystem), Infrastructure, Technology & Sports. **Essay / Ethics:** National Pride, Youth Empowerment, Inclusive Development.



HOT Question: “How does the National Sports Policy 2025 reflect a shift from event-based sports planning to a long-term ecosystem approach integrating governance, education, and economy?”



6. Hatti Tribe Polyandrous Marriage (Jajda)



A recent **Jodidaran (polyandrous) marriage** involving a **Hatti tribal woman** has revived constitutional and legal scrutiny over **tribal custom exemptions**, gender rights, and **polyandry's legality** under Scheduled Tribe (ST) provisions.

About the Hatti Tribe & Jodidaran Custom :

Feature	Details
Location	Predominantly in Himachal Pradesh's Trans-Giri region
ST Status	Granted Scheduled Tribe status in 2023
Jodidaran Practice	Fraternal polyandry—woman marries multiple brothers to avoid land fragmentation, ensure family unity, and secure livelihoods
Cultural Council	Governed by traditional bodies like Khumbli councils

Legal Status of Polyandry in India:

Law/Provision	Status
Hindu Marriage Act, 1955	Criminalises polyandry; excludes STs under Section 2(2)
Special Marriage Act, 1954	Criminalises polyandry uniformly
Bharatiya Nyaya Sanhita, 2023	Penal provisions against bigamy/polyandry
Customary Validity	Section 3(a) HMA requires customs to be ancient, certain, reasonable, and not opposed to public policy

Key Supreme Court Precedents:

Case	Verdict
Triple Talaq (2017)	Instant divorce held unconstitutional
Sabarimala (2018)	Bar on women's entry held unconstitutional
Ram Charan (2024)	Upheld tribal women's in
Sunita Chauhan (2024)	Held that polyandry viola



Uniform Civil Code (UCC) & ST Exemptions:

- **UCC Objective:** Harmonise personal laws across religion, caste, and tribe
- **Exemptions:**
 - **Uttarakhand UCC (2024–25)** exempts STs unless practices violate **constitutional rights**
 - **Goa UCC** shows **opt-in UCC models** can co-exist with tribal identities

Legal & Ethical Challenges:

- **Gender Autonomy vs Custom:** Lack of women’s say in traditional Khumbli decisions
- **Lack of Documentation:** Oral customs hinder judicial evaluation
- **Customs vs Rights:** Cultural legitimacy often masks patriarchal norms
- **Resistance to Reform:** Top-down laws without engagement often face rejection
- **Judicial Dilemma:** Courts face burden of validating undocumented customs

Reform Path	Strategy
Opt-in UCC	Allow voluntary inclusion, as seen in Goa
Community Engagement	Tribal-led reforms like in Nagaland village acts
Women’s Legal Literacy	Use MoTA’s Van Dhan Kendras for awareness campaigns
Cultural Equity	Follow Xaxa Committee (2014) recommendation for culturally sensitive reforms



UPSC Relevance: **GS Paper 2** – Indian Constitution, Polity, Social Justice.
GS Paper 1 – Indian Society, Tribal Culture.
GS Paper 4 - Ethics — Custom vs Constitutional Morality.



HOT Question: “Should personal tribal customs like polyandry be protected under constitutional exemptions, even if they conflict with gender rights? Critically examine with reference to the Hatti tribe’s Jodidaran practice.”



7. TALASH Scheme for Tribal Students



The **National Education Society for Tribal Students (NESTS)**, in collaboration with **UNICEF India**, launched the **TALASH** (Tribal Aptitude, Life Skills and Self-Esteem Hub) scheme to promote **career readiness and self-development** among tribal school students.

Implementing Bodies:

- NESTS (under **Ministry of Tribal Affairs**)
- UNICEF India (Technical Partner)



Target Group:

~1.5 lakh students of **Eklavya Model Residential Schools (EMRS)** across India.

Platform Type:

Digital platform offering **aptitude testing, counselling, and life skills training.**



Components of TALASH:

Component	Description
Psychometric Testing	Based on NCERT's Tamanna tool to assess student aptitude.
Career Cards	Personalised career options generated through aptitude profiling.
Counselling Support	Online counselling based on student interests and strengths.
Life Skills Module	Digital training in communication, emotional resilience, etc.
Teacher Portal	Trains EMRS teachers in guidance and counselling methods.



UPSC Relevance: **GS Paper 2** – Governance, Education, Welfare Schemes for Vulnerable Sections. **GS Paper 1** – Indian Society (Issues relating to Tribals). **GS Paper 4** - Ethics (Empathy, Education in Values and Life Skills).



HOT Question:

"How can digital life-skills education initiatives like TALASH bridge the gap in educational equity among India's tribal populations?"

