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Prelims UPSC CSE 2026

Monthly Magazine



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PREFACE

Current Affairs UPSC CSE Prelims 2026

This high-quality monthly compilation of Current Affairs for Civil Services Exam Prelims 2026 is designed to help Civil Services Exam aspirants by:

1. **Saving preparation time:** Consolidates key current affairs from multiple sources for CSE Prelims.
2. **Reinforcing static concepts:** Links static concepts with current affairs
3. **Enhancing revision:** Combines important current affairs and static concepts for effective revision.

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- Aligns with the CSE prelims exam pattern.
- Aids understanding and recall by offering multiple perspectives on current affairs.
- Saves time, consolidates and aids quick revision

Details of our Current Affairs Test Series are on the back cover and inside this magazine.

Our team of content developers have worked rigorously to create this high-quality compilation, and we hope that all Civil Services and other competitive exam aspirants will make the best use of it. All the Best!

R. C. Reddy IAS Study Circle
Hyderabad



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NEW TELEGRAM CHANNEL

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POLITY

1. Nyaya Bandhu (Pro Bono Legal Service)

Context: Till June, 2025, approximately, 14888 women beneficiaries have registered under the Nyaya Bandhu App.

About

- The Nyaya Bandhu (Pro Bono Legal Service) is one of the programmes under the scheme of "Designing Innovative Solutions for Holistic Access to Justice" (DISHA).
- It was launched in 2017 and is implemented by the Department of Justice under the Ministry of Law and Justice.
- It registers interested Pro Bono Advocates and connects them with the beneficiaries. (While law students can be involved, the core function of a "Nyaya Bandhu" is performed by practicing advocates.)
- **Beneficiaries are entitled for free legal aid under Section 12 of the Legal Services Authorities Act, 1987 through the Nyaya Bandhu Application.**
- In order to avail the services of a Pro Bono lawyer, **both the applicants and lawyers** are required to register on the **Nyaya Bandhu Mobile Application**.
- To enhance the reach and effectiveness of the Nyaya Bandhu program in remote areas, **Pro Bono Clubs (PBCs) in the Law schools** are engaged in providing community care, legal assistance and legal awareness to the **beneficiaries in the villages**.

2. Transplantation of Human Organs and Tissues Act (THOTA), 1994

Context: India achieved a remarkable milestone of performing over 18,900 organ transplants in 2024, the highest ever recorded in a single year, Union Health Minister J P Nadda said on August 2.

Transplantation of Human Organs and Tissues Act (THOTA), 1994:

The Transplantation of Human Organs and Tissues Act (THOTA), 1994 is a landmark law enacted by the Parliament of India to regulate the removal, storage, and transplantation of human organs and tissues for therapeutic purposes, while preventing commercial dealings and illegal organ trade.

- **First Enacted:** 4 February 1994, Ministry of Health and Family Welfare
- **Scope:** Applies to all Union Territories and to states which have adopted or enforced it. Health is a state subject in India, so adoption varies.

Objectives

- **Regulation:** Establish a legal framework for safe and ethical transplantation of human organs and tissues.
- **Prevention:** Curb commercialization, organ trafficking, and illegal advertisements regarding organ donation.
- **Authority:** Mandate the registration of transplant centers, tissue banks, and retrieval centers.

Key Provisions

1. Definition and Scope

- Covers donation and transplantation from both living and deceased donors.
- Initially covered organs only; amended in 2011 and 2014 to include tissues.

2. Consent & Authorization

- Written consent required from donor, witnessed by at least two individuals (one being a near relative).
- Authorisation Committees at State and UT level to approve all non-near relative and foreign transplants.

3. Brain Stem Death

- Legally recognized for organ donation, allowing for donation of multiple organs after brain death.

4. Near Relatives

- Definition expanded to include grandparents and grandchildren (2011 amendment).

5. Hospitals & Transplant Coordinators

- Mandatory registration of hospitals for transplantation work.
- Appointment of transplant coordinators in registered hospitals.

6. Retrieval Centres & Tissue Banks

- Accredited and registered centers authorized to retrieve organs and tissues.

7. Punishments

- Imprisonment up to 3 years and fines up to ₹5 lakh for violations involving unauthorized organ removal or commercial trading.

Regulatory and Institutional Framework

- **National Registry:** Database of organ and tissue donors/recipients, maintained by National Organ and Tissue Transplant Organization (NOTTO).
- **Monitoring:** Regular inspections of transplant centers and tissue banks; advisory committees assist authorities.
- **National Organ Transplant Programme (NOTP):** Network of organizations to facilitate organ donation and transplantation nationwide.

Special Safeguards

- **Brain Stem Death Certification Board:** Simplified composition; allows for alternative medical specialists if no neurologist is available.
- **Protection of Vulnerable Groups:** Stringent rules for transplants involving minors, foreign nationals, and mentally challenged persons.
- **Swap and Altruistic Donations:** Permitted under regulated conditions.
- If the donation is between living near relatives (as defined by the Act—spouse, parents,

children, siblings, grandparents, and grandchildren), prior approval from the Authorization Committee is not required; the hospital can carry out the transplant based on documents proving relationship.

- The Act completely prohibits commercial trading in human organs. NOTTO regulates transplantation activities, maintains registries, and promotes ethical donation, but organ trade is not allowed under any conditions.
- The Act requires mandatory registration of all hospitals that intend to carry out organ retrieval, storage, or transplantation procedures.
- The Act does permit altruistic (non-commercial) donations from unrelated individuals, but only after approval from the Authorization Committee, based on scrutiny for motives or coercion.

3. Transgender Persons (Protection of Rights) Act, 2019

Context: Chief Minister M K Stalin on July 31 released the State Policy for Transgender Persons, outlining a five-year roadmap to ensure dignity, equality and non-discriminatory access to identity, education, employment, healthcare, housing and public services for gender minorities.

Transgender Persons (Protection of Rights) Act, 2019:

- The Transgender Persons (Protection of Rights) Act, 2019 is a law enacted by the Government of India to protect the rights, dignity, and welfare of transgender persons. It came into force on 5 December 2019 and sets a legal framework for social, economic, and educational empowerment of the transgender community.

Key Objectives

- Prohibit discrimination against transgender persons in education, employment, healthcare, public services, and access to facilities.
- Recognize the right to self-perceived gender identity, allowing transgender persons to be

identified as such without having undergone gender-affirming surgery.

- Ensure equal opportunities and social inclusion.

Main Provisions

1. Definition of a Transgender Person

- The Act defines a transgender person as someone whose gender does not match with the gender assigned at birth, including trans-men, trans-women, persons with intersex variations, gender-queers, and persons with sociocultural identities.

2. Certificate of Identity

- Transgender persons may apply to the District Magistrate for a “certificate of identity” reflecting their self-perceived gender. For gender change (male/female), medical intervention certificate is required; for identifying as transgender, it is based on self-perception.

3. Prohibition of Discrimination

- Discrimination is prohibited in:
 - Education institutions
 - Employment (recruitment, promotion)
 - Healthcare services
 - Access to public places (shops, restaurants, roads, etc.)
- All establishments must provide policies to prevent discrimination.

4. Welfare Measures

- The appropriate government is directed to take steps for:
 - Rehabilitation, healthcare, and vocational training
 - Promotion of education and participation in society
 - Formulation of welfare schemes and programs for transgender persons.

5. Employment

- Public and private sector establishments must ensure non-discrimination and equal opportunity for transgender persons.
- No reservation is mandated by the Act, but targeted inclusion is encouraged.

6. Rights of Residence

- Transgender persons cannot be separated from their family, and must have the right to reside freely and participate in household life. The government must provide facilities for homeless/transgender persons in need of shelter or care.

7. Offences and Penalties

- Acts of forced removal, abuse, denial of entry, or removal from household are punishable. Penalties range from six months to two years imprisonment, and fine.

8. National Council for Transgender Persons

- The Act establishes this Council to advise, monitor, and evaluate policies, and redress grievances.

Notable Exclusions and Criticisms

- **Armed Forces Exclusion:** The Act does not apply to the armed forces.
- **Medical Requirements for Gender Change:** Requires medical certificate for change to male/female, seen as restrictive by activists.
- **No Provision for Reservation:** The Act does not mandate reservation in government jobs or education, though some states have implemented their own policies.
- The Act directs governments and states to ensure non-discrimination in recruitment and employment. It requires every establishment (including public sector) not to discriminate against transgender persons in matters relating to employment, including recruitment and promotion. However, it does not specifically mandate reservation, only non-discrimination and affirmative steps for inclusion.

- While the Act mandates non-discrimination, it does not provide reservation for transgender persons in public sector employment. Some states (e.g., West Bengal, Maharashtra) have taken steps on their own for reservation, but this is not a nationwide provision or a mandate under the central Act. The Act does specifically exclude armed forces from its purview, but reservation is not a granted right under the Act.

4. Equator Prize

Context: The Bibi Fatima Women's Self-Help Group (SHG) from Teertha village in Dharwad district of Karnataka has been selected as one of the 10 winners of the Equator Prize 2025, presented by the United Nations Development Programme (UNDP)

What is the Equator Prize?

- The Equator Prize is a prestigious international award organized by the Equator Initiative within the United Nations Development Programme (UNDP).
- It is awarded biennially (every two years) to recognize outstanding community efforts by Indigenous Peoples and local communities to reduce poverty through the conservation and sustainable use of biodiversity and nature-based solutions.

Purpose and Significance

- **Recognizes Grassroots Leadership:** Honors initiatives that combine environmental conservation, poverty reduction, and sustainable development led by local or Indigenous communities.
- **Global Platform:** Highlights solutions that are innovative, impactful, and scalable—bringing local achievements to the attention of international policymakers and media.
- **Contribution to SDGs:** Supports the achievement of multiple Sustainable Development Goals (SDGs), including climate action, biodiversity conservation, and social inclusion.

Selection Criteria

Winners are chosen by an independent Technical Advisory Committee based on:

- **Impact:** Demonstrable positive effects on environment, society, and economy (linked to SDGs).
- **Innovation and Transferability:** Novel approaches that can inspire or be replicated elsewhere.
- **Sustainability:** Lasting change achieved over at least three years.
- **Partnerships:** Engagement with NGOs, governments, research bodies, private sector.
- **Leadership and Community Empowerment:** Empowerment of local people, especially marginalized or Indigenous populations.
- **Gender Equality and Social Inclusion:** Prioritizes gender balance and includes youth, elders, and diverse groups in decision-making.

Eligibility

- Initiatives must be at least three years old.
- Must be by a local community-based group or Indigenous Peoples' organization in a rural area of a country eligible for UNDP support.
- Initiatives must deliver nature-based benefits that relate to at least two SDGs.

Eligible types:

- Community-based associations/organizations
- Community-based enterprises and cooperatives
- Women's associations or organizations

Prize and Recognition

- Each winner receives a cash prize (typically USD 10,000) to scale their work.
- Winners are invited to a high-profile award ceremony and provided with networking, training, and capacity-building opportunities.
- Initiatives are profiled internationally, influencing policy and gaining access to partnerships and funding.

Recent Developments (2025)

- The 2025 prize theme: “Nature for Climate Action,” with a special focus on youth- and women-led climate action.
- Ten winners selected from over 700 nominations across 103 countries, representing regions in Africa, Asia-Pacific, and Latin America.
- Projects highlighted for protecting/restoring critical ecosystems, building climate-resilient food systems, and promoting a just transition to green economies.

5. Talaq-e-Hasan

Context: The Supreme Court on Monday agreed to hear from November 19 a batch of petitions challenging the practice of talaq-e-hasan as unconstitutional.

What is Talaq-e-Hasan?

- Talaq-e-Hasan is a recognized form of divorce under Islamic law, specifically Sunni jurisprudence, allowing a Muslim husband to divorce his wife following a structured and deliberate procedure. Unlike “instant triple talaq” (talaq-e-biddat), which was banned in India, Talaq-e-Hasan is intended to be a gradual process that provides time for reflection and reconciliation.

Procedure

- **Pronouncements:** The husband pronounces “talaq” (divorce) once during a period of purity (tuhr), i.e., when the wife is not menstruating.
- **Waiting Period:** After the first pronouncement, there is a waiting period until her next menstrual cycle.
- **Reconciliation:** If the couple reconciles during this period, the divorce process stops, and the marriage continues.
- **Repeats:** If no reconciliation occurs, the husband repeats the pronouncement during the second tuhr and again in the third if separation is still desired.

- **Finality:** After the third pronouncement, the divorce becomes final and irrevocable.

Key Features and Distinctions

- **Revocable During Waiting Period:** The divorce is revocable before the third pronouncement. If the husband and wife resume cohabitation or intimacy during the waiting period, the divorce is revoked and the marriage continues.
- **Cooling-off and Reconciliation:** Talaq-e-Hasan is designed to provide opportunities for reconciliation, unlike the now-banned talaq-e-biddat.
- **Validity:** Approved by all schools of Sunni Muslim law and considered in line with the Prophet Muhammad’s guidance (“Sunnat”).
- **Extra-Judicial, Male-Initiated:** It does not require a court order and can only be initiated by the husband.

6. Election Process of Vice-President of India

Context: The election to the post of Vice-President of India is conducted under a constitutionally mandated process overseen by the Election Commission of India.

Election Process of Vice-President of India

Constitutional Basis

- The office of Vice-President of India is the second-highest constitutional post and is mentioned in Article 63 of the Indian Constitution.
- The election process for the Vice-President is governed by Article 66 and Article 68 of the Constitution, the Presidential and Vice-Presidential Elections Act, 1952, and the rules framed thereunder.

Electoral College

- The Vice-President is elected indirectly by an Electoral College comprising:

- All elected and nominated members of both Houses of Parliament (Rajya Sabha and Lok Sabha)
- State Legislative Assemblies do not participate in this election.
- Each Member of Parliament has equal voting power (value of vote = one).

Voting Procedure

- The election uses the system of proportional representation by means of the single transferable vote and voting is by secret ballot.
- Each member ranks candidates in order of preference. If no candidate secures the required majority of first preferences, the candidate with the lowest votes is eliminated and their votes are transferred based on second preferences. This continues until one candidate obtains more than half of the valid votes.
- The Election Commission of India supervises and conducts the election, appointing a Returning Officer (usually the Secretary-General of Lok Sabha or Rajya Sabha) and issuing the election notification.

Qualifications for Candidacy

- Must be an Indian citizen
- Must have completed 35 years of age
- Must be qualified for election as a member of the Rajya Sabha
- Must not hold any office of profit under the Government of India or any state government

Nomination Process

- Must be nominated by at least 20 proposers and 20 seconders, all members of Parliament
- Security deposit of ₹15,000 must be paid to the Reserve Bank of India

Election Schedule and Vacancy

- Election must be held before the term of the outgoing Vice-President expires (Article 68), typically announced 60 days prior to vacancy.

- In case of early vacancy (death, resignation, removal), election is held "as soon as possible" after the office goes vacant.

Declaration of Results

- The Returning Officer announces the results to the Electoral College, and the Election Commission notifies the Government for publication in the Official Gazette.
- As **per Article 66(1)** of the Constitution, the electoral college for the Vice-President's election includes all members of both Lok Sabha and Rajya Sabha, which means both elected and nominated members participate.
- This is the method prescribed by the **Constitution of India for the Vice-President's election**. It ensures that the vote of a member is based on their preference for candidates rather than a simple choice between them.
- **Article 71(1) of the Constitution explicitly** states that all doubts and disputes arising out of or in connection with the election of a **President or Vice-President** are inquired into and decided by the Supreme Court, and its decision is final.
- The rules for the election of the Vice-President, based on the **single transferable vote system, are designed to prevent a tie**. The process involves a specific quota for election, and if no candidate secures it in the first count, votes are transferred from the candidate with the lowest number of votes until one candidate achieves the quota. There is no provision for a "special majority vote" in the Rajya Sabha in the event of a tie during the election process itself.

7. Parliamentary Consultative Committees

Context: First meeting of PCC of Ministry of Ayush was held recently.

Parliamentary Consultative Committees (PCCs):

- **Constitution of PCC is one of the functions allocated to the Ministry of Parliamentary Affairs under the Government of India**

(Allocation of Business) Rules, 1961. They are created by executive resolution of the Ministry of Parliamentary Affairs.

- **Objectives:** To create awareness among the Members of Parliament about the working of Government.
 - **To promote informal consultation between the Government and the Members of Parliament on policies and programmes of the Government.**
- The Government will decide the composition of these Committees.
- **Ministry of Parliamentary Affairs forms and coordinates their working.**
- A Consultative Committee will have a Minimum membership of ten and a Maximum membership of thirty.
- The membership of Consultative Committees is voluntary.

8. Appointment of Additional High Court Judges

Context: President appointed Additional Judge to the Punjab and Haryana High Court.

Appointment of Additional High Court Judges

Constitutional Provisions

- The appointment of Additional Judges in High Courts is governed by **Article 224(1)** of the Constitution of India.
- **Article 224(1)** states that when the President of India is satisfied that the workload of a High Court has increased due to arrears of cases or temporary increase in business, the President may appoint duly qualified persons as Additional Judges.

Purpose of Appointment

- Additional Judges are appointed to **clear backlogs and manage temporary surges** in workload within a High Court without creating permanent posts.

- The **role is temporary and ad-hoc**, meant to ensure speedy justice delivery and reducing pendency of cases.

Eligibility and Qualifications

- Additional Judges must satisfy the same eligibility criteria as permanent High Court Judges:
 - Must be a citizen of India.
 - Must have held judicial office for at least ten years or must be an advocate in a High Court for at least ten years.

Tenure and Term

- The tenure of Additional Judges is limited to a maximum of two years at a time, as prescribed by **Article 224(1)**.
- They cannot hold office beyond this period unless reappointed, but there is no absolute constitutional restriction on total reappointments.
- This tenure limit differs from that of permanent Judges, **who serve until the age of 62**.

Appointment Process

- Appointment of Additional Judges is carried out by the President of India, after consultation with:
 - The Chief Justice of India,
 - The Governor of the state where the High Court is located,
 - The Chief Justice of the High Court concerned.
- The consultation process follows the same collegium recommendation principles applied for permanent appointments.

Powers and Jurisdiction

- Additional Judges have the same powers, jurisdiction, and privileges as permanent Judges during their tenure.
- There is no distinction in judicial authority, only in the tenure and basis of appointment.

- According to **Article 224** of the Indian Constitution, the President can appoint Additional Judges to a High Court to handle a temporary increase in cases or an accumulation of pending work. This provision is specifically designed to address judicial backlog.
- The same article of the Constitution explicitly limits the tenure of an Additional Judge. An Additional Judge can hold office for a maximum period of **two years**. The President does not have the authority to extend this term beyond the two-year limit.

9. Registrar General of India

Context: RGI asked States to take steps towards achieving universal registration of births and deaths.

Registrar General of India (RGI)

- The Registrar General of India (RGI) is a key government official responsible for the collection, compilation, and publication of demographic data in India.
- The office was established in 1949 under the Ministry of Home Affairs to institutionalize population data collection and civil registration systems.
- The post is held by a senior civil servant, usually of the rank of Joint Secretary or Additional Secretary.

Key Functions and Responsibilities

- The RGI is the ex-officio Census Commissioner of India, responsible for conducting the decennial Census under the Census Act, 1948.
- It oversees the planning, enumeration, tabulation, and dissemination of detailed demographic, socio-economic, and geographic data about India's population.
- Implements the Registration of Births and Deaths Act, 1969, ensuring compulsory and timely registration of births and deaths across the country.

- Manages the Civil Registration System (CRS) for vital statistics related to births, deaths, and other demographic events.
- Conducts the Sample Registration System (SRS) to estimate fertility and mortality rates and trends in the country.
- Carries out the Linguistic Survey of India, documenting the country's rich linguistic diversity.
- Facilitates the creation and updating of the National Population Register (NPR) as per the Citizenship Rules, 2003.

Organizational Structure

- The RGI is supported by the Directorate of Census Operations, which is present in every state and union territory to assist in data collection and coordination.
- Functions through coordination with state governments and other central ministries in conducting census and civil registration activities.

Importance

- The office of the RGI provides critical data for policymaking, planning, and governance at various levels of government.
- Data from the Census and civil registration informs sectors like health, education, urban planning, and social welfare programs.
- Accurate demographic data is essential for representative democracy, including allocation of constituencies and formulation of developmental policies.
- RGI functions under the **Ministry of Home Affairs (MHA)**, not MoSPI.
- RGI conducts the **Census** and manages the **Civil Registration System (CRS)**.
- The office of RGI was created in **1961 by Government of India** for the Census operations, but not under the Census Act, 1948 (that Act only provides the legal framework for Census).
- RGI has been designated as the authority to issue the **NRC**.

10. Article 311 of the Indian Constitution

Context: Jammu and Kashmir government has fired two employees for alleged terror links. The decision was taken under Article 311 (2)(c) of the Constitution.

Article 311 of the Indian Constitution:

- **Article 311 of the Indian Constitution** provides crucial job protection and procedural safeguards to civil servants under the Union and State governments, ensuring they are not dismissed, removed, or reduced in rank arbitrarily or without fair process.
- It deals with dismissal, removal, or reduction in rank of persons employed in civil capacities under the Union or State.
- Article 311 (1): Members of Civil service cannot be dismissed or removed by any authority subordinate to the appointing authority.
- Article 311 (2): No civil servant can be dismissed, removed, or demoted without an inquiry, prior notice of charges, and a fair chance to be heard.

Key Provisions

- **Authority Limit:** No civil servant (Union, State, or All India Services) can be dismissed or removed by an authority lower than the one by which they were appointed.
- **Due Process Requirement:** A civil servant must undergo an inquiry where charges are communicated and a fair opportunity to reply is provided before dismissal, removal, or reduction in rank.

Exceptions to Safeguards

There are three exceptional cases where the inquiry and opportunity requirements can be bypassed:

- **Criminal Conviction:** Dismissal due to conduct resulting in conviction on criminal charges.
- **Impracticability:** If the dismissing authority, in a written record, considers it reasonably impracticable to hold an inquiry.

- **National Security:** If the President or Governor deems it inexpedient to conduct an inquiry in the interest of state security.

Practical Impact

- **Protection Against Arbitrary Actions:** The article restricts government powers to terminate or demote civil servants without proper procedures, supporting job security and fair treatment.
- **Departmental Enquiry Process:** Normally, dismissal follows a formal charge sheet, inquiry with representation rights, and a decision based on investigative findings.
- **Right to Appeal:** Employees terminated under Article 311 may challenge their removal before administrative tribunals or courts.

Constitutional Context

- Article 311 falls under Part XIV of the Constitution, relating to services under the Union and States.
- It places statutory limits on the 'doctrine of pleasure' contained in Article 310 and aims to balance efficient administration with protection of employee rights.

Importance

- **Upholds Natural Justice:** Ensures civil servants are not removed unfairly.
- **Maintains Service Morale:** Guards against misuse of authority, fostering stability and integrity in the public service.
- Article 311(1) explicitly states that no person who is a member of a civil service of the Union or a State or holds a civil post under the Union or a State shall be dismissed or removed by an authority subordinate to that by which he was appointed.
- This safeguard exists to protect civil servants from arbitrary dismissal under the "doctrine of pleasure" (Article 310), which gives the President/Governor the power to dismiss civil servants at pleasure. Article 311 thus acts as a

limitation on that doctrine, ensuring security of tenure and fairness.

11. Census Town

Context: The upcoming Census 2027 proposes to retain the same definition of an urban area as that used during Census 2011 to ensure uniformity while comparing the urbanisation trends in the country, according to an official communication.

Census Town

- A **Census Town** in India (as defined in Census 2011) refers to a settlement that is not officially notified as a statutory urban local body (like a municipality), but exhibits urban features according to demographic and occupational criteria set by the Census of India. The 2011 Census captured a significant increase in the number of Census Towns, highlighting rapid urban expansion beyond formal municipal boundaries.

Census Town Classification Criteria (2011)

To be classified as a Census Town in 2011, a settlement had to meet all three of the following criteria:

- **Population size:** Minimum of **5,000 inhabitants**.
- **Economic activity:** At least **75% of the male main working population engaged in non-agricultural pursuits** (i.e., most working males should be employed outside farming).
- **Population density:** At least **400 persons per sq. km**.

If a place met these, but was not a municipality, corporation, etc., it was classified as a Census Town.

- Census Towns do not necessarily have elected ULBs. They are “urban” only for census purposes but remain rural in governance terms.
- The big jump (from ~1,362 in 2001 to ~3,894 in 2011) was due to rising **non-farm employment** in peri-urban/rural areas.

- Census Towns remain under **Gram Panchayats** (rural local bodies), unlike Statutory Towns.
- Article 243Q defines **Statutory Towns** (municipalities), not Census Towns. Census Town classification is based on **Census criteria** (population, density, occupational pattern), not the Constitution.

12. Forest Rights Act, 2006

Context: The UNDP report “Securing Rights, Enabling Futures – Policy Lessons from FRA and Future Pathways” reviewed nearly 20 years of Forest Rights Act (FRA) implementation.

Forest Rights Act, 2006

- The **Forest Rights Act, 2006** (Scheduled Tribes and Other Traditional Forest Dwellers [Recognition of Forest Rights] Act) is a landmark legislation enacted by the Government of India to empower forest-dwelling tribal communities and other traditional forest dwellers by legally recognizing their rights to land and resources in forest areas.

Objectives

- **Address Historical Injustice:** The act aims to undo the historical injustices caused by colonial and post-colonial forest policies, which excluded forest dwellers from accessing and managing forest resources.
- **Empowerment and Livelihood Security:** It ensures land tenure, socio-cultural rights, and livelihood security.

Key Provisions

Categories of Rights Recognized

1. Title Rights:

- Legal ownership of land cultivated by forest dwellers (up to 4 hectares), but only land actually under cultivation as of December 13, 2005.

2. Use Rights:

- Access to minor forest produce, grazing grounds, water bodies, and seasonal resources for use.

3. Relief and Development Rights:

- Right to rehabilitation for those illegally evicted, and access to basic amenities like health and education, subject to forest protection norms.

4. Forest Management Rights:

- Community rights to protect, conserve, regenerate, or manage forests for sustainable use.

Who Can Claim Rights?

- **Forest Dwelling Scheduled Tribes (FDST)**
- **Other Traditional Forest Dwellers (OTFD) residing in forests for at least 75 years prior to December 13, 2005.**

Implementation Process

- **Gram Sabha's Role:** The Gram Sabha (village assembly) starts the process by identifying, verifying, and recommending eligible individuals and communities for forest rights.
- **Screening and Appeals:** Claims are screened by committees at sub-divisional and district levels. Final decisions rest with the district-level committee, with provisions for appeal.
- **Protection Against Eviction:** Recognized rights protect dwellers from unlawful eviction.

Significance

- **Legal Empowerment:** Recognizes and legalizes the customary rights of forest dwellers, making

them stakeholders in forest management and conservation.

- **Conservation Role:** Empowers Forest communities to take responsibility for protecting biodiversity, wildlife, and ecological balance.
- **Participatory Governance:** Gram Sabha is a highly empowered body, with a decisive role in determining local policies and schemes impacting forest dwellers.
- FRA gives **Gram Sabhas** the authority to protect and conserve forests, wildlife, biodiversity, and ensure sustainable use of community forest resources.
- FRA does **not transfer ownership of all forest land** to local communities; it recognizes and vests certain rights (IFR & CFR) in forest-dwelling communities while keeping the forest land under government ownership. Its purpose is **to correct historical injustice.**



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ECONOMY

1. India VIX

Context: The National Stock Exchange is considering relaunching India VIX futures contracts, aiming to align with developed markets.

VIX Futures in the Indian Market:

- India has its own volatility index—the India VIX—and a corresponding futures market for “Volatility Index Futures,” based largely on the NIFTY benchmark.

What Is India VIX?

- India VIX stands for “India Volatility Index.” It measures expected market volatility over the next 30 calendar days, derived from NIFTY 50 index option prices traded on the National Stock Exchange (NSE).
- Like its U.S. counterpart (CBOE VIX), it reflects investor sentiment—high readings mean high expected market volatility; low readings signal calm/stability.
- Calculation is based on a modified methodology adopted from CBOE, using best bid-ask quotes from near- and next-month NIFTY option contracts—especially out-of-the-money strikes, as these are most sensitive to volatility.

India VIX Futures: How They Work

- Launched in 2014, India VIX futures are traded exclusively on the NSE and allow market participants to hedge or speculate on future volatility.
- Contract Specs:
 - Underlying: India VIX Index (annualized volatility %)
 - Settlement: Cash-settled, linked to closing value of India VIX on expiry day (average of index values in last 30 minutes of trading).
 - Expiry: Weekly contracts, expiring every Tuesday; three weekly contracts are live at any time, with new ones added after expiry.

- Lot size: Minimum 750 units per contract. Tick size is 0.25, so each tick moves contract value by ₹150 at launch (subject to change).
- Example of Pricing: If India VIX futures are quoted at 18.15, the price will be ₹1,815 (futures price × 100).
- Trading Strategies:
 - Hedging: Protect portfolios against sudden market drops or increased volatility.
 - Speculation: Bet on future increases/decreases in expected volatility.
 - Vega Trading: For options writers/advanced traders.

Applicability for Indian Market Participants

- Direct investment in the India VIX index is not possible—it is a statistical measure, not a tradable security. But India VIX futures give exposure to anticipated market uncertainty.
- These products are best suited for advanced/experienced investors, as they are complex, volatile, and mostly used for risk management or specialized trading strategies.
- India VIX is non-directional—it only gauges volatility, not market movement up or down.

Comparison: India VIX vs Global VIX

- India VIX is modelled on the U.S. VIX (CBOE), but calculated from NIFTY options rather than S&P 500 options.
- Both serve as “fear gauges” for their respective equity markets and underpin futures contracts for volatility trading.
- The India VIX (Volatility Index) is a measure of expected volatility, not a directional indicator of the market. Its value typically increases when there's a higher expectation of market volatility, which often happens during periods of market uncertainty and downward movements in indices like the NIFTY 50. Therefore, buying India VIX futures is a way to gain from a **rise in**

volatility, not specifically from large upward movements in the NIFTY 50.

- The India VIX is a volatility index based on the NIFTY 50 index option prices. It reflects the market's expectation of volatility over the **next 30 calendar days**. It's often referred to as a "fear gauge" because it tends to rise when investors anticipate greater market swings and uncertainty.

2. Rural Economic Conditions and Sentiments Survey (RECSS) 2025

Context: In a clear sign of rural economic momentum, 76.6 per cent of rural households reported an increase in consumption, marking a sustained trajectory of consumption-led growth, according to Nabard survey.

Rural Economic Conditions and Sentiments Survey (RECSS) 2025:

- The Rural Economic Conditions and Sentiments Survey (RECSS) 2025 is a national survey led by NABARD, providing critical insights into the economic health, financial inclusion, consumption patterns, and future expectations of rural Indian households. The July 2025 round highlights strong optimism and sustained economic improvement across rural India.

What is RECSS?

- The Rural Economic Conditions and Sentiments Survey is a periodic panel-based survey conducted by NABARD. It covers both quantitative data (actual economic changes: income, consumption, savings, borrowing) and qualitative sentiment data (expectations about future economic prospects) among rural households.
- The survey's main purpose is to track ground-level economic changes and sentiment shifts, supporting evidence-based policymaking and evaluating the impact of government schemes on rural prosperity.

Key Findings

- **Consumption Growth:**
 - 76.6% of rural households reported increased consumption during the last year, the highest share across all survey rounds.
 - Only 3.2% experienced a decline in consumption, showing robust demand-led rural growth.
- **Income Trends:**
 - 39.6% of households saw a rise in income last year.
 - For the year ahead, 74.7% expect higher incomes, with optimism driven by good monsoons, improved agricultural output, and government interventions.
- **Employment & Sentiment:**
 - Over 56% of respondents anticipate better job prospects in the near term, reflecting growing confidence in rural employment opportunities.
- **Savings & Borrowings:**
 - 20.6% reported increased household savings.
 - Financial inclusion is expanding: 52.6% sourced loans solely from formal institutions.
 - Borrowing patterns remain stable, with rising access to institutional credit.
- **Inflation Perceptions:**
 - Inflation concerns have eased notably, with 78.4% perceiving current inflation to be at or below 5%.
 - The mean value of inflation perception in July 2025 was 5.8%.
- **Household Distribution (Income growth, May 2025):**
 - 40.5%: Income increased by 5-10%
 - 21.9%: Up to 5% increase
 - 15.6%: 10-15% growth
 - 12%: 15-20% gains
 - 10%: Over 20% increase
 - Mean increase: 12.9%; Median: 10%

Methodology & Coverage

- Surveys covered thousands of households across hundreds of villages, with representative

samples to ensure inclusivity of regional and socio-economic diversity.

- The questionnaire collects both retrospective economic data and prospective sentiment data:
 - Retrospective: Household income, expenditure, saving, investment, borrowings over the last year.
 - Prospective: Expectations for income, employment, spending, and inflation over the next 6–12 months.

Policy & Practical Relevance

- RECSS serves as a real-time barometer of rural economic health, helping policymakers, banks, and development agencies plan welfare, credit, and infrastructure interventions.
- Positive outlook in 2025 is closely linked to improved government support—especially in roads, education, water, and direct income support schemes.
- The survey demonstrates the centrality of consumption and income growth in driving rural prosperity and underlines growing financial resilience and formal sector integration in the rural economy.
- In the July 2025 RECSS round, **76.6% of rural households reported an increase in consumption** over the past year, marking sustained consumption-led growth
- In fact, **52.6% of households sourced loans exclusively from formal institutions**, not informal ones.
- Households are optimistic—**74.7% expect their incomes to increase** over the next year.

3. Bond Switching

Context: The government has benefited from elongation of the debt maturity profile and savings on interest outgo through bond switches and conversions. In switches, bonds maturing in the near term are replaced with long-term papers. The interest cost advantage for the government because of the bond switches was ₹560 crore so far in this

fiscal, compared with ₹54 crore in the same period a year ago, shows a study by Bank of Baroda.

Bond Switching

Definition

- Bond switching is a transaction in which an investor or a government exchanges an existing series of bonds (source bonds) for a new series (destination bonds). These exchanges are often between bonds with different maturities, coupon rates, or other features.

Mechanism

- Governments may use bond switching to extend the maturity of debt, manage redemption pressures, or reduce interest costs.
- Investors might switch bonds in their portfolios to take advantage of changes in interest rates, lock in higher yields, or optimize credit/risk profiles.

Benefits

- For Governments: Spreads out repayments, reduces immediate outflow, and smoothens debt maturity profiles.
- For Investors: Flexibility to manage portfolios and align with investment goals, potentially securing better yields or managing risk.

Risks

- Market demand and current interest rates influence the attractiveness of switching.
- Investors might be reluctant to exchange short-term for long-term holdings when rates rise.

Example

- The Indian government has recently used bond switching to save on interest costs by exchanging short-term bonds for longer-term securities.
- This is a classic example of bond switching. The government is exchanging short-term debt for long-term debt to extend the maturity of its obligations and reduce the immediate repayment pressure. This process is also known as "maturity extension."

- This practice is called **Operation Twist**. It is a monetary policy tool used by a central bank (like the RBI) to influence the yield curve. While it involves buying and selling government securities, it's a market operation aimed at managing interest rates and liquidity, not a direct debt management practice of the government to restructure its debt.
- This is another perfect example of bond switching. The government is aiming to enhance the liquidity of its debt by consolidating old, less-traded bonds into new, highly liquid "benchmark" securities. This makes the government bond market more efficient for investors.

4. RBI's Weighted Average Call Rate

Context: The Reserve Bank of India's (RBI) internal working group reviewing the liquidity management framework (LMF) has recommended retaining the overnight Weighted Average Call Rate (WACR) as the operating target and phasing out the 14-day variable rate repo and variable rate reverse repo auctions (VRR/VRRR) as the primary liquidity management operation.

RBI's Weighted Average Call Rate (WACR)

What is WACR?

- The Weighted Average Call Rate (WACR) is the average interest rate at which Indian banks borrow and lend funds to each other on an unsecured basis in the overnight (one day) interbank money market, weighted by the volume of each transaction.

Key Features

- **Overnight Market:** WACR is based solely on one-day (overnight) transactions.
- **Unsecured Loans:** These are not backed by collateral, reflecting true short-term credit risk.
- **Volume-weighted:** The interest rate is not a simple average but gives higher weight to larger trades.

Role in Monetary Policy

- **Operating Target:** The WACR is explicitly chosen as the Reserve Bank of India's (RBI's) main operating target of monetary policy.
- **Monetary Policy Transmission:** By keeping the WACR close to the policy repo rate, the RBI ensures that changes in its policy stance are reflected in short-term market rates, facilitating broader transmission to the banking system and economy.

How it Works

- **Repo Rate Alignment:** The RBI conducts liquidity management through repo and reverse repo operations. Its goal is to keep the WACR closely aligned with the repo rate:
 - If the WACR falls below the repo rate, it may signal excess liquidity.
 - If it rises above the repo rate, it may reflect tight liquidity conditions.
- **Liquidity Management Tools:** The RBI uses various tools, including variable-rate repo and reverse repo auctions, and the Cash Reserve Ratio (CRR), to influence the WACR and market liquidity.

Importance

- **Signal of Liquidity and Sentiment:** The WACR reflects short-term liquidity conditions in the banking system and is a benchmark for the cost of overnight funds.
- **Systemic Indicator:** It is best reflective of marginal systemic mismatches in liquidity, acting as a barometer for immediate banking system stress or surplus.
- **Critical Benchmark:** Many other short-term rates, government debt pricing, and financial product rates are influenced by WACR.

Note: When the Weighted Average Call Rate (WACR) is consistently above the repo rate, it indicates a liquidity deficit in the banking system. Banks are facing a shortage of funds and are therefore willing to pay a higher interest rate (above the repo rate) to borrow from each other in the overnight money

market. To bring the WACR down towards the repo rate, the Reserve Bank of India (RBI) needs to inject liquidity into the system. Here, conducting liquidity infusion through variable rate repo auctions is the most appropriate action. The RBI provides funds to banks through repo auctions, which increases the supply of money and reduces the cost of borrowing in the interbank market, thereby pushing the WACR down.

5. Co-lending

Context: Recently, RBI issued revised directions for Co-lending Arrangements (CLA) between banks and Non-bank Financial Companies (NBFCs) under various provisions of the Banking Regulation Act (1949), Reserve Bank of India Act (1934), and National Housing Bank Act (1987).

What is Co-lending?

- Under CLAs, Regulated Entities (REs) can enter into a lending arrangement with other REs for extension of credit to the borrowers, subject to compliance with the extant prudential regulations.

Key highlights of the Revised Directions

- Minimum share:** Each RE to retain a minimum 10% share of the loans.
- Priority Sector Lending (PSL) status:** Each lender can claim PSL status for its share under co-lending, if the loan qualifies as priority sector.
- Uniform asset classification system:** If one lender tags a loan as Non-performing Asset (NPA), other co-lenders must do the same.
- Blended interest rate:** Interest rate charged to borrowers will be calculated based on the weighted average of each RE's internal rate, proportionate to their funding contribution.

Significance of Co-lending

- For banks:** Increased penetration in the remote regions due to NBFC's last mile connectivity, enhanced compliance with PSL targets, etc.

- For NBFCs:** Shared credit risk, enhanced access to cheaper capital, etc.
- For Consumers:** Access to cheaper credit due to competitive interest rates, better customization as NBFCs often offer flexible loan structures suited to local market realities, etc.
- In 2020, the RBI introduced the Co-lending Model (CLM), which allows banks and NBFCs to co-lend to the priority sector. The primary objective is to enhance credit flow to underserved sectors by combining the low-cost funds of banks with the wider reach and expertise of NBFCs, particularly in local or niche markets. This helps in more efficient credit delivery, especially in rural and semi-urban areas.
- Under the co-lending model, the bank is mandated to take a **minimum of 20% of the loan on its books**, with the NBFC taking the remaining 80%. This is the core of the arrangement—both entities share the credit risk and rewards, and the bank is not a mere agent. The loan is disbursed by both entities, and the loan recovery process is typically handled jointly or as per the agreed-upon terms, with the bank having a significant stake in the loan. The idea is that banks benefit from the NBFC's origination and collection capabilities, while NBFCs get access to cheaper funding.

6. Ad Valorem Duty

Context: USA will impose additional 25 percent ad valorem duty above the 25 per cent reciprocal tariffs on India.

Ad Valorem Duty

Definition

- Ad valorem duty is a type of import/export tax or tariff levied as a **percentage of the value of goods or property**, rather than based on quantity, weight, or volume. The term "ad valorem" is Latin for "according to value."

Key Features

- **Value-Based:** The duty is calculated as a percentage of the assessed value of the item or transaction, not a fixed amount per unit.
- **Common in Trade:** Frequently used in customs duties, property taxes, and sales taxes.
- **Dynamic:** The actual tax paid changes with the value of the item; higher-value goods pay more duty, while lower-value goods pay less.

How It Works

- **Valuation:** The value of the goods (often based on market price, invoice value, or customs appraisal) is determined.
- **Application of Rate:** A pre-specified percentage (e.g., 10%, 20%) is applied to this value.
 - **Example:** If a 15% ad valorem duty is levied on an imported machine worth \$10,000, the duty payable is \$1,500.
- **Payment:** The importer/exporter pays the duty as part of the transaction or customs clearance process.

Examples

- **Customs/Import Duties:** A 20% ad valorem duty on imported watches means an extra \$200 tax is paid on a \$1,000 watch.
- **Property Taxes:** Local governments levy property tax as a percentage of property value.
- **Sales Tax/VAT:** Charged as a percentage on the sale value of goods or services.
- **Automobiles:** Imported cars may attract a 10% ad valorem duty based on their invoice value.

7. CSR Spending Imbalance

Context: A new Developmental Intelligence Unit (DIU) report has revealed that 60% of India's CSR spending in 2022–23 was concentrated in six states, while Aspirational Districts received less than 20%.

About CSR Spending Imbalance:

- **What it is?**
 - Corporate Social Responsibility (CSR) is a statutory mandate under Section 135 of the Companies Act, 2013, requiring eligible companies to spend at least 2% of their average net profits (over the preceding three years) on social development activities.
- **Trends (2022–23)**
 - **Total CSR Expenditure** – ₹29,989.92 crore, showing **12.8% growth** from the previous year.
 - **Geographical Concentration** – Maharashtra, Tamil Nadu, Karnataka, Andhra Pradesh, Delhi, and Gujarat together received **~60% of CSR funds**.
 - **Neglected Regions** – Aspirational Districts in Jharkhand, Chhattisgarh, Bihar, Odisha, Madhya Pradesh, and the Northeast got **less than 20%**.
 - **Challenges Identified** – Misinterpretation of “local area preference”, duplication of government schemes, lack of impact-based metrics, and low community participation.

Development Intelligence Unit (DIU)**What is DIU?**

- The Development Intelligence Unit (DIU) is an innovative data and analytics organization in India, dedicated to harnessing public, private, and civil sector partnerships to drive rural development through actionable, evidence-based insights. DIU functions as a clearing-house and analytical hub, delivering high-quality, user-friendly data for public policy, advocacy, and program implementation.

Origins and Partnership

- **Founded:** 2023
- **Joint Initiative:** Transform Rural India Foundation (TRI) and Sambodhi Research & Communications Pvt Ltd.
- **Goal:** To address the paucity of reliable, quality rural data in India and to inform effective development interventions.

Mission and Objectives

- **Data for Development:** Democratize rural data and empower stakeholders for better policy and program decisions.
- **Public Good:** Embrace the philosophy “public data for public good,” enabling data-driven advocacy, positioning, and informing for rural growth.
- **Bridge Gaps:** Reduce opacity around rural issues, bridge urban-rural divides, and invigorate the public narrative about rural change and challenges.

Key Activities & Offerings

- **Data Infrastructure:** Building comprehensive systems to collect, process, and disseminate rural development metrics and indicators.
- **Flagship Reports:** Authoring, designing, and revamping major Ministry of Rural Development publications to make them more relevant and accessible.
- **Large-scale Surveys:** Conducting the world’s largest rural surveys, covering 660,000+ villages, in partnership with the Ministry of Rural Development.
- **Rural QOL Index:** Development of the “Rural Quality-of-Life Index” – a holistic scorecard for rural well-being that covers core pillars and a wide range of indicators.
- **Analytics for Flagship Schemes:** Supporting programs like Sansad Adarsh Gram Yojana (SAGY) with infrastructure gap analysis, budget allocation estimation, etc.
- **Data for Policy Fellowship:** Placement of early-career professionals in public offices to work on data science and policy interface.
- **Capacity Building:** Empowering public, private, and civil society clients with real-time, actionable rural data.

8. Special Rupee Vostro Accounts

Context: RBI removes prior approval requirements for banks to open SRVAs, speeding up rupee-based trade settlements and supporting the internationalisation of the Indian Rupee.

What are Special Rupee Vostro Accounts?

- Special Rupee Vostro Accounts (SRVAs) are designated accounts maintained by Indian banks on behalf of foreign banks to facilitate trade settlements in Indian Rupees (INR). These accounts are part of India's strategic initiative to promote the international use of the Indian Rupee, particularly for trade with countries facing foreign exchange restrictions or challenges with conventional currency conversions.

Key Features and Mechanism

- **Bank-to-bank arrangement:** The SRVA functions similarly to traditional correspondent banking but specifically supports trade in INR.
- **Operation:**
 - The foreign bank opens an SRVA with an Indian bank (Authorized Dealer branch) with RBI approval.
 - This account is used to receive or deposit INR funds related to export or import transactions between India and the foreign country.
 - Indian importers pay in INR to the SRVA, and Indian exporters receive payment from it, eliminating the need for currency conversion through third currencies like the US Dollar.
- **Regulatory Framework:**
 - Governed by the Reserve Bank of India (RBI) guidelines and Foreign Exchange Management Act (FEMA), 1999.
 - These accounts are strictly for trade-related transactions and prohibit speculative or illicit financial activities.

Benefits of SRVA

- **Cost Reduction:** Minimizes transaction and exchange rate conversion costs.
- **Currency Stability:** Provides more stable trade settlement by reducing exposure to foreign exchange volatility.

- **Trade with Sanctioned or Restricted Countries:** Facilitates trade even with nations facing global currency restrictions through direct rupee settlements.
- **Increased INR Use Globally:** Expands the international footprint of the Indian Rupee, enhancing India's global financial stature.
- **Liquidity Optimization:** Adds liquidity for foreign entities holding INR balances, which can be used per FEMA-approved transactions like trade, External Commercial Borrowings, or investments in government securities.

Important Operational Details

- Multiple SRVAs may be opened by foreign correspondent banks with different Indian banks.
- Balances in these accounts can be repatriated in freely convertible currencies or the currency of the trading partner, depending on the underlying transaction.
- Exchange rates for currency conversion are market-determined, possibly using cross rates when direct currency pairs are unavailable.
- The RBI regularly updates operational guidelines to ease the process and encourage adoption.
- Indian exporters can receive payment in INR via SRVA instead of foreign currency → key purpose of Vostro Rupee Accounts.
- If payment is done in **US Dollars via SWIFT**, Vostro Rupee Account is not used.
- A foreign bank (like Sri Lanka's) can maintain rupee balances with an Indian bank to settle trade in INR.
- Service payments for outsourcing to US in rupees via Vostro is not a practical use case (as the US firm prefers USD settlements, not INR).

9. Smart Money

Context: While Indian investors are confident of the country's long-term growth, foreign investors have reduced their exposure since January 2025: AMFI

What is Smart Money?

- Smart money refers to capital invested or wagered by individuals, institutions, or entities believed to have expert knowledge, superior information, or significant experience in financial markets. The term originated in gambling, describing bets made by seasoned gamblers who had insider knowledge or a history of success, and later evolved to characterize the investments of market professionals and institutional investors.

Key Features

- **Institutional Influence:** Smart money is most often associated with the actions of institutional investors—such as hedge funds, mutual funds, pension funds, central banks, and market “mavens.” These entities invest on a large scale and have access to comprehensive data and advanced analytical tools.
- **Informed Decisions:** It is believed that smart money is placed by those “in the know,” who can analyze trends, anticipate market moves, and act strategically based on superior market understanding or privileged information.
- **Market Impact:** Flows of smart money can move markets, often setting trends that retail investors may follow. High-volume trades, unusual price movements without public news, or significant insider buying/selling are often read as signs of smart money at work.

How to Track Smart Money

- **Trading Volume Spikes:** Unexpected high volume can indicate institutional activity.
- **Insider Trading Reports:** Significant buys/sells by company executives.
- **Commitments of Traders Reports (COT):** Shows positions of commercial and non-commercial traders.
- **Smart Money Index (SMI):** Measures market movements at opening and closing, based on the assumption that professional moves mainly occur at the close.

Why Does Smart Money Matter?

- **Strategic Advantage:** Understanding or identifying smart money movements can provide individual investors with valuable clues about potential market directions.
- **Market Sentiment:** Smart money typically anticipates trends, helping to inform broader market sentiment.

Examples:

- **VCs & PE funds:** considered smart money.
- **Institutional funds like hedge/mutual funds:** considered smart money
- **Sovereign wealth funds:** highly informed institutional capital.

While,

- **Insider trading:** is illegal; cannot be considered smart money.
- **Retail investors in penny stocks:** generally speculative, not smart money.

10. Push and Pull Transactions

Context: National Payments Corporation of India (NPCI) could shut down 'pull transactions' in the future to curb frauds. Currently, NPCI's Unified Payments Interface (UPI) allows both 'push' and 'pull' transactions.

What are Push and Pull Transactions?

- Push and pull transactions describe two fundamental ways in which payments or transfers are initiated and processed between parties, common in banking and payment systems.

Push Transactions

- **Definition:** In a push transaction, the payer (or sender) initiates the payment by "pushing" the money to the payee (receiver).
- **Control:** The payer controls the timing and amount of the payment.
- **Examples:**
 - Person-to-person bank transfers

- Wire transfers where the sender instructs their bank to send money
- Credit card payments where the cardholder authorizes a payment at the merchant's terminal

- **Process:** The payer's bank debits the sender's account and sends funds to the payee's account as instructed.

Pull Transactions

- **Definition:** In a pull transaction, the payee (or recipient) initiates the payment process by "pulling" money from the payer's account with prior authorization.
- **Control:** The payee controls the collection of funds as per the agreed schedule or contract.
- **Examples:**
 - Direct debits (automatic bill payments)
 - Subscription fee collections
 - Check payments, where the recipient deposits the check and the amount is pulled from the payer's account
- **Process:** The payee's bank requests the payer's bank to transfer funds, which debits the payer and credits the payee.

11. Sovereign Credit Rating

Context: S&P Global Ratings has upgraded India's long-term sovereign credit rating to 'BBB' from 'BBB-', with a stable outlook, citing robust economic growth, effective monetary policy, and the government's sustained focus on fiscal consolidation. The short-term rating has also been raised to 'A-2' from 'A-3'.

What is Sovereign Credit Rating?

- A sovereign credit rating assesses a country's creditworthiness and ability to repay its debts. It is evaluated by major rating agencies such as Standard & Poor's (S&P), Moody's, and Fitch. These ratings influence investor confidence,

borrowing costs for governments, and the overall economic environment.

Recent Upgrade of India's Sovereign Credit Rating

- In August 2025, S&P upgraded India's sovereign credit rating from BBB- (lowest investment grade) to BBB with a stable outlook.
- This upgrade was based on India's improving macroeconomic fundamentals, stable growth prospects, fiscal reforms, and increasing foreign investment inflows.

Positive Impacts of the Rating Upgrade

- 1. Lower Borrowing Costs for Government:**
 - Improved rating reduces risk perception, helping the government borrow at lower interest rates on international and domestic debt markets.
 - This lowers the cost of funding fiscal deficits and infrastructure investments.
- 2. Cheaper Finance for Businesses:**
 - Corporate borrowing rates tend to follow sovereign yields.
 - An upgrade helps Indian companies access capital markets with better credit spreads, reducing interest costs and enhancing profitability.
- 3. Boost to Foreign Investment:**
 - Higher credit rating attracts more foreign direct investment (FDI) and portfolio flows.
 - Inflows strengthen financial markets, increase liquidity, and contribute to economic growth.
- 4. Currency Strengthening:**
 - Positive investor sentiment leads to increased capital inflows, causing appreciation of the Indian Rupee.
 - A stronger rupee may lower import costs, reducing inflationary pressures.
- 5. Improved Global Perception:**
 - Enhances India's standing in international financial markets and negotiations.
 - Supports broader goals of economic reforms and integration with global trade and investment.

Challenges and Considerations

- **Export Competitiveness:**
 - Rupee appreciation can make Indian exports more expensive, potentially impacting export volumes negatively.
- **Structural Reforms Needed:**
 - Sustained benefits from upgrades depend on continued reforms in fiscal discipline, governance, and ease of doing business.
- **Market Expectations:**
 - Upgrades can raise expectations for policy measures; failure to meet them may lead to market volatility.
- An upgrade in India's sovereign credit rating signals lower country risk. This typically leads to a decrease in interest rates on foreign loans for Indian businesses and makes the country a more attractive destination for foreign direct investment (FDI). Lower borrowing costs and increased capital inflows generally improve the financial health and profitability of Indian businesses.
- A credit rating upgrade increases foreign investor confidence, leading to a surge in foreign portfolio investment (FPI). To invest in Indian assets, these investors must first purchase rupees, which drives up demand for the currency and causes it to appreciate against other currencies. A stronger rupee makes Indian exports more expensive for foreign buyers, which can reduce the price competitiveness of Indian goods in the global market.

12. RBI's Repo Rate

Context: Yield on the benchmark sovereign bonds has increased significantly.

RBI's Repo Rate: Meaning and Impact on Bond Market

What is the Repo Rate?

- **Definition:** The repo rate is the interest rate at which the Reserve Bank of India (RBI) lends

money to commercial banks against government securities for short-term needs.

- **Purpose:** It is a primary monetary policy tool to regulate liquidity, control inflation, and influence overall economic activity. When the repo rate is raised, borrowing from RBI becomes costlier, reducing liquidity and curbing inflation; when lowered, liquidity rises and borrowing is encouraged.
- **Current Level:** As of August 2025, the RBI repo rate is 5.50%, after a recent 50 basis point cut from the prior 6%, motivated by lower inflation readings and supported by other liquidity measures.

Impact of Repo Rate Changes on the Bond Market

1. Bond Prices and Yields

- There is an inverse relationship between interest rates (repo rate) and bond prices: When the repo rate decreases, existing bond prices rise; when the repo rate increases, bond prices fall.
- Lower repo rates make new bonds less attractive (as they offer lower yields compared to existing bonds), so demand shifts toward previously issued bonds, raising their prices.

2. Yield Curve Shifts

- A repo rate cut typically results in lower yields across government bonds (like India's 10-year benchmark), making borrowing cheaper and stimulating demand for credit and investment.
- Rate increases have the opposite effect: Bond yields rise, new debt becomes more expensive, and often investors demand even higher yields to compensate for expected future inflation.

3. Corporate Bond and Credit Spreads

- Repo rate movements ripple through to the corporate bond market: A rising repo rate increases yields and widens credit spreads, especially for lower-rated bonds; a falling repo rate narrows spreads and lowers company borrowing costs.

- Cheaper borrowing from commercial banks during low repo periods may push more corporates to issue bonds, boosting market volume.

4. Foreign Investment Flows

- Higher repo rates can attract foreign investments seeking yield, supporting the rupee and bond inflows; lower rates may reduce attractiveness, leading investors to seek higher yields elsewhere.
- When interest rates rise, existing bonds with lower coupon rates become less attractive, so their market price falls.
- Since $\text{yield} = (\text{coupon payment} \div \text{bond price})$, falling bond prices make **bond yields rise**.
- Existing long-term bondholders do not gain; they actually lose (capital loss) because they are locked into lower coupon payments compared to new high-yield bonds.

13. Integrated Food Security Phase Classification

Context: IPC has confirmed Famine in Gaza. More than half a million people in Gaza are trapped in famine, marked by widespread starvation, destitution and preventable death.

Integrated Food Security Phase Classification (IPC)

- The **Integrated Food Security Phase Classification (IPC)** is a comprehensive, standardized system used to classify and communicate the severity and magnitude of food insecurity and malnutrition globally. It provides a common language and framework for governments, humanitarian organizations, and other stakeholders to understand, compare, and respond to food crises.

What is IPC?

- **Global Standard:** IPC is recognized internationally for measuring the intensity of food insecurity, ensuring comparability across regions and over time.

- **Multi-agency Collaboration:** Developed by FAO and partners, IPC incorporates input from major humanitarian organizations and regional bodies.

Purpose and Benefits

- **Technical Consensus:** IPC fosters agreement among experts by consolidating evidence from various sources into a single statement.
- **Strategic Decision-Making:** Decision-makers use IPC results to prioritize response actions, allocate resources, and design effective interventions.
- **Quality Assurance:** Its protocols ensure that analysis is rigorous, neutral, and backed by scientific evidence.

How It Works

- Analysts gather data about food consumption, livelihoods, malnutrition, and mortality. The IPC then uses a “convergence of evidence” approach to classify situations into phases based on set thresholds.

IPC Phases

Phase	Description	Crude Death Rate (per 10,000 people/day)	Household Proportion
1	Generally, Food Secure	< 0.5	>80% meet basic needs
2	Borderline Food Insecure	< 0.5	≥20% have reduced but minimally adequate consumption
3	Acute Food and Livelihood Crisis	0.5-0.99	≥20% face food gaps/serious coping
4	Humanitarian Emergency	1-1.99	≥20% face extreme gaps/high malnutrition
5	Famine/Humanitarian Catastrophe	>2	≥20% face complete lack of food, with evident starvation/death

Application

- **Area-level and Household Classification:** At least 20% of an area’s population must fit a phase’s description for that area to be classified at that phase.
- **Maps and Tables:** IPC generates clear visual tools (maps, tables) for rapid communication to stakeholders and planners.

Importance

- **Prevention and Response:** IPC criteria can trigger early warnings and ensure timely mobilization to avert famine conditions.
- **Consistency:** By standardizing food security reporting, IPC enables direct comparison and transparent reporting across crises.
- IPC has two key strands: **Acute Food Insecurity** (short-term shocks) and **Chronic Food Insecurity** (long-term structural drivers).
- The UN Security Council has referenced IPC analyses (e.g., in Somalia, Yemen, South Sudan) while discussing famine risk.
- The Famine Review Committee (FRC) is an independent group of food security/nutrition experts that validates famine declarations.
- In IPC scale:
 - Phase 1 → Minimal
 - Phase 2 → Stressed
 - Phase 3 → Crisis
 - Phase 4 → Emergency
 - Phase 5 → Famine/Catastrophe.

14. Ponzi scheme

Context: IIT graduate was arrested in Bengaluru for running a ₹65-crore Ponzi scheme through a fake firm.

Ponzi scheme

- It is a type of investment fraud where returns to earlier investors are paid using funds from new investors, rather than from legitimate profits.
- It is named after **Charles Ponzi**.
 - In the 1920s, Charles Ponzi promised 50% returns in a few months through investments

in international mail coupons, but he actually used money from new investors to pay earlier ones.

- It promises high returns with little risk but uses new investors' money to pay earlier ones.
 - Lacking real profits, they collapse when new investments slow or many investors withdraw funds.
- The description explicitly states the company offers a "guaranteed 30% monthly return," which is an unusually high and consistent return that is promised with no mention of risk. This characteristic is **evident**.
- The description directly states that "early investors were being paid from the money collected from new investors rather than from actual profits." This is the quintessential definition of a Ponzi scheme and is **evident**.
- The company **claims** to use "advanced algorithmic trading" to generate profits, but the regulators' examination finds this to be false. The payouts are not coming from genuine profits. Therefore, the absence of a genuine underlying business is a key feature of the scheme, but the presence of one is not, making this characteristic **not evident** in the described fraudulent activity.
- This is a natural consequence of a Ponzi scheme's structure. Since the payouts depend on a continuous influx of new money, the scheme is inherently unsustainable and will collapse once the recruitment of new investors slows down. While not explicitly stated as having already happened, this is an **inherent characteristic** of the described activity and is implied by the fraudulent structure.

15. World Food Programme

Context: The Government of India and the World Food Programme (WFP) signed a Letter of Intent (LoI) to collaborate in addressing global hunger. India will provide WFP fortified rice to support nutritional needs of vulnerable populations in food-insecure regions.

About World Food Programme

- The World Food Programme (WFP) is the world's largest humanitarian organization, established in 1961 by the Food and Agriculture Organization (FAO) and the UN General Assembly.
- **Headquarters:** Rome, Italy.
- **Executive Board:** The Executive Board is WFP's supreme governing body.
 - It consists of **36 Member States** and provides intergovernmental support, direction and supervision of activities.
- **WFP is headed by an Executive Director**, appointed for fixed **five-year terms** and is responsible for the administration of WFP as well as the implementation of its programmes, projects and other activities.
- The WFP operates in over **120 countries and territories**, relying on voluntary contributions from governments, organizations, and individuals to fund its work.
 - The first development programme was launched in **Sudan in 1963**.
 - **WFP was awarded the Nobel Peace Prize in 2020**.

16. Purchasing Power Parity

Context: According to EY study, India is projected to emerge as the world's second-largest economy in purchasing power parity.

Purchasing Power Parity (PPP):

What is Purchasing Power Parity (PPP)?

- Purchasing Power Parity (PPP) is an **economic theory and measurement tool** used to compare the relative value of currencies across countries by taking into account the cost of a representative "basket of goods and services." PPP calculates the exchange rate at which one currency would need to be converted into another so that the same basket of goods or services can be purchased in both countries, thus equalizing their purchasing power.

Key Concepts

- **Law of One Price:** PPP is based on the principle that in the absence of transportation costs and trade barriers, identical goods should have the same price globally when priced in a common currency.
- **Absolute PPP:** States that exchange rates between two countries should equal the ratio of price levels of a fixed basket of goods and services.
- **Relative PPP:** Accounts for changes in price levels (inflation) over time and indicates how exchange rates adjust relative to inflation differences.
- **Basket of Goods:** Includes various consumer goods, services, equipment, and construction projects, aiming to represent the typical consumption patterns of countries.

Purpose and Uses

- **Economic Comparisons:** PPP allows economists to compare economic productivity, standards of living, and real GDP across countries more accurately than nominal exchange rates.
- **Adjusting GDP Figures:** Countries' GDPs and per capita income are often adjusted based on PPP to reflect actual purchasing power, revealing differences not apparent from market exchange rate comparisons.
- **Price Level Differences:** By eliminating distortions from fluctuating market exchange rates, tariffs, and taxes, PPP provides a more stable basis for cross-country analysis.
- **Financial Markets:** Traders and analysts use PPP to predict long-term exchange rate movements and to identify over- or undervalued currencies.

Calculation Formula

$$S = \frac{P_1}{P_2}$$

Where:

- S = Exchange rate of currency 1 to currency 2
- P1 = Cost of a good or basket in currency 1
- P2 = Cost of the same good or basket in currency 2

Example:

- **PPP exchange rate** = Price in India ÷ Price in US = ₹500 ÷ \$10 = **₹50 per USD**.
- **Nominal exchange rate** = ₹60 per USD.
- Since it takes **more rupees (₹60)** in the market than what PPP suggests (₹50), the rupee is **undervalued** relative to the dollar.

17. Free Market Capitalism & State Capitalism Models

Context: Recently, the US decided to acquire about a 10% equity stake in Intel, using funds originally allocated under the CHIPS and Science Act of 2022. It signals a new era of government intervention in high-tech sectors defining state capitalism models.

Free Market Capitalism & State Capitalism Models

- **Free Market Capitalism** is characterized by **private ownership of resources**, voluntary exchange, and limited state regulation.
 - The **role of government** is largely confined to enforcing contracts, protecting property rights, and ensuring market competition.
 - It aligns with **Adam Smith's 'invisible hand' theory**, where self-interest inadvertently promotes societal welfare.
 - **Examples:** The United States and historically the UK, where deregulation and privatization have been central policies.
- **State Capitalism:** It is defined as a system where the state **owns or controls significant parts of the economy** but still operates within global capitalist markets.
 - In this model, the state acts as both regulator and participant, often investing in industries deemed vital for national security or long-term growth.
 - State-owned enterprises (SOEs), sovereign wealth funds, and government-led industrial policies play crucial roles.
 - **Examples:** China, Singapore, and certain Middle Eastern economies where governments dominate finance, energy, or infrastructure.

- In the state capitalism system, the **state is the primary economic agent**, owning and operating major corporations, often called **state-owned enterprises (SOEs)**. These state-controlled entities, like major oil companies or banks, compete in domestic and global markets with a goal of generating profit, much like private firms. The state also uses tools like **Sovereign Wealth Funds (SWFs)** to invest globally.
- It describes a **centrally planned economy** (like communism or a command economy), not state capitalism. State capitalism is distinct because it **does not eliminate market mechanisms**. While the state is the dominant player, it operates within a market-based system, uses prices, and allows for private ownership and competition to a certain extent. The fundamental difference is that the state participates in the market for strategic or economic gain, whereas a centrally planned economy aims to control all economic activity without a market.

18. System of National Accounts

Context: The United Nations Statistical Commission has adopted the **System of National Accounts 2025 (SNA 2025)**, a revised global framework for measuring economies. It integrates concerns of inequality, environment, and unpaid work into national accounts, going beyond GDP.

What is the System of National Accounts (SNA)?

- The **System of National Accounts (SNA)** is the international standard framework for compiling comprehensive, consistent, and comparable macroeconomic accounts, including Gross Domestic Product (GDP), for countries worldwide. The **2025 SNA** is the latest update, refining the previous 2008 version to better reflect modern economies.

Adoption and Development

- The **2025 SNA** was adopted by the United Nations Statistical Commission at its 56th session in 2025.

- It is the sixth edition of the SNA, jointly published by the five organizations forming the Intersecretariat Working Group on National Accounts (ISWGNA).
- Developed through wide international consultation, incorporating input from experts, national statistical offices, and regional organizations.

Key Features and Updates in 2025 SNA

- **Retains Core Framework:** Maintains the underlying theoretical basis from 2008 but introduces new treatments reflecting economic developments.
- **New Economic Aspects:** Includes accounting for:
 - Globalization and digitalization,
 - Emerging financial instruments and Islamic finance,
 - Informal economy,
 - Natural resources and sustainability considerations.
- **Expansion Beyond GDP:** Broader measurement framework to include wellbeing, environmental sustainability, and more comprehensive wealth indicators.
- **Data as Produced Assets:** Recognizes data and data processing as capital assets, capitalizing data produced and used within production.
- **Financial Intermediation:** Clarifies treatment of central bank services and financial stability activities.
- **Depreciation & Depletion:** Separates depletion of natural resources from consumption of fixed capital with a refined impact on net domestic product measurements.

Applications and Importance

- **Economic Policy Making:** Provides detailed and harmonized macroeconomic indicators essential for policy formulation and economic analysis.
- **International Comparison:** Enables consistency across countries for GDP and national income comparison.

- **Sustainability and Wellbeing:** Facilitates integration of environmental and social dimensions into economic measures.
- One of the core innovations of SNA 2025 is capturing the digital economy (data, digital assets, digital platforms).
- It expands scope to **well-being, sustainability, and informal economy**, linking with environmental-economic accounts.
- SNA 2025 is prepared under the **Intersecretariat Working Group on National Accounts (ISWGNA)**, involving **UN, IMF, World Bank, OECD, Eurostat**, not just World Bank & IMF.

19. Index of Industrial Production

Context: Quick Estimates of the Index of Industrial Production (IIP) shows growth of 3.5% in July 2025.

What is the Index of Industrial Production (IIP)?

- The **Index of Industrial Production (IIP)** is a composite indicator that measures the short-term changes in the volume of production of a basket of industrial products during a given period as compared to a base period. It reflects the performance and growth trends of various industrial sectors in the economy.

Administration and Publication

- The IIP is compiled and published monthly by the **National Statistical Office (NSO)** under the **Ministry of Statistics and Programme Implementation (MoSPI), Government of India**.
- The current base year for the IIP in India is **2011-12**.

Scope and Coverage

- The IIP covers three broad sectors:
 - **Mining**
 - **Manufacturing (highest)**
 - **Electricity. (lowest).**
- It also includes classification by use-based sectors such as capital goods, basic goods, intermediate goods, infrastructure goods,

consumer durables, and consumer non-durables.

- The eight core industries — electricity, steel, refinery products, crude oil, coal, cement, natural gas, and fertilizers — represent about 40% of the total IIP weight.
- The index excludes construction, gas, and water supply sectors due to the unavailability of timely monthly data.

Importance of IIP

- **Economic Indicator:** It serves as a crucial measure of industrial growth and economic development, reflecting the health of the industrial sector.
- **Policy Making:** Used by the government, Reserve Bank of India, and financial analysts to formulate policies, take decisions on investments, and gauge economic trends.
- **Industrial Production Trends:** Helps monitor production fluctuations, track capacity utilization, and assess industrial sector performance.

Calculation

- The IIP is calculated as a weighted aggregate of production indices of various items using a **Laspeyres formula** where weights are assigned based on the value of output of each item in the base year.
- It is a **quantum index** expressing production changes in physical terms. For some items like machinery, production data are reported in value terms but adjusted for price changes using the Wholesale Price Index (WPI).



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INTERNATIONAL RELATIONS

1. Palestine's recognition as a state

Context: British Prime Minister Keir Starmer announced last week that his government would recognise the state of Palestine during the coming UN General Assembly session in September unless Israel agrees to a ceasefire in Gaza, allows more humanitarian aid and commits itself towards long-term peace based on the two-state formula.

Palestine's recognition as a state:

- **Other countries' announcements:**
 - French President **Emmanuel Macron** stated that France would recognise Palestinian statehood in September.
 - **Canada** and **Portugal** have also indicated plans to do the same.
 - The 21-month-long Gaza war has led to a major diplomatic crisis for Israel, with more Western allies favouring Palestinian statehood.
- **Significance of the recognition drive:**
 - Out of 193 UN member states, **147 already recognise Palestine**.
 - Traditionally, powerful Western nations avoided recognition, insisting it should follow a negotiated peace settlement.
 - Shifting stance among major powers:
 - **Russia** and **China** (UNSC members) already recognise Palestine.
 - If **France** and the **UK** proceed, the **U.S.** will be isolated on the UNSC over this issue.
 - France, the UK, and Canada are also **G7 members**, potentially influencing others.
 - Britain's move carries historic weight due to its role in the **Balfour Declaration (1917)**, which endorsed a Jewish homeland in Palestine.
- **Balfour Declaration (1917):**
 - Issued by **Sir Arthur Balfour**, British Foreign Secretary, to **Lord Lionel Walter Rothschild**, a Zionist leader.

- Declared British support for establishing a **"national home for the Jewish people" in Palestine**.
- At that time, Palestine was part of the Ottoman Empire; Jewish migration had already begun in the late 19th century.
- Around **60,000 Jews** (≈9% of the population) lived in Palestine in 1917.
- Zionists saw this as the solution to the 'Jewish question'.
- **Britain's actions after WWI:**
 - Despite promising Arab independence, Britain and France had agreed secretly under the **Sykes-Picot Agreement** to divide Ottoman lands.
 - Britain established a **League of Nations Mandate** over Palestine.
 - Jewish migration increased, with Jewish communities building institutions, industries, and paramilitary groups.
 - By the end of WWII, Jews were **30% of the population**.
 - Britain concluded the mandate was unworkable, backed **partition**, and informed the UN of its intention to end the mandate (expiry: **May 15, 1948**).
 - On **May 14, 1948**, Zionist leaders declared Israel's independence; the **U.S. recognised it immediately**, leading to the **First Arab-Israel War**.
- **Why Britain's recognition matters now:**
 - Marks a significant policy shift 108 years after the Balfour Declaration.
 - While it may not immediately change Israel's occupation, it signals a move away from unconditional support for Israel.
 - Comes amid accusations of **genocide against Palestinians** and global outrage over **Gaza's destruction and humanitarian crisis**.
- As of now, **147 out of 193 UN member states** have recognized Palestine as a state. This

includes a majority of countries in Africa, Asia, and South America. The number of countries that have yet to recognize Palestine is a minority, not a majority.

- State recognition is a political act by individual countries. UN membership is a separate, formal process governed by the UN Charter. A state must apply for membership, and its application must be approved by the **UN Security Council** (where any of the five permanent members can exercise a veto) and then by a **two-thirds majority vote in the General Assembly**. This is why Palestine, despite being recognized by a majority of UN members, holds only observer status, as its full membership has not been approved by the Security Council.

2. Great Recall Vote

Context: Taiwan has launched the largest recall vote in its history against 31 opposition lawmakers from the Kuomintang (KMT) party.

About Great Recall Vote:

What is the “Great Recall” Vote?

- A **mass legislative recall referendum** targeting KMT lawmakers in Taiwan.
- Citizens are voting to remove 31 KMT legislators in **two phases** (July and August 2025).
- It is the **largest recall exercise** under Taiwan’s constitutional provision allowing removal of elected officials.

Nation Involved:

- **Taiwan**, officially the Republic of China (ROC), with deepening democratic processes.
- **Democratic Progressive Party (DPP)** vs **Kuomintang (KMT)** rivalry is at the heart of this political conflict.

Objective of the Recall:

- **To remove KMT legislators accused of:**
 - Blocking important government bills.
 - Passing laws violating democratic norms.

- Allegedly colluding with the Chinese Communist Party.

Key Features of Taiwan’s Recall Mechanism:

1. Three-Stage Process:

- 1% signatures to initiate.
- 10% electorate support for holding vote.
- 25% district participation and majority votes for successful recall.

2. Constitutional Tool : Governed under Taiwan’s Public Officials Election and Recall Act.

3. Voter Empowerment: Empowers citizens to **directly remove legislators** they feel betrayed public trust.

4. Referendum-Linked Accountability: Adds participatory depth to Taiwan’s democracy but also risks misuse.

3. Awaza Programme of Action (2024–2034) (APoA)

Context: Third United Nations Conference on Landlocked Developing Countries (LLDC3) opened in Awaza, Turkmenistan. Conference serves as a crucial platform to implement the newly adopted APoA.

Awaza Programme of Action (2024–2034) (APoA)

- The Awaza Programme of Action (APoA) for Landlocked Developing Countries (LLDCs) 2024–2034 is a comprehensive global framework adopted by the United Nations General Assembly (Resolution A/RES/79/233, December 2024) to address the persistent development challenges faced by 32 landlocked developing countries. It represents a renewed and strengthened commitment to support the development of LLDCs, succeeds the Vienna Programme of Action, and aims to accelerate progress toward sustainable and inclusive economic growth.

Main Objectives

- Reduce structural vulnerabilities and remove supply chain bottlenecks for LLDCs.

- Enhance global partnerships and international support.
- Align national, regional, and global policy frameworks for coordinated development.
- Accelerate the achievement of the SDGs in LLDCs.
- Build resilience against future shocks—economic, climate, or geopolitical.

Five Priority Areas of APoA

1. Structural Transformation, Science, Technology & Innovation

- Promote diversification, value addition, and modernization of LLDC economies.
- Double output of services sectors (e.g., tourism, knowledge-intensive industries).
- Expand education, skills, and digital literacy; focus on bridging digital divides.

2. Trade, Trade Facilitation & Regional Integration

- Streamline cross-border procedures to reduce trade costs and delays.
- Enhance participation in regional and global value chains.
- Strengthen multi-sectoral trade corridors and regional integration.

3. Transit, Transport & Connectivity

- Develop and maintain efficient transit infrastructure—roads, rail, waterways, telecommunications, and energy grids.
- Universal broadband access, digital solutions for transport.
- Boost multimodal connectivity and cross-border energy cooperation.

4. Enhancing Adaptive Capacity & Resilience to Climate Change & Disasters

- Rapidly scale up climate finance for mitigation and adaptation.
- Integrate disaster risk reduction into all development planning.
- Protect biodiversity and promote sustainable natural resource use.

5. Means of Implementation, Finance & Partnerships

- Mobilize domestic and international public/private investment.

- Targeted technological and financial support; capacity-building partnerships.
- Good governance, rule of law, efficient institutions.

Key Commitments & Targets

- Double services sector output in LLDCs (particularly knowledge and tourism) by 2034.
- Establish regional agricultural research hubs to promote sustainable agriculture.
- Universal access to inclusive, quality education and digital skills, including gender digital divide bridging.
- Foster innovation and reward intellectual property, strengthen value chains and job creation.
- Support for SMEs and start-ups to create vibrant domestic and regional value chains.

Implementation & Monitoring

- **Multi-stakeholder approach:** Governments, UN system, private sector, civil society, and academia collaborate through the Inter-Agency Consultative Group for LLDCs.
- **Annual monitoring:** Implementation tracked via progress reports and the APoA Roadmap and Results Framework.
- **National and regional alignment:** Each LLDC is expected to integrate APoA objectives into national development strategies.

4. The Elders

Context: The Elders Group of international stateswomen and statesmen, for the first time called the situation in Gaza an "unfolding genocide".

What is The Elders?

- The Elders is an independent international non-governmental organization (NGO) comprising distinguished global leaders, former heads of state, Nobel laureates, peace activists, and human rights advocates. It was founded in 2007 by Nelson Mandela, along with support

from figures like philanthropist Richard Branson and musician Peter Gabriel.

Purpose and Vision

- The group describes itself as "independent global leaders working together for peace, justice, human rights, and a sustainable planet."
- It aims to use its members' collective decades of political and social experience to solve global challenges like conflict resolution, climate change, poverty, and human rights abuses.
- Mandela envisioned the group as moral voices to promote courage, inspire hope, and foster agreement where there is conflict or despair.

Key Members

- Past chairs include **Desmond Tutu**, **Kofi Annan** (former UN Secretary-General), and **Mary Robinson** (former President of Ireland).
- Other notable members have included Jimmy Carter, Graça Machel, Ban Ki-moon, Lakhdar Brahimi, Fernando Henrique Cardoso, and Ela Bhatt.

Activities and Impact

- **Conflict Resolution:** The Elders have played active roles in mediating conflicts such as in Darfur, Sudan, and support for Israeli-Palestinian peace efforts.
- **Human Rights Advocacy:** They campaign for universal rights and uphold principles enshrined in the Universal Declaration of Human Rights.
- **Climate Action:** Promote global cooperation to address climate change and sustainable development challenges.
- **Support to Vulnerable Groups:** Work to empower marginalized communities, including refugees, women, and young people.
- **Public and Quiet Diplomacy:** Operate both publicly and through discreet negotiations with governments and civil society actors.

Formation and Launch

- The idea was conceived in 1999 by Richard Branson and Peter Gabriel and came to fruition with Nelson Mandela's major launch announcement on his 89th birthday (18 July 2007) in Johannesburg, South Africa.
- The launch symbolically featured an empty chair for Aung San Suu Kyi, the Burmese political prisoner at the time, highlighting their focus on human rights.

Governance

- The Elders is chaired by senior influential leaders who guide its mission and strategy.
- Members serve as independent voices, free from government affiliations or political constraints.

5. E3 Group

Context: China said on August 15 it opposed invoking sanctions on Iran over its nuclear programme after three Western nations told the UN they would reimpose them if no diplomatic solution was found by the end of August.

What is the E3 Group?

- The E3 Group is an informal diplomatic coalition comprising France, Germany, and the United Kingdom (UK). It is most notable for its prominent role in European foreign policy and international diplomatic initiatives, particularly concerning security and global issues.

Historical Context and Formation

- **Establishment:** The E3 group emerged in 2003, initially to devise a coordinated European approach for nuclear negotiations with Iran.
- **Purpose:** Created as a flexible platform to allow these three major European powers to coordinate responses and present unified positions on key global challenges, sometimes both within and outside the European Union framework.
- **Evolution:** While the UK was an EU member until 2020, the E3 was sometimes referred to as the

"EU-3". Post-Brexit, it remains a forum for trilateral cooperation on foreign and security matters, acting independently of official EU mechanisms.

Activities and Significance

- **Iran Nuclear Negotiations:** The E3 played a central role in negotiating with Iran over its nuclear program, culminating in the Joint Comprehensive Plan of Action (JCPOA) signed in 2015. In these talks, the E3 operated first as EU-3 (France, Germany, UK), then expanded to E3+3 (adding USA, China, Russia; also known as P5+1).
- **Foreign Policy Coordination:** The E3 regularly releases joint statements and positions on current international matters such as Syria, Libya, Gaza, and Ukraine. It pursues coordination on humanitarian aid, economic sanctions, nuclear security, migration, and cyber defense.
- **Strategic Influence:** These countries together constitute some of Europe's most powerful economies and militaries; their cooperation can shape European diplomatic directions, especially in times of divergence within the wider EU.

6. Permanent Court of Arbitration

Context: India rejected the Permanent Court of Arbitration's (PCA) award on issues of general interpretation of Indus Waters Treaty.

Permanent Court of Arbitration (PCA)

- The Permanent Court of Arbitration (PCA) is an intergovernmental organization established in 1899 to facilitate peaceful resolution of international disputes through arbitration and other processes. It is headquartered in the Peace Palace in The Hague, Netherlands and is one of the oldest institutions dedicated to international arbitration.

History

- The PCA was created during the First Hague Peace Conference in 1899, initiated by Czar Nicholas II of Russia, aiming to provide a

permanent framework for arbitration to prevent war and resolve disputes peacefully between states.

- The PCA was formally established under Articles 20 to 29 of the 1899 Hague Convention for the Pacific Settlement of International Disputes.
- It was revised at the Second Hague Peace Conference in 1907 but remains fundamentally based on the 1899 Convention.
- The PCA was a pioneering institution in international dispute settlement and predates the International Court of Justice (ICJ), which was established in 1945.

Functions and Jurisdiction

- The PCA facilitates arbitration and other dispute resolution processes involving:
 - States
 - State entities
 - International organizations
 - Private parties
- It provides administrative support, including tribunal appointments, procedural matters, and record-keeping, but does not itself serve as a traditional court issuing binding judgments without parties' consent.
- **It handles a variety of disputes:**
 - Territorial and maritime boundaries
 - Sovereignty-related conflicts
 - Human rights cases
 - International investment disputes
 - Trade and contract disagreements
- The PCA also acts under various treaties and conventions like the United Nations Convention on the Law of the Sea (UNCLOS) and International Centre for Settlement of Investment Disputes (ICSID) proceedings.

Structure and Organization

- The PCA has no permanent judges but maintains a panel of arbitrators nominated by member states.

- Its administrative body is the International Bureau, headed by the Secretary-General.
- It is governed by an Administrative Council comprising representatives of contracting parties, responsible for policies and budget.
- The PCA offers procedural rules including its own Arbitration and Conciliation Rules and incorporates those from other bodies like UNCITRAL.

Membership and Status

- The PCA comprises 125 Contracting Parties (as of 2023).
- It is not a United Nations agency but has been a UN Observer since 1993, cooperating closely with the UN system.

Notable Arbitrations

- Permanent Court of Arbitration public hearing for the Enrica Lexie Incident (Italy v. India), PCA Case No. 2015-28
- The PCA has overseen high-profile cases such as:
 - The Island of Palmas Arbitration (Netherlands vs. United States, 1928)
 - The Eritrea-Yemen Arbitration (1996)
 - The Slovenia-Croatia Arbitration (2012)
 - The Enrica Lexie Incident (Italy v. India)
- PCA was indeed established in **1899 Hague Convention**, and its headquarters is at **The Hague**.
- Unlike ICJ, PCA does not have permanent judges; instead, arbitral panels are constituted case by case.
- Membership of PCA is not automatic with UN membership. It requires accession to one of the Hague Conventions. Some UN members are not PCA members.
- India is a member of the PCA and has been involved in arbitration cases (e.g., Indo-Bangladesh Maritime Boundary dispute, Indo-Pak Kishenganga case).

7. United Nations High Commissioner for Refugees

Context: UNHCR has temporarily suspended the process of facilitating the repatriation of Sri Lankan Tamil refugees.

About United Nations High Commissioner for Refugees (UNHCR)

- It is a **specialized agency** of the United Nations mandated to protect and support refugees, forcibly displaced communities, and stateless people.
- **Established in 1950**, the UNHCR leads international action to safeguard the rights and well-being of refugees and coordinates efforts for their voluntary repatriation, local integration, or resettlement to a third country when conditions allow.
- The agency operates under the principles of **international refugee law**, especially the **1951 Refugee Convention and its 1967 Protocol**.
- It was established by UNGA in **1950**, initially for 3 years, later made permanent.
- Its mandate rests on **1951 Refugee Convention + 1967 Protocol**. Not all states are parties.
- **India is not a signatory** to either the 1951 Convention or the 1967 Protocol. UNHCR operates in India only through **executive arrangements** with the government, and not in a treaty bound mandate.
- UNHCR reports to the **UN General Assembly** and the **ECOSOC**, not the Security Council.

8. FTA with EAEU

Context: Signing of Terms of Reference marks, the formal commencement of Free Trade Agreement (FTA) negotiations with the goal to establish a long-term framework for trade cooperation.

Potential Benefits of FTA with EAEU

- **Economic Benefits Trade expansion:** It will unlock untapped trade potential, increase

investments and establish a stronger, durable India–EAEU economic partnership.

- Bilateral Trade turnover stood at USD 69 billion in 2024 (7% rise from 2023).
- **Market access:** It will open wider opportunities for Indian exporters amid increasing US tariffs and support diversification into new sectors and geographies.
- **Enhance competitiveness:** It will strengthen India's position against non-market economies.
 - It will significantly benefit Indian Micro, Small and Medium Enterprises (MSMEs).
- **Energy partnership:** EAEU offers abundant natural resources and energy crucial for India's growth.
 - E.g. Russia now accounts for 35-40% of India's total oil imports by volume.
- **Strategic Benefits:** Strengthening ties with Russia led bloc will reinforce India's policy of multialignment.

Eurasian Economic Union (EAEU)

- The Eurasian Economic Union (EAEU or EEU) is a regional economic union of five post-Soviet states in Eurasia aimed at economic integration and cooperation.
- Established formally on January 1, 2015, following the Treaty on the Eurasian Economic Union signed on May 29, 2014 by Belarus, Kazakhstan, and Russia. Armenia and Kyrgyzstan joined soon after in 2015.
- As of 2023, the EAEU integrates a population of roughly 183 million people with a combined GDP exceeding \$2.4 trillion.

Member States

- Russian Federation
- Republic of Belarus
- Republic of Kazakhstan
- Republic of Armenia
- Kyrgyz Republic

Objectives and Functions

- The EAEU aims to create a single market for goods, services, capital, and labor through regional cooperation.
- It promotes free movement of goods, services, capital, and labor across member states.
- Common policies are implemented in areas such as macroeconomics, transport, industry, agriculture, energy, foreign trade, customs, technical regulation, competition, and antitrust regulation.
- The union's strategic goals include raising economic competitiveness, fostering stable development, increasing employment, and improving living standards of the member states' populations.

Institutional Structure



- **Supreme Eurasian Economic Council:** The highest body of the EAEU, consisting of the heads of member states, which defines the strategic direction and major policy decisions.
- **Eurasian Intergovernmental Council:** Composed of the heads of governments of the member states, it addresses economic cooperation and coordination.

- **Eurasian Economic Commission:** The executive body responsible for day-to-day administration, regulation, and implementation of EAEU policies. It holds supranational regulatory authority over the union.
- **Court of the Eurasian Economic Union:** Judicial arm ensuring interpretation and enforcement of EAEU laws.

9. Appointment of the Executive Director at the International Monetary Fund

Context: The Union government has approved the appointment of former Reserve Bank of India (RBI) Governor Urjit Patel as Executive Director at the International Monetary Fund (IMF) for a period of three years.

Appointment of the Executive Director at the International Monetary Fund (IMF)

Structure of the IMF Executive Board

- The **IMF Executive Board** consists of 25 Executive Directors (EDs).
- These EDs represent either single IMF member countries (with large quotas) or groups of countries pooled together.
- The Managing Director serves as Chairperson of the Board.

Appointment of Executive Directors

- **Election and Nomination:**
 - Most Executive Directors are **elected or appointed by IMF member countries** or by groups of countries (constituencies).
 - The process takes place at regular intervals, typically every two years after a general election of the Board.
 - Some countries (like the US, China, Japan, Germany, France, UK, Russia, Saudi Arabia, India) have sufficient financial quotas to directly appoint their own Executive Directors.

National Appointment Process:

- For countries entitled to appoint an ED, the national government selects its representative.
- In India's case, the **Appointments Committee of the Cabinet** selects and approves the candidate to represent India at the IMF Executive Board (e.g., Urjit Patel, former RBI Governor, was appointed in August 2025).
- The Executive Director serves a term of typically two years, which may be renewed.

Responsibilities and Role

- The Executive Director represents the interests of his/her country (or constituency) at the IMF, participates in Board meetings, and votes on key decisions including lending, policy, and surveillance.
- EDs play a critical role in shaping IMF policy and governance, as well as providing oversight of IMF management and operations.
- Not all IMF members nominate their own Executive Directors. The IMF Board has **24 Executive Directors**: some represent single large economies (like the U.S., Japan, China), while others represent **multi-country constituencies**.
- India is part of a **constituency with Bangladesh, Bhutan, Sri Lanka, and Maldives**, and the Executive Director is elected for the group.
- The tenure is **two years**, not five. Re-election is possible.

10. Indian Ocean Naval Symposium

Context: Recently, Emerging Leaders Panel Discussion was held under Indian Ocean Naval Symposium (IONS) at Kochi.

Indian Ocean Naval Symposium (IONS)

- The Indian Ocean Naval Symposium (IONS) is a **biennial, voluntary initiative that brings together the navies of the littoral (coastal) states of the Indian Ocean region to foster maritime cooperation, discuss regional security**

issues, and promote friendly relationships among member states.

Key Features

- **Purpose:** IONS provides an open, inclusive forum for discussion of maritime security, humanitarian assistance, disaster relief (HADR), piracy, interoperability, and other regionally relevant issues.
- **Inception and Chairs:** Conceived by the Indian Navy in 2008, IONS held its inaugural meeting in New Delhi with India as the first chair (2008–2010). The chair rotates every two years among the member states.
- **Membership:** IONS comprises 25 member countries grouped into four sub-regions:
 - South Asian Littorals: Bangladesh, India, Maldives, Pakistan, Seychelles, Sri Lanka
 - West Asian Littorals: Iran, Oman, Saudi Arabia, UAE, Qatar
 - East African Littorals: France (Reunion), Kenya, Mauritius, Mozambique, South Africa, Tanzania
 - South East Asian & Australian Littorals: Australia, Indonesia, Malaysia, Myanmar, Singapore, Thailand, Timor-Leste.
- **Observers:** Nine countries have observer status, including China, Germany, Italy, Japan, Madagascar, Netherlands, Russia, Spain, and South Korea.

Activities

- **Conclaves and Working Groups:** IONS organizes biennial symposiums (Conclaves of Chiefs), workshops, lectures, essay competitions, and operational exercises (e.g., IMMSAREX for maritime and disaster response).
- **Information Sharing:** The organization enhances the flow of information between naval professionals, fostering common understanding and cooperative solutions for maritime challenges.
- **Focus Areas:**
 - Maritime security (anti-piracy, counterterrorism)

- Humanitarian assistance and disaster relief (HADR)
- Information security and interoperability
- Regional cooperation and capacity building

11. Palermo Convention

Context: Recently, UNTOC and UNCAC have been invoked by India in the extradition request of a fugitive offender.

Palermo Convention

- The **Palermo Convention** refers to the **United Nations Convention against Transnational Organized Crime (UNTOC)**, adopted by the UN General Assembly in November 2000 in Palermo, Italy. It is the **primary international legal instrument** to combat transnational organized crime and came into force on **29 September 2003**.

Objectives

- **Combat Transnational Organized Crime:** Promote international cooperation to fight crime that crosses borders, such as human trafficking, money laundering, arms trafficking, and corruption.
- **Strengthen Laws and Enforcement:** Mandate nations to create new domestic criminal offences (e.g., participation in criminal organizations, obstruction of justice), and to build frameworks for extradition, mutual legal assistance, and law enforcement cooperation.
- **Assist and Protect Victims:** The protocols under the Convention emphasize the protection and support of crime victims, with specific regard to human trafficking.

Structure and Protocols

The Convention is supplemented by three major protocols (collectively known as the **Palermo Protocols**):

1. **Protocol to Prevent, Suppress and Punish Trafficking in Persons, Especially Women and Children**

- First global legally binding definition of human trafficking.
- Focuses on protection, assistance, and effective prosecution.

2. Protocol Against the Smuggling of Migrants by Land, Sea and Air

- Defines and addresses organized criminal networks involved in migrant smuggling.

3. Protocol Against the Illicit Manufacturing of and Trafficking in Firearms, Their Parts and Components and Ammunition

- Targets arms trafficking and related crimes.

Implementation

- **United Nations Office on Drugs and Crime (UNODC):** Acts as the custodian of the Convention and its protocols, providing technical assistance and monitoring implementation.
- **Ratification:** Member states must ratify the Convention to be bound by its terms and then can ratify any or all of the protocols.
- **Enforcement:** Requires member states to enact corresponding national laws and minimum

punishments (e.g., four years' imprisonment for transnational organized criminal offences).

Significance

- The Palermo Convention is central to global crime control, facilitating **information sharing, capacity building, and collaborative investigations** among member nations.
- It plays a key role in combatting issues such as **trafficking in persons, arms trafficking, money laundering, and corruption.**



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ENVIRONMENT

1. ICJ Ruling Revives Legal Status of Kyoto Protocol

Context: In a landmark advisory opinion, the International Court of Justice (ICJ) has clarified that the Kyoto Protocol (1997) remains legally valid and binding, even after the Paris Agreement (2015) came into effect.

About ICJ Ruling Revives Legal Status of Kyoto Protocol:

What is the Kyoto Protocol?

- **Adopted in 1997**, entered into force in 2005 under the **UN Framework Convention on Climate Change (UNFCCC)**.
- It was the **first binding international treaty** mandating emission reductions by developed nations (Annex-I countries).
- Based on the principle of **Common but Differentiated Responsibilities and Respective Capabilities (CBDR-RC)**.
- Had two commitment periods: **2008–2012** and **2012–2020**.

Key Obligations:

- Emission reductions by Annex-I countries (from 1990 baseline).
- Finance and technology transfer to developing nations.
- Creation of mechanisms like Clean Development Mechanism (CDM).

Why Was the Kyoto Protocol Considered Obsolete?

- The **Paris Agreement (2015)**, with a universal and bottom-up structure, replaced Kyoto's **top-down, binding** targets with voluntary NDCs (Nationally Determined Contributions).
- The US never ratified the Kyoto Protocol; Canada, Japan and others exited or stopped complying.

- No third commitment period was adopted post-2020.
- Post-Paris, the protocol was considered **defunct in operational and legal terms**, though never formally repealed.

Significance of the ICJ Ruling:

- **Legal Continuity Reaffirmed:** The ICJ ruled that lack of new commitment periods does not mean termination. Kyoto remains part of international climate law.
- **States Can Be Held Legally Accountable:** Non-compliance with Kyoto targets may now constitute an **"internationally wrongful act"**, reviving the possibility of state responsibility under international law.
- **Retroactive Assessment Permitted:** Even past obligations (e.g., first commitment period targets) are open for review and compliance assessment.
- **Scope for Climate Litigation Expanded:** Though the opinion is **non-binding**, it empowers civil society and states to pursue stronger climate litigation and demand accountability.
- It required ratification by at least 55 parties to the convention, accounting for at least 55% of the total 1990 carbon dioxide emissions of the developed countries. This threshold was met in late 2004, leading to its entry into force on February 16, 2005.
- The three flexible mechanisms — **Emissions Trading, CDM, JI** — are core innovations of the protocol.
- The United States **signed** the Protocol in 1998, but it **never ratified** it. In 2001, President George W. Bush announced that the U.S. would not participate in the Protocol, citing concerns about its economic impact and the exemption of developing nations from mandatory emission reductions.

- The Doha Amendment to the Kyoto Protocol was adopted in 2012. It established a second commitment period for developed countries from 2013 to 2020.

2. Mouse Deer

Context: The elusive Silver-backed Chevrotain (mouse deer), thought extinct for over 30 years, has been rediscovered in the forests of southern Vietnam, sparking global conservation optimism.

About Mouse Deer:

- **What is the Mouse Deer?**
 - The mouse deer, also called chevrotain, is the **world's smallest hooped mammal**, belonging to the family **Tragulidae**. Though it resembles both a mouse and a deer, it is unrelated to either and represents a primitive ruminant lineage.
- **Scientific Name & Taxonomy:**
 - **Scientific Names:**
 - *Tragulus kanchil* (Lesser Mouse Deer)
 - *Tragulus napu* (Greater Mouse Deer)
 - *Tragulus versicolor* (Silver-backed Chevrotain – rediscovered species)
- **Habitat and Distribution:**
 - Found in **tropical and subtropical forests** of **South and Southeast Asia** (India, Vietnam, Thailand, Sri Lanka).
 - African cousin (*Hyemoschus aquaticus*) resides in West and Central African rainforests.
 - Often inhabit **dense undergrowth**, lowland forests, and remain **nocturnal and elusive**.
- **Biological and Behavioural Traits:**
 - Lack modern thermoregulation mechanisms found in advanced artiodactyls.
 - Known for their ability to **submerge underwater for minutes** to evade predators.
- **Feeding Habits:**
 - **Primarily herbivorous:** feed on fruits, leaves, and soft plant parts.
 - The African chevrotain occasionally consumes insects, crabs, and scavenged meat—an unusual trait for ruminants.
- **Social and Reproductive Behaviour:**
 - Prefer **solitary or paired existence**; territorial with small home ranges (13–24 hectares).
 - Males use **chin and preputial glands** for marking.
- **Reproduction:**
 - One offspring per birth.
 - Weaning at 3 months and maturity between 5–10 months.
- **Unique Adaptations:**
 - **Drumming with hooves:** Emits rhythmic beats to signal distress or warn off threats.
 - **Underwater hiding:** Known to stay submerged for over 5 minutes—key survival trait.



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- The mouse deer, also known as the chevrotain, is a small, shy animal that lives near water sources. It is known to spend time partially submerged to evade predators such as pythons, civets, and eagles. This behavior is a key survival strategy for the species.
- Mouse deer are primarily solitary and nocturnal. They are known to inhabit dense tropical forests with thick undergrowth, where they can easily hide during the day and forage for food under the cover of darkness.

3. Ramsar Convention

Context: The 15th Meeting of the Ramsar Convention (COP15), held in Victoria Falls, Zimbabwe, concluded with new resolutions on wetland restoration, protection of migratory birds and wetland species, and equitable governance.

15th Meeting of the Ramsar Convention (COP15)

- The **Ramsar COP15** conference in Zimbabwe attended by some 3,000 delegates, was the second time that Africa has played host to a Ramsar Convention conference after Uganda hosted COP9 in 2005.
 - The conference, themed **"Protecting Wetlands for Our Common Future"**, gathered global stakeholders to address freshwater ecosystem threats.
- COP16 will be hosted by **Panama** in 2028.
 - Zimbabwe took over the three-year Ramsar Convention on Wetlands presidency from China.

Major Outcomes

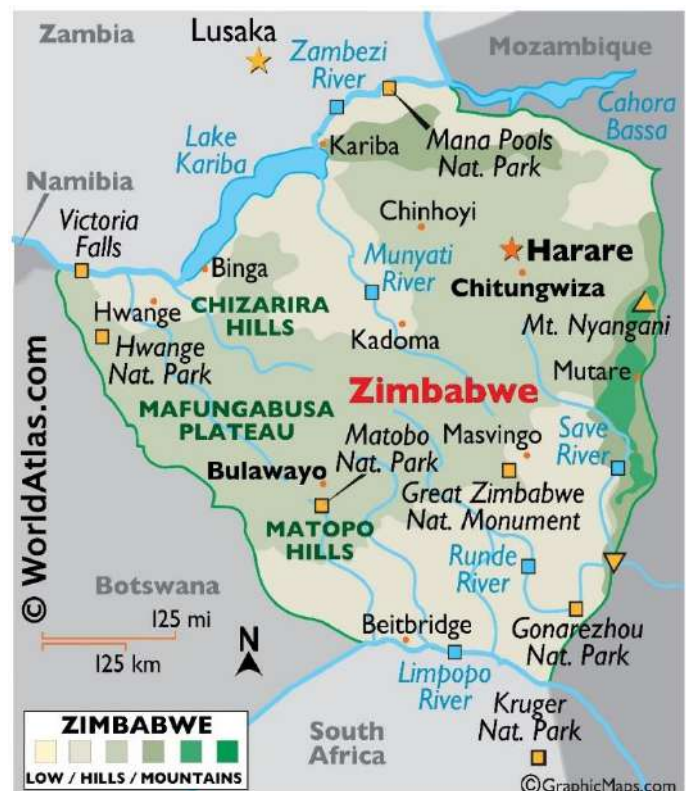
- At COP15 of the Ramsar Convention, all 13 proposed resolutions were adopted, marking significant progress in global wetland protection and restoration.
- The resolutions focused on **national action, monitoring, capacity building**, integrating wetlands into climate adaptation, and disaster risk reduction.

- A key outcome was the **Victoria Falls Declaration**, emphasizing political will, resource mobilisation, and investment in sustainable wetland management.
- Its Highlights include commitments to **restore degraded freshwater ecosystems, protect migratory birds, and adopt clearer criteria** for designating Wetlands of International Importance.
- A new **strategic plan with four goals and 18 targets** was approved, though a major breakthrough in long-term financing was not achieved.
- The core budget was increased by 4.1% to CHF 15.5 million for 2025–2027.
 - Additional resolutions addressed equitable governance, urban wetlands, traditional knowledge, and youth engagement.

Neighbours of Zimbabwe:

Zimbabwe is a landlocked country in southern Africa bordered by:

- **West:** Botswana
- **North:** Zambia
- **East:** Mozambique
- **South:** South Africa



4. Isotope tagging

Context: A South African University launched Rhisotope Project in Waterberg Biosphere Reserve which adopts isotope tagging to prevent poaching of Rhinos.

How Isotope tagging works?

- Radioactive isotopes or radioisotopes: Unstable form of an element that emits radiation to transform into a more stable form.
 - The radiation can be traced, and typically causes changes in the substance it falls upon.
- Isotope tagging: Through a non-invasive procedure, rhino horns are injected with low doses of radioactive isotopes.
 - Easy detection of tagged horns by radiation portal monitors (RPMs) deployed at borders, ports, and airports worldwide to identify unauthorized nuclear materials.

5. Asian Giant Tortoise

Context: The Asian Giant Tortoise has been reintroduced into the Zeliang Community Reserve in Nagaland.

Asian Giant Tortoise

- The Asian Giant Tortoise (*Manouria emys*), also known as the Asian Forest Tortoise, is the largest tortoise species in mainland Asia. It is a primitive and ecologically significant reptile, recognized for its size, unique reproductive behavior, and crucial role in forest ecosystems.

Key Features

- **Size:** Shell length up to 61cm (24in), weight up to 35–40kg (77–88lbs).
- **Lifespan:** 80–100 years, making it one of the longest-lived terrestrial animals.
- **Appearance:** Adults are charcoal or dark brown, with hatchlings starting as grayish-brown. The carapace (shell) is broad, flattened, and uniquely serrated.

- **Behavior:** Diurnal and usually solitary. Often called the "small elephant of the forest" due to its important ecological role.

Range, Habitat & Ecology

- **Distribution:** Bangladesh, India (notably Northeast: Nagaland, Arunachal Pradesh, Assam), Myanmar, Thailand, Malaysia, Indonesia, Vietnam, and possibly Brunei.
- **Habitat:** Prefers tropical and subtropical dense, moist evergreen forests, especially hill forests with abundant leaf litter.
- **Ecological Role:** Aids in seed dispersal, nutrient cycling, and forest regeneration by consuming a broad range of plant matter and fruits; helps maintain forest health.

Diet

- Primarily herbivorous, feeding on leaves, fruits, mushrooms, bamboo shoots, and decomposing plants.
- Occasionally consumes invertebrates, frogs, and carrion when available.

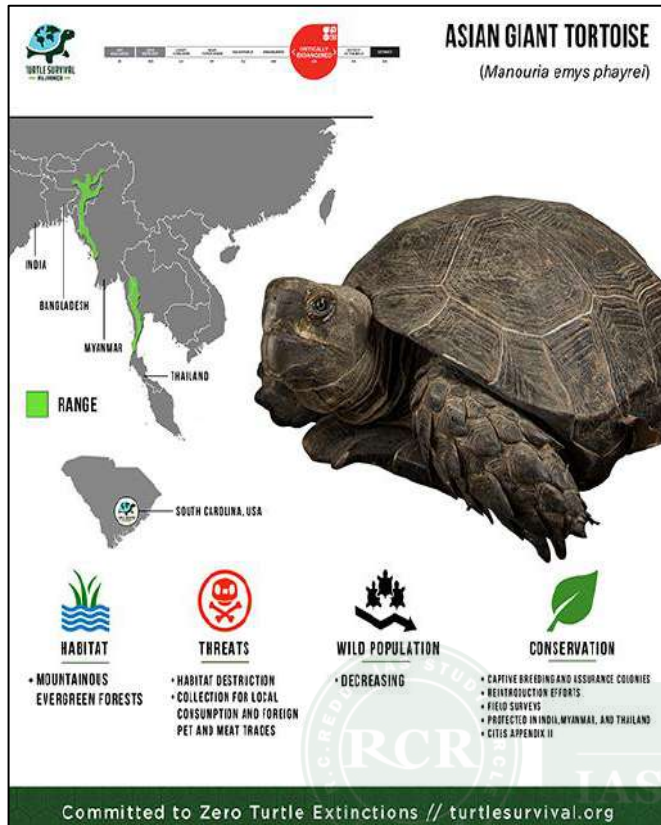
Reproduction & Unique Behaviors

- **Nesting:** Females build large above-ground nests from leaf litter (a rare maternal behavior among tortoises) and exhibit nest guarding to protect eggs from predators.
- **Clutch Size:** Up to 50 eggs per nest.
- **Incubation Period:** About 60–90 days.
- **Temperature- Dependent Sex Determination:** Higher incubation temperatures yield females, lower produce males.

Conservation Status

- **IUCN Red List:** Critically Endangered [CR].
- **Threats:** Habitat destruction, hunting for local consumption, illegal collection for the pet and meat trades, and anthropogenic activities like slash-and-burn farming.
- **Legal Protection:** Included in CITES Appendix II, and under Schedule IV of the Indian Wildlife (Protection) Act, 1972.

- **Conservation Efforts:** Captive breeding centers and community-based reintroduction programs, particularly in Northeast India and Southeast Asia. Monitoring, tracking, and habitat protection are ongoing priorities.



6. International Seabed Authority

Context: The session coincided with the 30th Commemoration of ISA's Establishment under the United Nations Convention on the Law of the Sea (UNCLOS) and its 1994 Part XI Implementing Agreement.

Key Decisions at 30th Session

- Progress on development of Common Heritage Fund, a financial toolbox support sustainability, capacity-building & equitable benefit-sharing.
- Operationalization of Economic Planning Commission to assess economic impacts of seabed mining and recommend mitigation measures.
- Adopted November 1 as the International Deep Seabed Day.

What is the International Seabed Authority?

- The International Seabed Authority (ISA) is an autonomous international organization established under the United Nations Convention on the Law of the Sea (UNCLOS) 1982. Its main headquarters is in Kingston, Jamaica. The ISA was formed after UNCLOS came into force on 16 November 1994 and became fully operational in 1996.

Mandate & Functions

- **Regulation:** The ISA organizes, regulates, and controls all mineral resource-related activities in the international seabed area ("the Area")—the seabed and ocean floor beyond the limits of national jurisdiction.
- **"Common Heritage of Humankind":** All activities in "the Area" are to benefit all humanity, balancing resource use and environmental protection.
- **Environmental Protection:** Ensures the effective protection of the marine environment from harmful effects of deep-seabed mining and exploration.
- **Resource Management:** Licenses exploration and regulates contracts for minerals such as polymetallic nodules, cobalt-rich crusts, and polymetallic sulphides—vital for battery and technology industries.
- **Promotion of Marine Science:** Supports and promotes scientific research and technology transfer for the sustainable and equitable use of seabed resources.

Structure & Membership

- **Members:** All parties to UNCLOS are members (currently 169 states and the European Union).
- **Assembly:** The supreme authority, with all member states represented. Sets general policy and budgets, and elects ISA officials.
- **Council:** 36-member executive body approves contracts, oversees legal/technical aspects, and supervises operations.
- **Secretariat:** Led by a Secretary-General and supports day-to-day activities.

- **Committees:** Legal & Technical Commission, Finance Committee, and other expert groups handle technical, legal, and environmental matters.

Key Activities

- **Granting Contracts:** Issues exploration licenses to states, private companies, and groups interested in deep-sea mining in areas beyond national jurisdiction.
- **Environmental Stewardship:** Develops Regional Environmental Management Plans (REMPs), assesses impacts, and can halt or modify operations to protect unique biodiversity.
- **Capacity Building:** Runs initiatives like the Endowment Fund for marine science, especially supporting scientists from developing countries.
- **No Commercial Mining Yet:** As of mid-2025, commercial deep-sea mining in the Area has not yet started; regulations and moratorium discussions are ongoing.
- The 1994 Implementing Agreement of UNCLOS established the ISA as an autonomous international organization to manage the deep seabed "Area" and its resources.
- The decisions of the ISA are binding only on its members. Membership in the ISA is open to all parties to the UN Convention on the Law of the Sea (UNCLOS). States that are not party to UNCLOS are not bound by the ISA's decisions.
- India was indeed the first country to receive this status in 1987 under the UNCLOS regime, before the formal establishment of the ISA. This gave India exclusive rights to explore for polymetallic nodules in a 150,000 square kilometer area in the Central Indian Ocean Basin.
- The ISA's mandate is limited to the regulation of mineral-related activities in the deep seabed area. The regulation of fisheries and navigation in the high seas falls under the purview of other international bodies and conventions, such as the International Maritime Organization (IMO) and various regional fisheries management organizations.

7. Krill

Context: Krill, a species crucial to marine food chains, is under increasing pressure due to fishing, climate change, and growing demand for its omega-3 oil used in fishmeal, pet food, and human supplements.

Krill

- Krill are small, shrimp-like marine crustaceans belonging to the order Euphausiacea. There are about 85 species of krill found in all the world's oceans, from the Arctic to the Antarctic. Krill play a pivotal role in ocean ecosystems as a fundamental food source and contribute significantly to biogeochemical cycles.

Biological Features

- **Size:** Most krill grow up to 6cm, but Antarctic krill (*Euphausia superba*) can reach up to 7cm.
- **Body Structure:** Transparent body with hard exoskeleton, reddish spots. Compound eyes and two antennae. Many legs are adapted for swimming and feeding.
- **Bioluminescence:** Many krill species have special organs that emit light, making them glow in the dark.

Ecology and Behaviour

- **Habitat:** Krill are exclusively marine and found in all oceans. Some species are endemic to specific regions; Antarctic krill are especially abundant in the Southern Ocean.
- **Swarming:** Krill gathers in immense swarms, which can make ocean waters appear pink. Swarms may contain millions of individuals.
- **Feeding:** Primarily on phytoplankton (microscopic plant-like organisms) and zooplankton. Krill themselves are the main food for whales, seals, penguins, fish, squid, and seabirds.
- **Daily Vertical Migrations:** Krill moves to the surface to feed at night and descend during the day. This behaviour reduces predation risk and aids nutrient cycling.

Ecological Importance

- **Food Chain:** Krill are a keystone species, forming a crucial link at the bottom of the marine food web. Baleen whales, especially blue whales, rely heavily on krill for sustenance.
- **Biogeochemical Cycles:** Krill contribute to the ocean carbon sink through massive release of faecal pellets, which transfer carbon from surface waters to the deep ocean. They help physically mix nutrients from deep waters, fuelling primary production in surface waters.
- **Biomass:** Antarctic krill alone represent one of the largest biomasses of any animal on Earth, estimated at hundreds of millions of tonnes.

Commercial Use

- **Fishing:** Krill are harvested mostly in the Southern Ocean and waters around Japan, totaling 150,000–200,000 tonnes annually.
- **Uses:** Aquaculture and aquarium feed, bait in sport fishing, pharmaceutical industry, and human food (e.g., okiami in Japan, alamang in the Philippines).
- Krill are a vital component of the Southern Ocean ecosystem and significantly contribute to the biological pump, a process that moves carbon from the atmosphere and surface waters to the deep ocean.
- Krill consume vast amounts of phytoplankton, which absorb carbon dioxide from the atmosphere through photosynthesis. The carbon from this phytoplankton is then incorporated into the krill's bodies. When krill excrete, their faecal pellets are dense and sink rapidly to the ocean floor, effectively transferring the carbon into the deep sea where it can be stored for centuries.



8. GRIHA Rating System

Context: Prime Minister dedicated Kartavya Bhawan to the nation which is designed to meet GRIHA-4 green building standards with solar panels, rain water harvesting, etc.

GRIHA Rating System

What is GRIHA?

GRIHA stands for Green Rating for Integrated Habitat Assessment. It is India's national rating system for green buildings, designed to assess the environmental performance of buildings holistically over their entire life cycle. The acronym "GRIHA" also means "abode" in Sanskrit.

- **Developed by:** The Energy and Resources Institute (TERI)
- **Supported by:** Ministry of New and Renewable Energy (MNRE), Government of India
- **Launched as national system:** 2007

Purpose & Objectives

- **Benchmark for Green Buildings:** Provides a definitive and indigenous standard for what qualifies as a 'green building' in India.
- **Lifecycle Approach:** Evaluates the design, construction, operation, and maintenance phases.
- **Minimizes Environmental Impact:** Seeks to reduce resource consumption, optimize energy and water efficiency, minimize waste, and lessen ecological footprint.
- **Supports National Commitments:** Aids India's emission reduction and climate change mitigation strategies.

How Does GRIHA Work?

Assessment Criteria

GRIHA is a 100-point system structured around 34 criteria (as per GRIHA V3), grouped under categories such as:

- Site Planning
- Energy Efficiency
- Water Management
- Waste Management

- Material Selection
- Occupant Health and Well-being

Each criterion has assigned points; some core criteria are mandatory, while others are optional. A project needs to demonstrate compliance to earn points.

Rating System

- **Certification Threshold:** Minimum 50 points required for GRIHA certification.
- **Star Ratings:**
 - 50–60 points: 1 star
 - 61–70 points: 2 stars
 - 71–80 points: 3 stars
 - 81–90 points: 4 stars
 - 91–100 points: 5 stars

Projects undergo documentation, evaluation, and site verification before certification is awarded.

Types of GRIHA Certifications

GRIHA offers variants, such as:

- Standard GRIHA for large new constructions
- GRIHA for Existing Buildings
- GRIHA for Cities
- SVAGRIHA (Simple Versatile GRIHA) for small-scale projects

Importance & Benefits

- **Promotes Sustainability:** Encourages environmentally responsible construction practices.
- **Reduces Operational Costs:** Energy and water efficiency means lower bills over the building's lifetime.
- **Enhanced Eco-friendly Reputation:** Recognition as a certified green building.
- **Supports Regulatory Compliance and Incentives:** Many local governments offer incentives for GRIHA-certified projects.

GRIHA vs. Other Systems

- **Indigenous to India:** Unlike global systems like LEED, GRIHA is tailored for India's climatic and socio-economic conditions.

- **Holistic Approach:** Covers aspects from site selection to post-occupancy monitoring.
- GRIHA is the national rating system for green buildings in India, jointly developed by The Energy and Resources Institute (TERI) and the Ministry of New and Renewable Energy (MNRE).
- GRIHA's comprehensive evaluation system assesses a building's performance from its design phase through construction to its operation, focusing on key areas like site selection, resource utilization, and waste management.
- While the Indian government has encouraged the adoption of GRIHA, it is **not mandatory for all government buildings**. They are encouraged to pursue at least a 3-star rating, but it is not a legal mandate. LEED is a voluntary, globally-recognized rating system. Both are voluntary systems in India.
- The GRIHA rating system provides a 1-to-5 star rating based on a building's compliance with the criteria, where a higher star rating indicates a higher level of green performance and sustainability.

9. Nauru

Context: Pacific microstate Nauru, has a novel plan to fund its fight against climate change by selling “golden passports”.

Nauru

- Nauru is a tiny island country in the central Pacific Ocean, northeast of Australia. Despite its small size, it is notable for its phosphate mining history, unique political structure, and international engagement.

Geography and Demographics

- **Area:** About 21 square kilometers, making it the world's third smallest island country by land area (after Vatican City and Monaco).
- **Population:** Around 12,000 (2025 estimate)—one of the world's least-populated countries, though not the absolute smallest by population (Tuvalu have lesser population).

- **Geography:** Located just south of the Equator, Nauru is a coral atoll with no rivers or significant freshwater sources.

International Status

- **United Nations:** Nauru has been a full member of the United Nations since 1999.
- **Commonwealth of Nations:** Nauru is also a member of the Commonwealth. It joined the Commonwealth in 1968 immediately after gaining independence.



10. Contaminants and Health Impacts

Context: The 2024 Annual Groundwater Quality Report by the Central Ground Water Board (CGWB) has revealed widespread contamination by nitrates, fluoride, arsenic, uranium, heavy metals, and pathogens in over 440 districts across India, threatening the health of millions and undermining water security.

Key Contaminants and Health Impacts:

Contaminant	Source	Health Impacts	Hotspot States/Districts
Nitrates	Fertilisers, sewage	Blue Baby Syndrome (Methemoglobinemia), cancer risk	Punjab, Haryana, Karnataka
Fluoride	Geogenic, fertilisers	Dental (Mottling of teeth) & skeletal fluorosis	Rajasthan, Andhra Pradesh, Telangana
Arsenic	Geogenic, mining,	Skin lesions, cancer, gangrene	Bihar, West

	over-pumping		Bengal, U.P.
Uranium	Geogenic, fertilisers	Kidney damage, organ toxicity	Punjab (Malwa region)
Heavy Metals, Mercury	Industrial waste	Neurological damage, anaemia, Cognitive impairment due to mercury contamination	Kanpur, Vapi
Pathogens	Sewage leaks	Cholera, dysentery, hepatitis	Odisha, U.P.

11. FAO Food Price Index

Context: The FAO Food Price Index (FFPI) for July 2025 rose to 130.1 points, its highest in over two years, driven by record meat prices and a surge in vegetable oil prices, despite declines in cereals, dairy, and sugar.

About FAO Food Price Index (FFPI)

- The FAO Food Price Index (FFPI) is a widely recognized monthly indicator published by the Food and Agriculture Organization (FAO) of the United Nations. It measures the monthly change in international prices of a representative basket of globally traded food commodities. Established in 1996, FFPI helps track trends, inflation, and food security issues worldwide.

Composition

The FFPI is calculated as the average of five sub-indices, each representing a major food commodity group:

1. Cereals
2. Vegetable Oils
3. Dairy
4. Meat
5. Sugar

These groups are weighted by their average export shares from 2014–2016 (the current base period), ensuring the index reflects the importance of each category in global food trade. The FFPI covers 24 key agricultural commodities and uses over 95 export/spot price quotations in US dollars.

Calculation Method

- **Laspeyres Index Formula:** FFPI uses the Laspeyres methodology, which means quantities from the base period serve as weights, and the index shows relative price changes of the basket over time.
- **Data Sources:** Prices are collected from major global markets and commodity trade platforms. The base period for computation is 2014–2016 (index value = 100).

Frequency and Release

- **Monthly Updates:** FFPI is published every month—typically on the first Thursday—tracking real-time developments in food prices and inflation risks.
- **Historical Span:** Monthly data is available from 1990; annual from 1961.

Significance

- **Global Food Security:** Provides a vital signal for policymakers about trends, supply shocks, and risks of food inflation.
- **Early Warning:** FFPI often indicates looming issues in affordability and nutrition in vulnerable regions—crucial for humanitarian planning.
- **Reference Point:** Cited in economic reports, food security briefings, and international trade analyses.



12. Asiatic Lion

Context: On World Lion Day (August 10), Gujarat celebrated a record 891 Asiatic lions, as per the 2025 Lion Census, with over half living outside Gir.

Asiatic Lion (*Panthera leo persica*)

- It is one of the **five big cat species** found in India.
- **Physical Characteristics:** Asiatic lions are slightly **smaller than African lions**.
 - Males have **less developed manes**, leaving their ears visible.
 - Prominent **longitudinal fold of skin** along the belly (a distinguishing feature from African lions).
- **Distribution:** In India, concentrated in the state of Gujarat in and around the Gir Forest mainly in;
 - Gir National Park and Wildlife Sanctuary
 - Paniya Wildlife Sanctuary
 - Mityala Wildlife Sanctuary
 - Barda Wildlife Sanctuary
- **Conservation Status:**
 - **IUCN Red List status:** Endangered
 - **CITES:** Appendix I
 - **Wildlife Protection Act, 1972:** Schedule I

Note: There is no record of Vansda National Park or Shoolpaneshwar Wildlife Sanctuary hosting Asiatic lions.

13. Easter Island

Context: Rising sea levels due to climate change could submerge coastal areas by 2080, threatening the moai statues and archaeological heritage.

Easter Island

Geography

- **Location:** Easter Island, also known as Rapa Nui, is a remote volcanic island situated in the southeastern Pacific Ocean.
- **Coordinates:** Approximately 27°07' S latitude and 109°21' W longitude.
- It lies about 3,510 km (2,180 miles) west of mainland Chile, making it one of the most isolated inhabited islands in the world.
- **Easter Island is at the southeasternmost point of the Polynesian Triangle, a vast region in Oceania bounded by Hawaii, New Zealand, and Easter Island itself.**

Physical Characteristics

- The island covers an area of about 163.6 sq km (63 sq miles) and is roughly triangular in shape with three extinct volcanic cones.
- The highest point is Mount Terevaka (507 meters/1,663 feet).
- Notable natural features include three freshwater crater lakes: Rano Kau, Rano Raraku, and Rano Aroi.
- There are no permanent rivers or streams, typical of Pacific volcanic islands.

Political & Linguistic History

- Easter Island is a special territory of Chile, annexed in 1888 and part of the Valparaíso Region as the commune Isla de Pascua.
- The island's residents govern through a local municipal council and mayor but remain under Chilean national administration.
- The indigenous people, the Rapa Nui, are Polynesian in origin and settled around 1200 AD.
- They developed a unique culture, the most famous legacy being the moai statues—massive stone monoliths carved to honor deities and ancestors.
- The two main languages spoken are Rapa Nui (an Eastern Polynesian language) and Spanish (the official language of Chile).



Cultural Highlights

- The island is renowned for nearly 1,000 monumental stone statues called moai, which line much of the coastline.

- The entire island is a UNESCO World Heritage Site, protected largely by Rapa Nui National Park.
- The Tapati Festival, held annually in February, celebrates Rapa Nui culture through traditional music, dance, and competitions.

14. Cauvery Wildlife Sanctuary

Context: Two tiger cubs were found dead in Cauvery Wildlife Sanctuary (CWS), Karnataka, while their mother tigress has gone missing.

About Cauvery Wildlife Sanctuary (CWS):

- A protected area in Karnataka, declared in 1987 under the Wildlife Protection Act, later expanded to over 1,027 km² in 2013. It acts as a vital tiger and elephant habitat.
- **Location:**
 - Spread across Mandya, Chamarajanagar, and Ramanagara districts of Karnataka.
 - Lies along the Cauvery River and shares boundaries with Tamil Nadu's Dharmapuri forests.
 - Serves as a wildlife corridor linking Bannerghatta NP, BRT Tiger Reserve, and MM Hills WS.
- **Key Features:**
 - **Climate:** Semi-arid, with rainfall from both SW and NE monsoons.
 - **Landscape:** Dry deciduous, thorn forests, riverine patches, and evergreen sholas.
 - **Tourist sites:** Hogenakkal Falls, Mekedatu, Sangam.
- **Flora:**
 - **Dominant trees:** Terminalia arjuna, Syzygium cumini, Hardwickia binata, Albizia amara, Tamarindus indica.
 - Mix of deciduous and evergreen vegetation ensures biodiversity resilience.
- **Fauna:**
 - **Flagship species:** Tiger, Asian elephant, leopard, dhole, sloth bear.
 - **Other mammals:** Sambar, spotted deer, barking deer, wild boar, chevrotain, macaques.

- **Endangered fauna:** Grizzled giant squirrel, smooth-coated otter, hump-backed mahseer fish.
- **Birds:** Over 280 species, including white-rumped vulture, Nilgiri wood-pigeon, yellow-throated bulbul.
- **Significance:**
 - **Ecological Role** – Maintains genetic connectivity for large carnivores in the Western & Eastern Ghats.
 - **Water Security** – Protects the Cauvery River catchment, vital for South India's drinking and irrigation needs.

15. Dibru–Saikhowa National Park

Context: A new peer-reviewed study (Earth Journal, 2024) found that native and invasive plants are altering grasslands in Assam's Dibru–Saikhowa National Park.

About Dibru–Saikhowa National Park (DSNP)

- A **riverine protected area** in eastern Assam, located between the Brahmaputra and Dibru rivers.
- Declared a **National Park** in **1999** and a **Biosphere Reserve** in **1997**.
- Area: **425 sq. km**.

Key Features

- **Unique Landscape:** Island-like formation dominated by wetlands, grasslands, and semi-evergreen forests.
- **Feral Horses:** Only known habitat of around 200 wild horses, descendants of animals abandoned during World War II.
- **Flora:** Grassland ecosystems alongside semi-evergreen forests; now under threat from both native trees (Bombax ceiba, Lagerstroemia speciosa) and invasive species (Chromolaena, Parthenium, Mikania).
- **Fauna:**
 - Critically endangered Bengal Florican (Houbaropsis bengalensis).

- Hog deer (Axis porcinus) and swamp grass babbler (Prinia cinerascens).
- Rich avian diversity due to its floodplain location.
- **Hydrology:** Subject to recurring floods of the Brahmaputra, shaping its dynamic ecosystem.

16. Arctic Reindeer

Context: A new international study warns that Arctic reindeer (caribou) populations could decline by up to 80% by 2100 due to climate change, especially in North America.

Arctic Reindeer

Taxonomy and Distribution

- The Arctic reindeer (Rangifer tarandus), also known as caribou in North America, is a large deer species with a circumpolar distribution across the Arctic, subarctic, tundra, and boreal forests of northern Europe, Siberia, Greenland, Alaska, and Canada.
- There are migratory and sedentary populations; tundra reindeer migrate vast distances, while forest reindeer live in smaller groups and migrate less.

Habitat and Adaptations

- Reindeer thrive in frigid environments, well-adapted to the extreme cold of Arctic regions, including open tundra and adjoining boreal woodlands.
- Their hollow guard hairs provide exceptional insulation, while large, crescent-shaped hooves enable them to walk on snow and dig ("cratering") for food beneath snow.
- Females, uniquely among deer species, also have antlers, which help them defend feeding sites through the harsh winter.

Feeding and Behaviour

- **Diet:** Reindeer are herbivores, primarily consuming lichens (especially reindeer lichen) in winter and grasses, sedges, leaves of willows and birches, and mushrooms during the summer.

- Reindeer are highly social animals, forming herds that may swell to hundreds of thousands during spring migration and disperse in smaller groups in autumn and winter.
- Their migrations are among the longest of any terrestrial mammals, following vegetation and avoiding harsh climates.

Reproduction and Life Cycle

- Reindeer are polygynous, with dominant males mating with groups of females during the October–November rut. Males lose weight and antler mass during mating season.
- Gestation lasts about 210–240 days, resulting in the birth of a single calf, which quickly learns to follow and graze with its mother.
- Calves face predation from wolves, bears, and lynx-up to half may not survive their first year.
- The mating season (rut) for Arctic reindeer occurs in **autumn** (September–October), not winter. The calves are born in the **spring** (late May–early June), not late autumn.
- The gestation period of a reindeer is approximately **7-8 months**. This duration is biologically adapted to ensure that the birth of the calf in the late spring coincides with the peak availability of fresh, nutrient-rich vegetation in the Arctic tundra. This timing is critical for the survival and rapid growth of the newborn calf and for the mother to regain her strength.

17. Globally Important Agricultural Heritage Systems

Context: As per the Food and Agriculture Organization (FAO), India is currently home to three Globally Important Agricultural Heritage Systems (GIAHS).

The Globally Important Agricultural Heritage Systems (GIAHS)

- They are dynamic, community-managed farming systems that integrate agrobiodiversity, traditional knowledge, and cultural heritage to ensure sustainable livelihoods and food security.

- They are recognised by the FAO, 99 such systems have been designated across 29 countries.
- Recently, a **mountain agropastoral system in Tajikistan** has become Central Asia's first inclusion in the GIAHS.
 - Additionally, a **pine tree agroforestry system** and a traditional bamboo-fishery system in **South Korea**, and an **agrosilvopastoral system in Portugal** have also been recognized.

India's Globally Important Agricultural Heritage Systems (GIAHS)

- **Koraput region, Odisha:** It is known for highland subsistence paddy farming and rich diversity of indigenous rice varieties, along with medicinal plant resources linked to tribal knowledge systems.
- **Kuttanad farming system, Kerala:** It is a unique **below-sea-level agriculture model combining paddy fields**, coconut gardens, inland fisheries, and shell collection in a wetland ecosystem.
- **Saffron Heritage of Kashmir:** It features traditional saffron cultivation using intercropping and organic practices, supporting biodiversity and soil health.

18. Saltwater Crocodile

Context: Saltwater Crocodile population has increased in Sundarban Biosphere Reserve in West Bengal.

Saltwater Crocodile (*Crocodylus porosus*)

- The Saltwater Crocodile, also known as the estuarine crocodile, Indo-Pacific crocodile, or informally as "saltie," is the largest living reptile in the world.
- Males typically grow up to 5 meters in length and weigh around 500 kg, while females are smaller, usually around 2.5 to 3 meters long and weighing under 100 kg.
- They are apex predators and highly opportunistic hunters in their aquatic environments.

Distribution and Habitat

- The species inhabits a wide region spanning from the eastern coast of India, through Southeast Asia and the Sundaic region, to northern Australia and Micronesia.
- Found in diverse habitats such as coastal brackish mangrove swamps, estuaries, river deltas, and freshwater rivers.
- Notable populations exist in the Sundarbans (largest mangrove forest spanning India and Bangladesh), Bhitarkanika National Park (Odisha, India), the Andaman and Nicobar Islands, Northern Australia (including Darwin River systems), and Southeast Asian coasts.
- They can tolerate a broad range of salinities, often moving between freshwater and saltwater habitats seasonally.

Physical Adaptations

- Saltwater crocodiles have specialized salt-excreting glands that enable them to survive in salty oceanic waters, a unique trait among crocodilians allowing them to swim long distances across oceans.
- They thrive in warm, tropical, and subtropical climates and tend to vacate colder waters during cold spells.

Behavior and Diet

- Saltwater crocodiles are ambush predators, typically lying in wait partially submerged to snap up prey with powerful jaws and drag it underwater to drown.
- Their diet includes a wide variety of animals such as fish, crustaceans, turtles, birds, mammals, and occasionally livestock. Juveniles feed on smaller prey like insects and amphibians.
- They are territorial animals, with males especially competing fiercely for prime habitat zones.

Reproduction and Nesting

- Females construct mound nests using mud and vegetation in suitable locations near water.

- They exhibit maternal care, guarding nests and hatchlings carefully to improve offspring survival.

Conservation Status

- The saltwater crocodile is listed as Least Concern by the IUCN, reflecting stable or increasing populations in many areas due to effective protection measures.
- However, they remain protected under the Wildlife Protection Act (Schedule I) in India, CITES Appendix I/II (varies by region), due to threats such as illegal hunting, habitat destruction, and human-wildlife conflicts.

Ecological Importance

- Saltwater crocodiles are keystone species in their ecosystems, playing a critical role in maintaining the balance of aquatic food webs.
- Their presence in mangrove and estuarine environments contributes to the health and biodiversity of these habitats.
- The Saltwater Crocodile (*Crocodylus porosus*) is the only one of India's three crocodile species (the other two being the Mugger and the Gharial) that has the unique ability to thrive in both freshwater and saline coastal or estuarine habitats.
- The ability of the saltwater crocodile to live in marine environments is due to specific **physiological adaptations**. These include specialized **lingual salt glands** on their tongues that excrete excess salt, along with other efficient osmoregulatory mechanisms that help them maintain their internal fluid balance.
- In India, the Saltwater Crocodile's distribution is indeed concentrated in the mangroves and deltas of the east and south. The **Bhitarkanika National Park** in Odisha is particularly known for its large population, along with the Sundarbans in West Bengal and the Andaman & Nicobar Islands. Distribution info is factually true, but it doesn't explain their ability to thrive in both freshwater and saline habitats.

19. Wildlife Crime Control Bureau

Context: The Assam Police and officials of the Wildlife Crime Control Bureau seized two elephant tusks weighing 4.6 kg from a man on August 23.

Wildlife Crime Control Bureau (WCCB)

- The **Wildlife Crime Control Bureau (WCCB)** is a statutory, multi-disciplinary body of the Government of India established to combat organized wildlife crime and illegal trade in wildlife and their derivatives. It operates under the Ministry of Environment, Forest and Climate Change and plays a significant role in the enforcement of wildlife protection laws, capacity building, intelligence gathering, and international cooperation.

Establishment and Organizational Structure

- Constituted on **6th June 2007** through amendments to the **Wild Life (Protection) Act, 1972**.
- Headquarters:** New Delhi.
- Regional offices:** Delhi, Mumbai, Chennai, Kolkata, Jabalpur, Bhopal.
- Sub-regional offices:** Amritsar, Guwahati, Cochin.
- Border units:** Ramanathapuram (Tamil Nadu), Moreh (Manipur), Motihari (Bihar), Gorakhpur (Uttar Pradesh), Nathula Pass (Sikkim); placed at sensitive points to curb wildlife trafficking.

Mandate and Key Functions

WCCB is empowered under Section 38Z of the Wild Life (Protection) Act, 1972 to:

- Collect and collate intelligence** about organized wildlife crime and disseminate it to relevant agencies for prompt action.
- Establish and maintain a centralized wildlife crime data bank** for effective monitoring and analysis.
- Coordinate enforcement actions** across multiple agencies, states, and border units.
- Facilitate international cooperation** and fulfill India's obligations under global conventions like

CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora).

- Assist and advise customs authorities** in inspecting flora and fauna consignments under relevant laws and EXIM policies.
- Capacity building** of wildlife crime enforcement agencies through professional training for investigation and prosecution.

Technology and Operations

- WCCB runs an **online Wildlife Crime Database Management System** for real-time crime analysis and trend detection.
- It leads national and international operations such as **Operation Save Kurma, Thunderbird, Wildnet, Lesknow, BIRBIL**, among others, resulting in arrests and seizures related to endangered species and illegal wildlife products.
- The Bureau assists in both preventive and prosecutorial aspects of wildlife crime.

Role and Impact

- WCCB has emerged as a nodal agency for wildlife crime control in India, combating poaching, trafficking, and illegal trade in both terrestrial and aquatic species.
- It supports law enforcement nationally and advises on policy, legislation, and operations with an international scope.
- WCCB maintains a centralised wildlife crime database and helps in forensic technique development.
- WCCB itself does **not** have prosecution powers; it assists state agencies who prosecute under the Wildlife (Protection) Act.
- WCCB partners with INTERPOL, UNODC, CITES Secretariat, and other agencies.
- The idea of WCCB came from the **Tiger Task Force (2005)**, after rising poaching threats.

20. Invasive Alien Species

Context: A new study published in *Nature Ecology & Evolution* has revealed that India is massively underestimating the economic cost of invasive alien species, with management costs underreported by over 1.16 billion percent — the highest global discrepancy.

About Invasive Alien Species (IAS)

What it is?

- As per the Convention on Biological Diversity (CBD) and Indian law, an invasive alien species is a non-native organism whose introduction and spread threaten biodiversity, ecosystem services, or human well-being.
- The Indian National Biodiversity Authority (NBA) defines them as species outside their natural range that establish and proliferate, causing ecological or economic harm.

Characteristics of IAS

- High adaptability** – thrive in disturbed or new ecosystems.
- Aggressive growth** – outcompete native species for light, water, and nutrients.
- Reproductive advantage** – rapid breeding or vegetative propagation.
- Absence of predators** – flourish unchecked in new habitats.
- Economic and ecological impact** – alter soil chemistry, hydrology, and crop yields.

Global Impact

- Global cost of invasive species since 1960 exceeds **\$2.2 trillion**.
- Non-native plants account for the **highest management cost (\$926 billion)**.
- Arthropods (\$830 billion) and mammals (\$263 billion) follow.
- Europe reported the highest cost (\$1.5 trillion).

India's Case

- Lantana camara**, **Parthenium hysterophorus**, **Prosopis juliflora**, and **Water Hyacinth** dominate forests, rangelands, and wetlands.
- Large swathes of **Bandipur**, **Mudumalai**, and **other reserves** are overrun by lantana.
- Agriculture suffers due to weeds like **parthenium** reducing crop yields.
- Aquatic invasives clog waterways, impacting irrigation and fisheries.
- NBA & research institutions have flagged **Eichhornia** and **Parthenium** as invasive threats.

- The Wildlife (Protection) Act, 1972 does **not** provide a schedule for invasive species. Control is dealt with indirectly via the **Biological Diversity Act, 2002** and action plans.
- Article 8(h) of CBD obliges parties (including India) to manage invasive alien species.
- Prosopis juliflora* was intentionally introduced for afforestation and as fuelwood, but later became invasive.

21. Article 9.1 of the Paris Agreement

Context: India and developing countries push to bring Article 9.1 back at the center of negotiations in COP30, at Belém, Brazil.

What is Article 9.1 of the Paris Agreement?

- Article 9.1 of the **Paris Agreement** sets out the financial obligations of developed countries to support developing countries in their efforts to combat and adapt to climate change. It states:
 - “Developed country Parties shall provide financial resources to assist developing country Parties with respect to both mitigation and adaptation **in continuation of their existing obligations under the Convention**”.

Key Elements of Article 9.1

- Financial Assistance:** Developed countries must provide financial resources to developing countries to support climate change mitigation (reducing greenhouse emissions) and adaptation (adjusting to climate impacts).
- Continuation of Obligations:** These provisions build upon earlier commitments under the UN Framework Convention on Climate Change (UNFCCC), especially Articles 4.3 and 4.4, which mandated Annex II countries (developed nations) to provide new and additional finance for climate action in developing countries.
- Legally Binding:** The use of the word “shall” creates a legally binding obligation for developed countries acting collectively to provide finance.

- **No Fixed List of Developed Countries:** The Paris Agreement does not define “developed” or “developing” countries in a fixed way, allowing flexibility as countries’ circumstances change over time.

Importance and Context

- Article 9.1 emphasizes the principle of **common but differentiated responsibilities (CBDR)**, recognizing differing capabilities and responsibilities among nations.
- It ensures that developing countries receive the necessary support to implement their nationally determined contributions (NDCs) under the Paris Agreement.
- The article supports global collaboration for finance flows toward a climate-resilient and low-carbon future.
- Article 9.1 explicitly states that developed country Parties shall provide financial resources to assist developing countries for mitigation and adaptation.
- The obligation is only on **developed countries**; developing nations may contribute voluntarily, but they are not mandated.
- Though the **USD 100 billion goal** originated in Copenhagen (2009), Article 9 of the Paris Agreement reinforced developed country commitments and provided the legal grounding for climate finance under UNFCCC.

22. Conocarpus Trees

Context: The Supreme Court-mandated Central Empowered Committee (CEC) has sought a ban on **Conocarpus trees in India due to ecological harm.**

About Conocarpus Trees

- **Scientific Name:** Conocarpus erectus (also called Buttonwood tree).
- **Origin:** Native to coastal areas of North & South America, West Africa.

- Introduced in India (mainly Gujarat, Maharashtra, Telangana) for urban greening and roadside plantations due to its fast growth and ability to withstand saline & arid conditions.
- They are evergreen, medium-sized trees (up to 20 m) and grow rapidly in dry, saline, and polluted environments.
- **Concerns in India:**
 - Allergic Reactions: Reported to release high levels of pollen, causing respiratory issues, asthma, and skin allergies.
 - Ecological Impact: Classified as invasive in some regions – suppresses native vegetation.
 - High water intake may stress groundwater in dry areas.
 - Municipal Bans: Hyderabad (2022) and Gujarat (2023) restricted large-scale plantation.
- Many Indian cities, including those in Gujarat, Telangana, and Andhra Pradesh, as well as countries in the Gulf region, have indeed restricted or banned the planting of **Conocarpus** trees due to growing concerns about their negative effects.
- The roots of the Conocarpus tree are known to be aggressive and can cause significant damage to urban infrastructure. Their extensive root systems can penetrate and crack underground pipes, sewage lines, and even the foundations of buildings, leading to costly repairs. This infrastructural damage is one of the primary reasons for the restrictions.
- Conocarpus trees are known to produce large amounts of allergenic pollen, which can trigger or worsen respiratory conditions such as **asthma and allergies**, particularly during their flowering season. The trees also release **allelopathic chemicals** that can inhibit the growth of other nearby plants, affecting local biodiversity. This health and ecological risk is another major factor contributing to the ban on its plantation.



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SCIENCE AND TECHNOLOGY

1. MuleHunter.ai

Context: At least 15 more banks are set to implement the RBI-developed MuleHunter platform over the next two months to intensify efforts to tackle fraud by identifying accounts used for fraudulent transactions, a senior official said on August 1.

MuleHunter.ai:

- MuleHunter.ai is an advanced AI/ML-powered fraud detection platform developed by the Reserve Bank Innovation Hub (RBIH), a subsidiary of the Reserve Bank of India, to efficiently identify and flag “mule accounts” commonly used for money laundering and cybercrimes.

What is MuleHunter.ai?

- **Purpose:** Detects “money mule” accounts—bank accounts used by criminals (sometimes run by unsuspecting individuals) to launder illicit funds. These accounts are often deeply interconnected and hard to trace using traditional detection methods.
- **Developer:** Reserve Bank Innovation Hub (RBIH), an RBI subsidiary, in collaboration with major banks and financial institutions.

How MuleHunter.ai Works

- **Behavioural Pattern Analysis:** The system analyzes up to 19 distinct patterns of mule account behavior, identified in partnership with banks—such as sudden unusually large transfers, new account linkages, or rapid fund movements.
- **Machine Learning Algorithms:** Employs AI that continuously learns from new transaction data, adapting to evolving fraud techniques and providing greater accuracy and speed than rule-based/manual systems.

- **Real-Time Monitoring:** Monitors and flags suspicious account activities nearly instantly, generating timely alerts for financial institutions to prevent further misuse.
- **International and Domestic Scope:** Capable of tracking cross-border as well as domestic financial flows for suspicious activities.
- **Continuous Improvement:** The platform self-updates and refines its detection models as it processes more data, thus continuously enhancing fraud detection capabilities.

Impact & Implementation

- **Improved Detection Rate:** Pilot testing with two major public sector banks demonstrated significant improvement—approximately three times better accuracy and ten times faster response than manual systems.
- **National Coverage:** RBIH is engaging additional banks to roll out MuleHunter.ai nationwide, aiming to strengthen fraud prevention in India’s increasingly digital financial ecosystem.
- **Relevance:** Tackles a critical issue, as 67.8% of cybercrime complaints pertain to online financial fraud in India; mule accounts are central to such activities.

Policy & Industry Implications

- **Fraud Mitigation:** Reduces risks associated with digital banking, lending, and fintech operations, protects consumers, and upholds the integrity of the financial system.
- **Collaborative Approach:** RBI advocates cooperation between banks and regulatory bodies to maximize the effectiveness of MuleHunter.ai and create a more robust financial infrastructure.
- **Limitations and Risks:** While AI enhances fraud detection, RBI cautions against overreliance due to risks to financial stability imagined by unchecked AI deployment.

2. Biosimilar Drugs

Context: Biosimilars need to be made less expensively while ensuring efficacy and minimal adverse effects. The larger the number of affordable biosimilars, the more options we will have for our patients.

Biosimilar Drugs:

- A biosimilar drug is a biological product that is highly similar to an already approved original biologic medicine (known as the reference or innovator product), with no clinically meaningful differences in terms of safety, purity, and potency. Unlike generic drugs, which are exact chemical copies of small-molecule drugs, biosimilars are derived from living organisms and are complex molecules that cannot be exactly replicated. Their development involves demonstrating similarity through extensive analytical studies, animal testing, and clinical trials to confirm comparable efficacy, safety, and immunogenicity.

Key points about biosimilars:

- **Nature and Source:** Biosimilars are made from living cells or organisms and include proteins, antibodies, or nucleic acids, making them structurally complex and sensitive to manufacturing changes.
- **Regulatory Approval:** Approval requires a totality of evidence showing similarity to the reference biologic, including structural characterization, biological activity, safety, and clinical effectiveness.
- **Differences from Generics:** Generics are identical chemical copies with simple manufacturing, whereas biosimilars have inherent variability and require rigorous comparability tests.
- **Clinical Use:** Biosimilars offer a lower-cost alternative to high-priced biologics used in treatment of cancer, autoimmune diseases, anemia, and other serious conditions, while

maintaining equivalent therapeutic benefits and safety profiles.

- **Examples:** Biosimilars exist for drugs like infliximab (for autoimmune diseases), filgrastim (for chemotherapy-induced neutropenia), and erythropoietin (for anemia).
- They are approved based on a showing of high similarity to an already-approved biological product (the reference product). The key is demonstrating that there are no clinically meaningful differences.
- Unlike generic drugs, which are small molecule drugs and can be identical chemical copies, biosimilars are large, complex biological products. It's impossible to create an exact, identical copy due to the nature of their production in living systems. Therefore, the focus is on being "highly similar," not identical.
- The approval pathway for biosimilars is more rigorous than for generics. It requires a comprehensive comparison to the reference product, including extensive analytical, preclinical, and comparative clinical studies to ensure similarity.
- In India, the regulation of biosimilars is governed by the "Guidelines on Similar Biologics" issued jointly by the Central Drugs Standard Control Organisation (CDSCO) and the Department of Biotechnology (DBT), ensuring a structured and rigorous approval process.

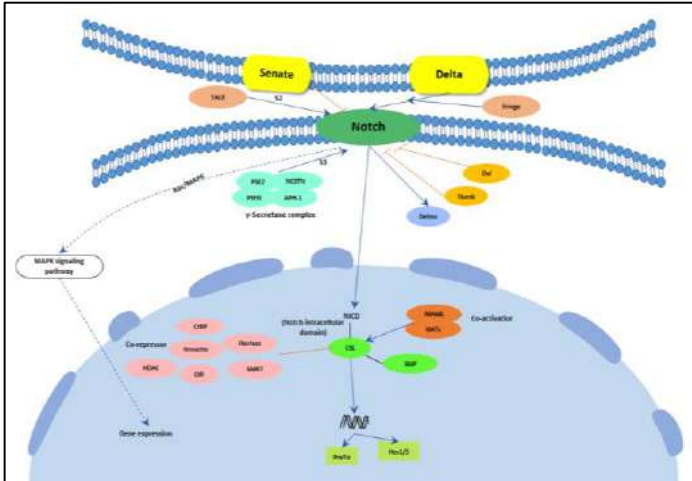
3. Notch Signalling

Context: A team of Harvard scientists has used artificial intelligence (AI), in the form of AI-designed proteins, to generate large numbers of immune cells and enhance immunity against diseases ranging from cancer to viral infections, a new research paper published in Cell said.

About Notch Signalling

- It is a cell-to-cell communication system vital for various developmental processes and tissue homeostasis in multicellular organisms.

- Homeostasis is the process by which living organisms maintain a stable internal environment despite external changes.
- It plays a vital role in cell fate determination, proliferation, differentiation, and apoptosis.
- It can lead to birth defects and diseases like cancer



4. Intermediate-Range Nuclear Forces Treaty (INF)

Context: Russia has officially withdrawn from the Intermediate-Range Nuclear Forces (INF) Treaty.

The Intermediate-Range Nuclear Forces Treaty (INF)

- The INF Treaty was signed in December 1987 by the United States and the former Soviet Union, and entered into force on 1 June 1988.
- It required both countries to eliminate their ground-launched ballistic and cruise missiles that could travel between 500 and 5,500 kilometres by an implementation deadline of 1 June 1991.
- It was crucial to **Euro-Atlantic security for decades** and it eliminated a whole category of nuclear weapons that threatened Europe in the 1980s.

5. TRi-structural ISOtropic Particle Fuel (TRISO)

Context: The US Department of Energy (DOE) has selected Standard Nuclear as the first company to develop next-gen TRISO nuclear fuel, reducing

reliance on Russian uranium and boosting domestic supply chains.

About TRi-structural ISOtropic Particle Fuel (TRISO):

- **What is TRISO?**
 - A **high-performance nuclear fuel** designed for **advanced reactors**, offering enhanced **safety and efficiency**.
 - Developed by **US DOE and private firms** like **BWX Technologies**.
- **How is it Formed?**
 - Consists of a **uranium, carbon, and oxygen** fuel kernel.
 - Encased in **three protective layers of carbon-ceramic materials** to prevent radiation leaks.
 - Particles are **tiny (seed-sized)** but can be shaped into **pellets or pebbles** for reactors.
- **Key Features:**
 - **Extreme Durability** – Resists neutron irradiation, corrosion, oxidation, and high temperatures.
 - **Self-Contained Safety** – Each particle acts as its own containment system, minimizing radiation risks.
 - **Versatile Use** – Compatible with molten salt and high-temperature gas-cooled reactors.
- **Significance:**
 - Supports **next - gen small modular reactors (SMRs)** and **Gen-IV reactors**.
 - Reduces US dependence on Russian uranium.
 - Enhances clean energy security and nuclear innovation.

6. Asia's Longest Freight Train – Rudrastra

Context: Indian Railways has successfully conducted the trial run of 'Rudrastra', Asia's longest freight train measuring 4.5 km, marking a significant milestone in freight logistics efficiency.

About Asia's Longest Freight Train – Rudrastra:

- **What it is?**
 - **Rudrastra** is a **4.5 km-long freight train** created by combining **six standard rakes** into one operational unit.

- It is India's longest freight train and among the longest in Asia.
- **Organisation Involved:**
 - Developed and operated by **Indian Railways**, specifically the **Pandit Deendayal Upadhyaya (DDU) Division** of the East Central Railway.
 - Trial run coordinated with the **Dhanbad Division** for operational integration.
- **Objective:**
 - Enhance freight efficiency by transporting larger cargo volumes in a single run.
 - Reduce operational duplication in crew management, scheduling, and routing.
 - Minimise time and resource usage in goods transportation.
- **Features:**
 - **Length:** 5 km.
 - **Wagons:** 354 (carrying capacity of ~72 tonnes per wagon).
 - **Locomotives:** 7 engines (two at the front, others positioned between rakes).
 - **Speed:** Average of 40 km/h over a **209 km**
 - **Configuration:** Formed by attaching three long-haul combinations of two freight trains each.
 - **Route:** Partly on the **Dedicated Freight Corridor (DFC)**, partly on conventional tracks.

7. Little Red Dot Galaxies

Context: Astronomers have discovered the most distant confirmed black hole, hidden inside a rare galaxy known as a "Little Red Dot." Its enormous size and early existence challenge current theories about how galaxies and black holes formed in the young universe.

Little Red Dot Galaxies:

What are "Little Red Dot" Galaxies?

- "Little Red Dots" (LRDs) are a recently discovered class of extremely compact, red-hued galaxies detected by the James Webb Space Telescope (JWST) in the early universe. These galaxies are mysterious, exceptionally

small in size, and were previously undetected due to the limits of earlier telescopes. LRDs have been observed to exist predominantly in the period between 600 million and 1.5 billion years after the Big Bang—making them some of the earliest galactic structures known.

Scientific Significance

- **Challenging Standard Models:** The existence of LRDs—dense galaxies with signs of active black hole growth—challenges conventional cosmological models. Standard galaxy evolution models propose that supermassive black holes (SMBHs) should form more slowly, after a generation of massive stars have come and gone. However, these LRDs host rapidly growing SMBHs very early in cosmic history, requiring a rethinking of how black holes and galaxies formed soon after the Big Bang.
- **Unique Physical Properties:**
 - Compact and very red (dusty, metal-poor, or aged light signature)
 - Show strong evidence for actively feeding black holes at the galaxy centers
 - May represent the first few growth episodes of "seed" black holes, rapidly increasing in mass in dense, gas-rich environments
 - Some theoretical models even propose that these might be supermassive Population III stars, or quasi-stars transitioning into SMBHs.
- JWST data on LRDs reveal that massive black holes and compact galaxies appeared much earlier than standard models predicted, driving scientists to reconsider early-universe evolution theories.
- The "active black hole growth" seen in LRDs directly points to very rapid SMBH formation in the universe's first billion years—much earlier and more massive than predicted by classical models. The unusual features of LRDs (their compactness and early, rapid SMBH growth) are precisely what force a re-examination of existing cosmological models.

8. Compound 3b

Context: The novel molecule/drug candidate, named **Compound 3b**, neutralizes the resistance mechanism and shows strong therapeutic results in preclinical model.

What is the Breakthrough?

- Researchers at the Indian Institute of Technology (IIT) Roorkee, in collaboration with UiT- The Arctic University of Norway, have developed a drug candidate called **Compound 3b** that represents a major advance in the battle against antibiotic-resistant superbugs.

Why is Antibiotic Resistance a Crisis?

- **Antimicrobial Resistance (AMR):** Bacteria such as *Klebsiella pneumoniae*, identified by the World Health Organization as a top-priority global health threat, have rapidly evolved resistance to nearly all antibiotics, including powerful drugs like meropenem.
- **Mechanism of Resistance:** Many superbugs produce enzymes called β -lactamases (specifically, KPC-2) that break down β -lactam antibiotics, rendering them ineffective.

Compound 3b – Mechanism of Action

- **β -lactamase Inhibitor:** Compound 3b belongs to a class of molecules called β -lactamase inhibitors. It is specifically designed to block the KPC-2 enzyme.
- **Synergy with Meropenem:** When administered with the antibiotic meropenem, Compound 3b prevents resistant bacteria from degrading the drug, restoring the antibiotic's ability to kill infection-causing germs.
- **Preclinical Success:** Laboratory and animal models have shown that Compound 3b is highly specific, safe for human cells, and effective at reducing lung bacterial loads, restoring meropenem's potency against deadly infections.

Research Team and Collaboration

- **Lead Investigator:** Prof. Ranjana Pathania, Department of Biosciences and Bioengineering, IIT Roorkee.

- **Key Team Members:** Dr. Mangal Singh, Perwez Bakht.
- **International Collaboration:** Prof. Annette Bayer and team from UiT Tromsø, Norway.

Global and National Significance

- **Restoring Old Antibiotics:** Instead of needing to constantly develop brand-new antibiotics, Compound 3b allows existing drugs to remain effective by protecting them from bacterial resistance mechanisms.
- **Accessible Treatment:** The approach could make life-saving drugs more accessible and effective worldwide, especially in countries like India facing high burdens of infectious diseases and drug-resistant infections.
- **Publication & Recognition:** The study is published in the *Journal of Medicinal Chemistry* and has received attention for its strong preclinical results and potential global impact.

9. Sleeping Sickness

Context: WHO has announced that Kenya has eliminated sleeping sickness as a public health problem.

About the Sleeping Sickness

- It is a vector-borne disease, also known as **Human African Trypanosomiasis (HAT)**, and is endemic in sub-Saharan Africa.
- It is caused by **protozoans** of the genus *Trypanosoma*, transmitted to humans by bites of **tsetse flies** (*Glossina*) which have acquired the parasites from infected humans or animals.
- Rural populations dependent on **agriculture, fishing, animal husbandry or hunting** are deemed most at risk of exposure.
- **Symptoms** include fever, headaches, joint pain, and, in advanced stages, neurological symptoms like confusion, disrupted sleep patterns, and behavioral changes.
- Without treatment, it is generally **fatal**. Common treatments include **Pentamidine** and **Nifurtimox**.

- The eradication of sleeping sickness is difficult due to a combination of medical and logistical challenges. The disease's endemic regions are often characterized by political instability and poverty, which makes it hard to maintain consistent disease surveillance and vector control programs.
- The parasite, **Trypanosoma brucei**, has a unique ability called **antigenic variation**. It can change its surface coat proteins, effectively presenting a new target to the host's immune system. This constant change prevents the body from developing a long-term immune memory, making the development of a single effective vaccine extremely challenging.
- The **Tsetse fly** is the vector for the disease. It thrives in specific habitats—warm, humid, riverine areas found across sub-Saharan Africa. This geographical constraint means that control measures, like insecticide spraying or traps, must be implemented over vast, often difficult-to-access, areas.

10. Project Kusha

Context: Post Operation Sindoor, IAF is pressing for rapid progress on Project Kusha.

What is Project Kusha?

- Project Kusha is an ambitious indigenous initiative by India, led by the Defence Research and Development Organisation (DRDO), aimed at developing a cutting-edge long-range air defence system. The project seeks to counter various aerial threats such as fighter jets, drones, cruise missiles, and hypersonic missiles.

Objectives and Significance

- **Goal:** To develop a multi-layered surface-to-air missile (SAM) system capable of detecting and neutralizing enemy aircraft and missiles at extended ranges (up to 350-400 km).
- **Strategic Importance:** Designed to enhance India's defense capabilities and achieve strategic autonomy by reducing reliance on foreign

systems such as Russia's S-400 and Israel's Iron Dome.

- **Deployment Timeline:** Prototype expected by 2026, with operational deployment targeted for 2028-29.

Technical Features

- **Interceptor Missiles:** Project Kusha will include three types of interceptor missiles with ranges approximately 150 km, 250 km, and 350-400 km, each tailored to different threat profiles.
- **Advanced Radar Systems:** Incorporates long-range surveillance and fire control radars to improve detection, tracking, and engagement of multiple targets simultaneously.
- **Integration:** Designed for seamless integration with the Indian Air Force's existing command and control infrastructure, enabling coordinated defense operations.
- **Capability:** Expected to counter stealth jets, drones, ballistic and cruise missiles, and hypersonic threats with a high probability of kill (80-90%).

Comparison with Global Systems

- Project Kusha is often compared to Russia's S-400 system but aims to surpass it in some capabilities, such as countering newer missile technologies.
- It is also viewed as a complement or alternative to Israel's Iron Dome system.
- Development by DRDO and collaboration with Bharat Electronics Limited (BEL) highlights India's growing technological base and increasing self-reliance in defense.

Economic and Strategic Impact

- Project Kusha is estimated to cost around ₹21,700 crore (~\$2.6 billion).
- It offers potential for export, strengthening India's position in global defense markets.
- Enhances India's airspace security, especially in light of regional tensions.

11. Orbiting Carbon Observatory

Context: The Trump administration plans to shut down NASA's OCO missions that track carbon dioxide and monitor plant health, a key data source for scientists, policymakers, and farmers.

What is the Orbiting Carbon Observatory (OCO)?

- The Orbiting Carbon Observatory (OCO) is a NASA mission specifically designed to observe and measure the concentration and distribution of atmospheric carbon dioxide (CO₂) from space. Its objective is to provide precise, global, and space-based measurements of CO₂ to better understand the carbon cycle and its impact on Earth's climate.

Mission Background

- The original OCO satellite was launched on February 24, 2009, but failed to reach orbit due to a rocket fairing separation failure.
- OCO-2, the replacement satellite, was successfully launched on July 2, 2014. It is NASA's first dedicated Earth remote sensing satellite to study atmospheric CO₂ from space with high precision and resolution.
- Later, OCO-3, a stand-alone payload derived from OCO-2's flight instrument, was installed on the International Space Station in May 2019.

Scientific Objectives

- To provide spatially resolved measurements of atmospheric carbon dioxide on a regional scale ($\geq 1,000$ km).
- To identify geographic sources and sinks of CO₂, including natural processes and human activities impacting atmospheric CO₂ levels.
- To improve understanding of the global carbon cycle, which is crucial for climate change models and forecasting future atmospheric CO₂ trends.
- OCO-2 and OCO-3 provide data to complement ground-based networks and other satellite missions like NASA's Aqua satellite and its Atmospheric Infrared Sounder (AIRS) instrument.

Technology and Instruments

- The OCO satellites carry three high-resolution grating spectrometers designed to measure CO₂ absorption of sunlight reflected from Earth's surface in the near-infrared spectrum.
- These spectrometers measure specific wavelengths absorbed by carbon dioxide and molecular oxygen, enabling accurate quantification of gas concentrations along the path between the satellite and Earth's surface.
- Data are collected rapidly (several images per second) across multiple footprints on Earth's surface to capture detailed spatial variations.

Importance of OCO

- Climate Change Insight:** As CO₂ is a major greenhouse gas, monitoring its sources and sinks is critical to understanding climate dynamics.
- Policy Support:** Provides global data that can inform international climate agreements and national emissions reduction efforts.
- Scientific Understanding:** Helps resolve discrepancies in the global carbon budget and test climate models.
- OCO is meant to precisely measure **CO₂ distribution** in Earth's atmosphere.
- Data is used to map **seasonal and regional carbon fluxes** between forests, oceans, and the atmosphere.
- OCO uses **spectrometers in the near-infrared spectrum**, not microwave sensing.
- OCO-2 was launched by NASA (2014) aboard a Delta II rocket. NISAR is a **different joint NASA–ISRO mission**, unrelated to OCO.

12. IOAA

Context: The 18th International Olympiad on Astronomy and Astrophysics (IOAA) is being hosted in India.

What is the IOAA?

- The International Olympiad on Astronomy and Astrophysics (IOAA) is an annual global competition in astronomy and astrophysics for

high school students. It aims to promote interest and education in these sciences among young people worldwide, providing a challenging platform for talented students to demonstrate and expand their skills.

History and Organization

- The first IOAA was held in 2007 in Chiang Mai, Thailand.
- The Olympiad was founded as a split from the International Astronomy Olympiad to broaden participation and scope.
- It is organized by a council of team leaders with elected presidents and secretaries governing the event.
- Since then, IOAA has been hosted by various countries across Asia, Europe, and the Americas.

Participants and Format

- **Participants:** High school students selected by their national teams, usually through national astronomy olympiads or competitions.
- Each country usually sends up to five students with team leaders (teachers or scientists).
- **Age Limit:** Usually students must be under 20 years old by July 1 of the competition year.

Competition Structure

- The competition includes a theoretical paper and an observational/practical paper, each lasting about 5 hours.
- Theoretical questions test knowledge of astronomy and astrophysics concepts with varying difficulty levels.
- Practical tests involve sky observation, data analysis, use of software simulations, and planetarium tasks to evaluate practical skills.

Awards and Recognition

- Medals (gold, silver, bronze) and honourable mentions are awarded based on absolute and relative performance scores.
- Some participants achieve multiple gold medals across years, highlighting sustained excellence.

- IOAA also organizes a junior version (IOAA-Jr) for younger participants under reduced age limits.

Note: India participated in the inaugural IOAA in 2007, making it one of the founding members. The country has also hosted the Olympiad in the past, including the 2016 edition in Bhubaneswar and the 2025 edition in Mumbai.

13. Binary Star System

Context: Astronomers have discovered a new type of supernova triggered when a massive star interacted with a black hole in a binary system, leading to a rare and powerful stellar explosion about 700 million light-years away.

What is a Binary Star System?

- A binary star system consists of two stars orbiting a common center of mass. Over half of all stars in our galaxy are in binary (or higher-multiple) systems, making them crucial objects in astronomy.

Importance for Mass Measurement

- **Crucial for Stellar Masses:** Binary systems provide the best and often only direct method for astronomers to determine the masses of stars. For single stars, mass must be inferred from models and indirect observations, but for binaries, it can be measured empirically from orbit.
- **Observable Parameters:** Astronomers can observe the orbital motion—period and separation—of the stars. With spectroscopic and photometric data, it's possible to measure velocities and calculate orbits, even if the stars cannot be resolved visually.

Broader Significance

- Precise mass measurement is central to understanding stellar evolution, structure, and lifecycle.

- Binary stars help test astrophysical models and calibrate the mass-luminosity relationship used for single stars.
- The mass of an isolated star cannot be directly measured. However, in a binary star system, the mutual gravitational pull causes the stars to orbit a common center of mass. This orbital motion provides the only direct way for astronomers to measure the mass of a star.
- By observing the orbital period and the distance between the two stars (the orbital parameters), scientists can use a modified form of **Kepler's third law** and **Newton's law of gravitation** to calculate the combined mass of the system. This method allows them to derive a crucial stellar property that is otherwise not directly observable.

14. Technology Development Board

Context: TDB backs Indigenous AI-Powered Blood Testing Devices for primary healthcare.

Technology Development Board (TDB)

- The Technology Development Board (TDB) is a statutory body set up by the Government of India under the Technology Development Board Act, 1995.
- It was established in September 1996 to promote the development and commercialization of indigenous technologies, and to adapt and diffuse imported technologies for wider domestic application.

Objectives and Functions

- **Primary Objective:** Accelerate the development and commercialization of new technologies (including innovations from research labs, industry, and startups).
- **Financial Assistance:** Provides equity capital, soft loans (at 5% simple interest per annum), and grants to:
 - Industrial concerns and startups
 - Research and development institutions

- **Support Stages:** Focuses support on technologies that are close to commercialization or ready for market deployment (Technology Readiness Level 7–9), helping bridge the gap between research and commercial scale-up.

Key Functions:

- Facilitates interaction between industry, scientists, technocrats, and specialists.
- Encourages production of competitive consumer products.
- Motivates product and process innovation with both social relevance and profitability.
- Helps build entrepreneurial culture and industry-research partnerships.
- Assists other technology financing bodies and participates in venture capital funds and seed support initiatives.
- Supports projects in diverse sectors including health, engineering, agriculture, IT, transport, energy, textiles, and defense.

Funding Sources

- Originally funded by grants from the Government of India via the Research and Development Cess Act, 1986, as amended in 1995 (now phased out).
- Also receives funds from recoveries, returns on investments, and donations (eligible for 100% tax deduction under the Finance Act, 1999).
- TDB provides equity, soft loans, and financial assistance to promote commercialization of indigenous technology.
- It may support acquisition/adoption of foreign technology if it is of strategic/critical importance, but focus remains on indigenization.
- TDB is a **statutory body** (established by the Technology Development Board Act, 1995). Its funds are credited to the **Consolidated Fund of India** and then allocated.
- It functions under the **Department of Science & Technology (DST)**, not DBT.

15. Soaps & Detergents

Context: During World War I, shortages of animal fats and oils spurred chemists to find alternatives. This led to the development of synthetic cleaning agents: the first commercial “soap-like” detergents emerged in the mid-1930s.

What are Soaps & Detergents?

- **Soaps:** Naturally derived, made from fatty acids and alkali; work through surfactant action.
- **Detergents:** First widely made in the 1930s; synthetic surfactants; effective in hard water.
- **Composition:** Sodium (Na) or Potassium (K) salts of fatty acids (RCOONa or RCOOK).
- **Raw Materials:** Derived from vegetable oils (coconut, palm, olive) or animal fats.

Historical Background

- **2800 BC (Mesopotamia):** Earliest recorded use of soap-like substances.
- **Ancient India:** Soap nuts, tree bark, leaves, and flowers were used as natural cleansers.
- **Industrial Revolution:** Mass production of soap began in Europe, though soaps remained luxury goods taxed heavily until the 19th century.
- **World War I:** Shortage of natural oils led to the birth of synthetic detergents, with commercial-scale detergent production beginning in the 1930s.

Working Mechanism of Soaps and Detergents

- **Amphiphilic Nature:**
 - **Hydrophilic** (water-loving) end attracts water.
 - **Hydrophobic** (water-repelling) end embeds into grease/dirt.
- **Surfactants:** Reduce water's surface tension and dirt dislodges when scrubbing/rinsing.
- **Detergents:** Soap-like but formulated with stronger surfactants, bleach, and fragrances; more effective in hard water.

Economic and Social Dimension

- **Industrial Significance:** Large-scale global industry worth billions of dollars, employing millions.
- **Public Health:** Widespread use of soap linked to reduced infectious diseases, especially diarrhoea and skin ailments.
 - Soap penetration in India is high (~98% households), reflecting its role in sanitation (Swachh Bharat Abhiyan).

Environmental Concerns

- Soaps are generally biodegradable (natural fatty acids) however, some surfactants (sulphonates) persist in the environment. Phosphates in detergents cause eutrophication (nutrient pollution, algal blooms).
- Synthetic detergents have largely replaced traditional soaps in household and industrial applications.
- Detergents, unlike soaps, do not form a precipitate (scum) with the calcium and magnesium ions found in hard water. This allows them to remain effective in hard water conditions, which are common worldwide. Soaps, on the other hand, are ineffective in hard water because they form an insoluble, sticky residue, losing their cleansing properties.
- While many modern detergents are biodegradable ("soft" detergents), not all of them are. Early detergents were non-biodegradable ("hard" detergents) and caused significant environmental problems, such as river foaming. In contrast, natural soaps are generally more biodegradable and thus are considered environmentally more sustainable.

16. Coal Gasification

Context: The Union Minister of Coal and Mines stated that while coal remains vital for India's energy security, the government is pushing coal gasification to reduce environmental concerns from traditional combustion.

What is Coal Gasification?

- Coal gasification is a process that converts coal into synthesis gas (a mixture of carbon monoxide, hydrogen, and other hydrocarbons).
 - This syngas can be used to produce power, liquid fuels, chemicals, and fertilizers.
 - Compared to direct burning, gasification reduces emissions of particulate matter and other pollutants.

Government Initiatives to Promote Coal Gasification

- **Auction Reforms:** Commercial coal block auctions now include a **50% rebate** in revenue share for companies that commit to a minimum threshold of gasification.
- **Long-term Target:** India has set a target of **100 MT coal gasification by 2030**, to diversify coal usage and reduce environmental stress.
- **Financial Incentive Scheme for Coal Gasification:** The scheme was launched in **2024** and has a total outlay of **₹8,500 crore**.
 - It encourages participation from both public and private sector players to establish coal gasification projects across the country.
- Coal gasification is considered a cleaner method than direct combustion because it allows for the capture and removal of pollutants like sulfur and nitrogen compounds before the final product (syngas) is used.
- The process converts coal into a gas mixture, **syngas**, which burns more cleanly. This allows for the efficient removal of impurities, resulting in significantly lower emissions of harmful gases and particulate matter compared to burning solid coal.
- The Government of India, under its Ministry of Coal, has set a target to gasify 100 million tonnes (MT) of coal by 2030. This policy is aimed at reducing the country's import dependence on natural gas and other fossil fuels.

17. Immunoglobulin M (IgM) Antibody

Context: New study shows that IgM antibodies can also act as mechanical stabilisers of harmful proteins.

About Immunoglobulin M (IgM) Antibody

- It's the largest and first antibody immune system makes when fighting off viruses, bacteria, parasites or other harmful invaders.
 - Antibodies are protective proteins produced by the immune system.
- It's also the first antibody the immune system starts to develop as a fetus.
- They are found in blood and lymph.
- The presence of **Immunoglobulin M (IgM)** antibodies in a blood sample is a key indicator of a recent or active infection. This is because IgM antibodies are part of the body's **primary immune response**, meaning they are produced early on when a pathogen is first encountered.
- IgM is indeed the **first class of antibody** that the immune system produces upon initial exposure to a new antigen (like a virus or bacteria). Its early appearance and high concentration in the blood during the initial phase of an infection make it a reliable marker for recent exposure.

18. UPM J1040–3551 AabBab

Context: Scientists have discovered a rare quadruple star system in our Milky Way galaxy called UPM J1040–3551 AabBab. It is the first known system where two brown dwarfs orbit around two red dwarf stars.

About UPM J1040–3551 AabBab:

- **What it is?**
 - A unique **4-star system**:
 - **2 Red dwarf stars** (small, common stars that shine faintly but live very long).
 - **2 Brown dwarfs** (objects between stars and planets, called “failed stars” because they cannot fuse hydrogen like stars).

Red Dwarf Stars

- **Definition:** Red dwarfs are main sequence stars of spectral type M or early K, with masses less than about 0.8 times that of the Sun.
- **Characteristics:**
 - **Mass and Size:** Range from about 7% to 50% of the Sun's mass; radius as small as 9% of the Sun's.
 - **Temperature:** From about 2,000 K to 4,000 K, much cooler than the Sun ($\approx 5,800$ K).
 - **Luminosity:** Exceptionally low; typically less than 10% of the Sun's, sometimes as low as 0.01%.
 - **Appearance:** They look orange-red or dimly reddish, and none is visible to the naked eye from Earth, including the closest, Proxima Centauri.
 - **Fusion:** Sustain life-long fusion of hydrogen into helium via the proton-proton chain reaction.
 - **Longevity:** Can survive for trillions of years—far longer than more massive stars—because they burn hydrogen slowly and, being fully convective, never build up helium cores.
 - **Abundance:** Around 75% of the Milky Way's stars are red dwarfs.
- **Notable Examples:** Proxima Centauri, Barnard's Star, Lalande 21185.

Brown Dwarf Stars

Diagram illustrating relative sizes and temperatures of stars, brown dwarfs, and planets

- **Definition:** Brown dwarfs are "failed stars"—objects too massive to be planets but not massive enough (below ≈ 0.08 solar masses) to sustain stable hydrogen fusion in their cores.
- **Characteristics:**
 - **Mass and Size:** Mass ranges from about 13 to 80 times that of Jupiter (≈ 0.01 – 0.08 times the Sun's mass); size similar to Jupiter, despite much higher mass.
 - **Temperature:** Effective temperatures from about 300 K (ultra-cool) up to 2,600–3,000 K for young, massive brown dwarfs.

- **Luminosity:** Very dim; most emit primarily infrared radiation and are exceedingly hard to detect optically.
- **Fusion:** Brown dwarfs never sustain hydrogen fusion; some can fuse deuterium or lithium for brief periods, but they rapidly cool down and fade.
- **Color:** Depending on age and temperature, can range from reddish to purple to dark brown; always much dimmer than red dwarfs.
- **Notable Examples:** Gliese 229B, Teide 1, WISE 1828+2650.
- Red dwarfs are most abundant stars; brown dwarfs exist in large numbers but are hard to detect (infrared faintness).
- brown dwarfs radiate mainly in infrared, while red dwarfs shine dimly in visible red light.
- The mass of a brown dwarf lies between that of the heaviest gas giant planets and the lightest red dwarf stars.
- brown dwarfs can fuse **deuterium** (and lithium if massive enough), but not sustained hydrogen fusion.

19. 3rd Generation Partnership Project

Context: India hosted first-ever 3GPP (3rd Generation Partnership Project) RAN Meetings on 6G Standardization.

3rd Generation Partnership Project (3GPP):

- The **3rd Generation Partnership Project (3GPP)** is an international collaborative initiative that develops technical specifications for mobile telecommunications—and it is the foundation for standards such as GSM (2G), UMTS (3G), LTE (4G), and 5G networks.

What is 3GPP?

- **Definition:** 3GPP is a consortium of seven primary national or regional telecommunications standards organizations ("organizational partners") that work together

to create protocols and system specifications for mobile networks.

- **Founded:** December 1998, with the original goal of developing globally accepted specifications for 3G mobile phone systems, evolving from the GSM (2G) standard.
- **Scope:** Covers the entire mobile system—radio access (base stations), network core (data transport, switching), and service layers (multimedia, internet, security, Quality of Service, etc.).
- **Members:** ARIB (Japan), ATIS (US), CCSA (China), ETSI (Europe), TSDSI (India), TTA (Korea), TTC (Japan).

Key Functions and Activities

- **Technical Specification Groups (TSGs):** 3GPP organizes its work into three main groups:
 - **RAN (Radio Access Networks):** Standards for cellular networks.
 - **SA (Services & Systems Aspects):** Service architecture, security, and multimedia.
 - **CT (Core Network & Terminals):** Core network and terminal functionality.
- **Releases:** 3GPP issues “Releases” (roughly every 18 months) that aggregate new features, technologies, and protocol updates.
- **Complete System Approach:** Specifications cover interoperability, ensuring that mobile systems from different countries and vendors work globally.
- **Evolution:** Initial focus on 3G (UMTS), but now also manages the evolution of LTE (4G), 5G NR (New Radio), and roadmap for future 6G technologies.
- 3GPP is a global collaboration that creates the technical specifications for a wide range of mobile technologies, from 2G (GSM) through 5G and beyond.
- 3GPP is a partnership of seven regional Standard Development Organizations (SDOs), including ETSI (Europe), ARIB and TTC (Japan), ATIS (North America), CCSA (China), and TTA (South Korea).

These SDOs are the parent bodies that govern 3GPP's work.

- 3GPP is an independent, non-profit organization. While it collaborates closely with the **International Telecommunication Union (ITU)**, which is a UN agency, it is **not** a specialized agency under the ITU's direct control. 3GPP's specifications are often submitted to the ITU for approval as global standards, but it maintains its own independent governance structure.
- TSDSI is the Indian SDO and became a partner of 3GPP in 2015, representing Indian interests and contributing to the development of global telecom standards.

20. Programmed Cell Revival

Context: CCMB's seminal work on programmed cell revival offers hope for regenerative medicine.

Programmed Cell Revival (PCR):

- **Programmed Cell Revival (PCR)** is a recently discovered highly organized biological process by which cells on the verge of death can reactivate their essential functions and fully restore themselves. This challenges the long-held belief that cell death is an irreversible process.

Understanding Programmed Cell Revival (PCR)

- **Definition:** PCR is an intrinsic, tightly regulated cellular process where cells near death can reboot vital developmental, metabolic, and immune pathways, effectively reversing the dying process and restoring normal function.
- **Mechanism:** During PCR, cells rebuild damaged organelles and reverse structural changes associated with death. A unique cellular compartment forms where mitochondria surround multivesicular bodies, indicating a repair mechanism.
- **Molecular Pathways:** The process involves activation of chromatin remodeling, gene expression linked to regeneration and

inflammation, and critical signaling pathways such as NF- κ B.

Experimental Evidence and Applications

- **Wound Healing:** PCR accelerates skin wound healing and corneal burn repair in mice models.
- **Regeneration:** It stimulates tail regeneration in frog tadpoles and enhances nerve repair in nematodes like *C. elegans*.
- **Stem Cell Production:** It promotes blood stem cell regeneration in fruit flies, highlighting potential systemic regenerative effects.

Therapeutic Potential and Risks

- **Regenerative Medicine:** Harnessing PCR could revolutionize therapies for tissue injuries, degenerative diseases, and organ regeneration.
- **Cancer Concerns:** Though PCR enhances survival and repair, it may also enable cancer cells to evade treatment by reviving after damage, possibly increasing tumor aggressiveness and resistance to therapies.

Significance

- PCR redefines cellular life and death paradigms, suggesting that cellular demise can be reversed under certain conditions. This opens new frontiers for medical research seeking to harness innate cellular resilience for healing while balancing potential risks, particularly in oncology.
- Recent studies suggest that some cells can undergo **Programmed Cell Revival (PCR)** — a process by which they **reverse early apoptotic changes** and regain viability, which has implications in cancer survival and therapy resistance.
- Mitochondria cannot **permanently suppress pro-apoptotic signals**; instead, PCR is mediated by **temporary halting or repair of apoptotic signaling pathways**, such as mitochondrial outer membrane permeabilization (MOMP) and caspase activation, not a complete permanent suppression.

21. Democratic Republic of Congo

Context: The United States wants to secure its supply of strategic minerals in conflict-torn Democratic Republic of Congo, hoping to challenge China's near-monopoly on the lucrative sector.

Democratic Republic of Congo (DR Congo)

- The **Democratic Republic of Congo (DRC)** is a country in Central Africa, known for its large size, vast natural resources, and rich biodiversity.
- It is the **second largest country in Africa by area** after Algeria and the 11th largest worldwide.
- Kinshasa is its capital and largest city, situated along the Congo River.



Geography and Borders

- **Coastline:** Although DR Congo has a very short coastline (approximately 40 km) along the Atlantic Ocean via the Congo River estuary, it is not considered landlocked.
- **Countries it Borders:** DR Congo shares land boundaries with 9 countries, which is the maximum number of shared borders by any African country.
- **These countries are:**
 - Angola (including the Cabinda enclave)
 - Burundi

- Central African Republic
- Republic of the Congo
- Rwanda
- South Sudan
- Tanzania (across Lake Tanganyika)
- Uganda
- Zambia.

22. 3I/ATLAS Comet

Context: 3I/ATLAS is a comet discovered in 2025 by ATLAS (Asteroid Terrestrial-impact Last Alert System) survey telescope situated in Rio Hurtado (Chile).

3I/ATLAS Comet

- **3I/ATLAS**, also known as **C/2025 N1 (ATLAS)**, is an **interstellar comet** discovered on July 1, 2025, by the NASA-funded **Asteroid Terrestrial-impact Last Alert System (ATLAS)** telescope located in Río Hurtado, Chile. It is the **third confirmed interstellar object** passing through the Solar System after 1I/'Oumuamua (2017) and 2I/Borisov (2019).

Key Features

- **Origin:** From outside the Solar System, entering from the direction near the constellation Sagittarius.
- **Trajectory:** Follows a hyperbolic trajectory with a very high relative velocity (~58 km/s) to the Sun, indicating it is not gravitationally bound to our Solar System.
- **Size:** Observations suggest the nucleus is less than 1 km in diameter, estimates range between 0.32 and 5.6 km.
- **Composition:** Rich in carbon dioxide, with small amounts of water ice, carbon monoxide, cyanide gas, and nickel vapor—chemicals similar to those found in comets of our Solar System.
- **Activity:** Active comet with a solid icy nucleus and a surrounding coma (cloud of gas and dust), caused by sublimation of the nucleus ice when heated by the Sun.

Discovery and Observations

- Initially detected at 4.5 astronomical units from the Sun, 3I/ATLAS was tracked and observed by multiple professional and amateur astronomers around the world.
- The comet's discovery led to retrospective identification of earlier observations including those from the Zwicky Transient Facility.
- Observations show a marginal coma and tail-like features indicating active outgassing.

Significance

- As an interstellar visitor, 3I/ATLAS provides valuable data on the composition and behavior of objects from outside our Solar System, offering insights into planetary system formation beyond our own.
- Its chemical richness helps compare and contrast with native Solar System comets.
- It poses no threat to Earth, with the closest approach being about 1.8 AU (270 million km) from Earth.

23. Cosmic Dust Composition

Context: Scientists have revealed fascinating new insights into cosmic dust and chemical processes within the Butterfly Nebula (NGC 6302), about 3,400 light-years away in the constellation Scorpius. Observations made by the James Webb Space Telescope (JWST) provide critical clues on how elemental building blocks for stars, planets, and possibly life itself form in space.

Key Findings

- **Cosmic Dust Composition:**
 - Scientists discovered two main types of dust:
 - **Gemstone-like silicates** forming crystallized, microscopic gems in calm regions.
 - **Smoky, irregular grains** formed in turbulent, energetic parts.
- Both types coexist within the nebula, revealing the dual nature of cosmic dust formation.

- **Nebula Structure:**

- At the nebula's center lies a **hidden, extremely hot star** (220,000 Kelvin), enveloped by a thick, doughnut-shaped dust torus acting as a barrier shaping the nebula's iconic "butterfly" lobes.
- The dust torus consists of **crystalline silicates like quartz** and large dust grains indicating prolonged growth.

- **Chemical Signatures and Jets:**

- Jets of iron and nickel blast outwards from the core star in opposite directions.
- **Complex carbon molecules called polycyclic aromatic hydrocarbons (PAHs), which have flat ring-like "honeycomb" structures, were detected for the first time in an oxygen-rich nebula.**
 - These molecules are related to life-linked carbon structures and provide evidence of complex chemistry even in harsh celestial environments.

Importance of Discoveries

- **Insights on Planetary Formation:**

- The findings offer clues into how rocky planets like Earth initially formed from cosmic dust.
- Understanding the growth and chemical structure of dust in nebulae sheds light on the materials from which planetary systems originate.

- **Revising Previous Understanding:**

- This is the first time carbon-based PAHs have been observed forming in an oxygen-rich planetary nebula, challenging existing models of dust chemistry.

- **Use of Advanced Technology:**

- JWST's **Mid-Infrared Instrument (MIRI)** provided spectroscopic images revealing nearly 200 distinct spectral lines from atoms and molecules.
- The observations were combined with data from the **Atacama Large Millimeter/submillimeter Array (ALMA)** for a comprehensive understanding.

Stellar and Nebular Details

- **The Butterfly Nebula is a bipolar planetary nebula, famous for its two large lobes resembling butterfly wings.**
- **The central star is the remnant core of a Sun-like star undergoing the planetary nebula phase, a brief stage lasting about 20,000 years before fading to a white dwarf.**
- **The dark dust torus obscures direct optical observation of the star, but JWST's infrared capability finally pinpointed its location.**



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GEOGRAPHY AND MAPPING

1. Location of Morocco

Context: India and Morocco have signed a Mutual Legal Assistance Treaty (MLAT) and a Memorandum of Understanding (MoU) to promote cooperation in judicial and legal spheres.

Neighbours of Morocco:

- Morocco shares land borders with Algeria to the east, the disputed territory of Western Sahara to the south, and also has land borders with two Spanish exclaves (Ceuta and Melilla) on its northern coast. Morocco is additionally separated from Spain by the Strait of Gibraltar.
- **East:** Algeria
- **South:** Western Sahara (disputed territory, largely under Moroccan control)
- **North:** Spanish cities Ceuta and Melilla (enclaves on the Mediterranean coast, bordering Morocco)
- **Maritime neighbours:** Spain (across the Strait of Gibraltar and through Ceuta/Melilla), Portugal (Atlantic maritime border)



2. Location of Slovenia

Context: Slovenia has become the first Europe Union (EU) country to impose a total arms embargo on Israel over the Gaza conflict.

Slovenia is a Central European country bordered by:

- **West:** Italy
- **North:** Austria
- **East:** Hungary
- **South & Southeast:** Croatia



3. Attack on Embassy of India in Ireland

Context: Against the backdrop of racist attacks on foreigners in Dublin, the Embassy of India in Ireland has issued an advisory for citizens urging them to take “reasonable precautions”. The advisory came soon after an Indian national took to social media, on July 31, reporting that he became the latest victim of an attack by teenage gang members.

- **Bluestack Mountains:** The Bluestack Mountains, also known as the Blue Stack Mountains or Croaghgorms (Irish: na Cruacha

Gorma, meaning "the blue stacks"), are a significant mountain range located in the south of County Donegal, Ireland. They act as a natural barrier separating towns such as Donegal Town and Ballyshannon in the south from Dungloe and Letterkenny in the north and west (The **Bluestack Mountains** are located entirely within **County Donegal, which is in the Republic of Ireland, not on the border with Northern Ireland (part of the UK).**)

- **St. George's Channel:** St. George's Channel is a sea channel that connects the Irish Sea to the north and the Celtic Sea (which is part of the Atlantic Ocean) to the southwest. It separates the southeastern coast of Ireland, specifically County Wexford, from the southwestern coast of Wales, at St David's Head (The **St. George's Channel separates Ireland from Great Britain, specifically from Wales.**)



4. Sea of Japan

Context: China and Russia began joint naval drills in the Sea of Japan on Sunday as they seek to reinforce their ties and counterbalance what they see as a U.S.-led global order. The "Joint Sea-2025" exercises kicked off in waters near the Russian port of Vladivostok and would last for three days, China's Defence Ministry said on August 3.

Sea of Japan

- The Sea of Japan is a large marginal sea of the western Pacific Ocean, bordered by Japan to the east, the Russian mainland and Sakhalin Island to the north, and the Korean Peninsula (North and South Korea) to the west. Sometimes also called the East Sea (especially in Korea), this sea plays a vital role in the region's geography, economy, culture, and security.



5. Location of Philippines

Context: The Philippine President visits India marking the 75th anniversary of diplomatic ties between two countries.



Major islands of the Philippines from north to south:

- Luzon (northernmost, home to Manila)
- Mindoro (South of Luzon)
- Palawan (west of Luzon but stretches further south than Panay)
- Mindanao (southernmost major island)

6. Amazon Forest

Context: Over 25% of the Amazon rainforest has already been degraded due to deforestation, fires, and mining, putting immense pressure on its biodiversity and ecological stability.

About

- The Amazon rainforest, often called the **lungs of the Earth**, is home to about **10%** of all known plant and animal species — and countless others that haven't even been discovered yet.
- The Amazon spans **8 countries and one overseas territory: Brazil, Bolivia, Colombia, Ecuador, Guyana, Peru, Suriname, Venezuela, and French Guiana** (a French overseas territory).
- It stores around **250–300 billion tonnes of carbon**, equivalent to **15–20 years of global greenhouse gas emissions**, and generates rainfall that supports some of the world's largest cities and most vital agricultural regions.
- It is home to over **47 million people**, including **2.2 million Indigenous and traditional communities**, whose cultures and livelihoods are deeply tied to the forest.

**7. New Zealand**

Context: Inaugural India-New Zealand Defence Strategic Dialogue held in New Delhi to discuss security perspectives and further bolster bilateral cooperation.

New Zealand

- New Zealand (Aotearoa in Māori) is an island country in the southwestern Pacific Ocean, renowned for its dramatic landscapes, indigenous Māori heritage, and progressive historical and geopolitical stances. Made up primarily of two main islands (the North Island and the South Island), as well as numerous smaller islands like Stewart Island, it is one of the world's most geographically isolated developed nations.

Geography

- **Location:** Southwestern Pacific Ocean, south east of Australia.
- **Major Islands:** North Island (Te Ika-a-Māui) and South Island (Te Waipounamu); Stewart Island/Rakiura is the third-largest but much smaller in area and population.
- **Landscape:** Mountain ranges (Southern Alps), volcanic plateaus, geothermal zones, fjords, lakes, and extensive coastlines.
- **Climate:** Temperate, maritime climate with regional variations.

History

- **Indigenous Peoples:** The Māori arrived from Polynesia around the 13th century CE.
- **European Contact:** First sighted by Abel Tasman (1642), then mapped by James Cook (1769).
- **British Colony:** Became a British colony in 1840 following the signing of the Treaty of Waitangi.
- **Dominion Status:** Gained dominion status in 1907.
- **Full Independence:** Gained full statutory independence with the Statute of Westminster Adoption Act 1947, though it remained part of the Commonwealth.

- **Women's Suffrage:** New Zealand was the first country in the world to grant women the right to vote (1893).

Geopolitics

- **ANZUS Alliance:** Originally a member of the ANZUS (Australia, New Zealand, United States) security treaty, but its nuclear-free policy (1984) led to suspension of its security obligations with the US (though the alliance technically remains).
- **Nuclear-Free Policy:** New Zealand's anti-nuclear stance is a cornerstone of its foreign and defense policy.
- **Commonwealth Membership:** Remains an active Commonwealth realm with the British monarch as ceremonial head of state.
- **Pacific Partnerships:** Active member of the Pacific Islands Forum, high UN participation, and strong development ties with Pacific nations.



8. Malaysia

Context: Malaysia will lead a regional delegation to Myanmar next month after the junta scrapped its state of emergency, Foreign Minister Mohamad Hasan announced on August 8. Mr. Mohamad told reporters the trip will “most likely” take place on

September 19 and include Foreign Ministers of Indonesia, Thailand and the Philippines.

Malaysia

- Malaysia is a Southeast Asian nation located partly on the Malay Peninsula (Peninsular Malaysia) and partly on the island of Borneo (East Malaysia). It is known for its vibrant multicultural society, economic dynamism, tropical landscapes, and strategic geo-political position.
- **Capital:** Kuala Lumpur (Putrajaya is the administrative capital)
- **Area:** ~330,000 sq.km
- **Borders:** Land borders with Thailand, Indonesia, and Brunei; maritime boundaries with Singapore, Vietnam, and the Philippines.

Key Geographic Facts

Borders

- **Longest Land Border:** Malaysia shares its longest land border with Indonesia (on Borneo), approx 2,019.5 km.
- **Second Longest:** With Thailand, it's about 595–646 km.
- **Shortest Land Border:** Malaysia's direct land border with Singapore is much shorter (~1.056 km, at the Johor-Singapore Causeway and Tuas Second Link), but this is not the world's shortest international boundary.



Islands and Maritime Issues

- **Tioman Island:** Tioman is a Malaysian island in the South China Sea, famous for natural beauty and tourism. It is not disputed nor claimed by Indonesia or China. Disputed islands between Malaysia and Indonesia include Sipadan and

Ligitan, while disputes with China generally pertain to maritime areas in the South China Sea (Spratly Islands). Tioman is not a subject of a territorial or sovereignty dispute.

9. Sea of Galilee

Context: The Sea of Galilee in Israel has mysteriously turned red, alarming locals and tourists. Investigations revealed the cause to be algae blooms of *Botryococcus braunii*, linked to climate change and rising global temperatures.

About Sea of Galilee:

- **What it is?**
 - A **freshwater lake** in northern Israel, historically significant in Christianity and Judaism.
 - Known as **Lake of Gennesaret** in the New Testament and **Sea of Chinnereth** in the Old Testament.
- **Location:**
 - Situated in the **Jordan Rift Valley**, fed mainly by the **Jordan River**.
 - Bordered by **Lower Galilee hills** (west & southwest) and **Golan Heights** (east).
- The **Sea of Galilee** (also called Lake Tiberias or Kinneret) is indeed the **lowest freshwater lake** on Earth (about **-209 m below sea level**) and supplies a significant share of Israel's drinking water.
- While it is **fed mainly by the River Jordan**, it is **not part of the East African Rift Valley**; instead, it lies in the **Jordan Rift Valley**, which is part of the larger **Great Rift Valley system**, but not geologically in the East African segment.



10. Oman

Context: The conclusion and signing of the proposed free trade agreement between India and Oman is expected to be announced soon, an official has said. The trade pact text is being translated into Arabic in Oman.

Oman

- Oman is a nation situated on the southeastern coast of the Arabian Peninsula. It has a rich maritime history, diverse geography ranging from deserts to mountain ranges, and holds strategic importance due to its proximity to key sea routes.
 - **Capital:** Muscat
 - **Major Ports:** Duqm, Sohar, Salalah
 - **Strategic Locations:** Strait of Hormuz, Arabian Sea, proximity to the Indian Ocean

Key Facts

Tropic of Cancer and Muscat

- **Tropic of Cancer:** The Tropic of Cancer passes through northern Oman.
- **Muscat Location:** Muscat, the capital, is located northeast in Oman, and although the Tropic of Cancer runs through parts of the Muscat governorate, it does not pass directly through Muscat city itself. It passes through areas such as Al Amerat (a district within Muscat governorate), Al Sifah, Fanja, Rustaq, and Ibri.

Duqm Port and Masirah Island

- **Duqm Port:** Duqm is a rapidly developing port town and industrial hub on the southeastern coast of mainland Oman, overlooking the Arabian Sea and Indian Ocean. It is about 550 km south of Muscat and is on the Omani mainland, not on Masirah Island.
- **Masirah Island:** Masirah Island is the largest island of Oman, located off the east coast. It has its own fishing industry and military base, but Duqm Port is not situated there.



11. Nakhchivan exclave

Context: Armenia and Azerbaijan committed to peace after decades of conflict, Donald Trump said after the South Caucasus rivals signed a deal on August 9. However, Iran said it will not allow the creation of Trump Route for International Peace and Prosperity — a corridor near the Iran border linking Azerbaijan to Nakhichevan exclave.



Nakhchivan exclave

- **Nakhchivan** is an **exclave** of Azerbaijan, meaning it is a part of the country that is geographically separated from the main territory.
- It is surrounded by **Armenia** to the north and east, and it shares borders with **Iran** and a short border with **Turkey** to the south and west.

- The region is considered **disputed** in a broader sense due to its strategic position and its historical ties to the long-standing conflict between Armenia and Azerbaijan, particularly with regard to the Nagorno-Karabakh region.

12. Mali

Context: Mali arrested around 20 soldiers suspected of wishing to overthrow the junta, which itself took power in the west African country in a coup, sources said on August 10. Since 2012, Mali has been wracked with crises on various fronts, with militants linked to the al-Qaeda or IS groups carrying out violent attacks across the Sahel nation.

Mali is a **landlocked country** in **West Africa**. It shares borders with **7 countries**:

- **North** → Algeria
- **East** → Niger
- **Southeast** → Burkina Faso
- **South** → Côte d'Ivoire & Guinea
- **Southwest** → Senegal
- **West & Northwest** → Mauritania



13. Fiji

Context: India sent 5 metric tonnes of black-eyed cowpea seeds to Fiji as humanitarian aid to support agriculture, under its Act East Policy.

Fiji

- Fiji is an island nation situated in the South Pacific Ocean, northeast of New Zealand and east of Australia. Known for its idyllic beaches and vibrant multicultural society, Fiji is a popular tourist destination as well as a significant Pacific nation.

Geography

- Archipelago:** Fiji consists of more than 300 islands (some sources cite about 330), with around 100 islands permanently inhabited.
- Major Islands:** The two largest and most important islands are Viti Levu and Vanua Levu.
 - Viti Levu hosts the capital city, Suva, as well as the largest population center.
- Location:** South Pacific Ocean, roughly 2,000 km northeast of New Zealand.
- Features:** Fiji is characterized by volcanic mountains, tropical forests, and coral reefs.



Political History

- Colonial Era and Independence:** Fiji was a British colony from 1874 until 1970, when it gained independence.
- Post-Independence Developments:**
 - Following independence, Fiji faced recurring tensions between its indigenous Fijian and Indo-Fijian populations.

- The country has experienced multiple military coups (notably in 1987, 2000, and 2006) that have shaped its political institutions and constitution. These coups were driven by ethnic, political, and sometimes socio-economic factors.
- Since its last coup in 2006, Fiji has made efforts toward democratic reforms, although the legacy of political instability still influences its society and governance.

14. Mud Waves

Context: A 2025 study in Global and Planetary Change discovered 117-million-year-old mud waves buried beneath the Atlantic seabed near Guinea-Bissau.

What are Mud Waves?

- Mud waves are large-scale bedforms observed in muddy sediment environments, typically found underwater, such as in ocean basins or river deltas. They are similar to sand waves on sandy seabeds but occur where fine-grained sediments like mud, silt, and clay dominate.

Characteristics

- Sizes:** Mud waves can be quite large, with heights ranging from less than 10 meters to more than 80 meters, and spacing between waves can vary from 1 km to over 10 km, typically 4–6 km apart.
- Formation:** They form due to the combined action of water currents, waves, and sediment transport processes on muddy seabeds.
- Dynamics:** These waves interact with flowing water, affecting wave energy and sediment movement patterns. Water waves propagating over mud often lose energy due to the damping effect of the muddy seabed.
- Behavior:** The mud layer can behave like a fluid when disturbed, causing liquefaction and creating internal waves at the mud-water interface. This results in energy dissipation and contributes to wave damping.

- **Environmental Impact:** Mud waves influence coastal and marine sediment transport, and their study helps in understanding erosion and deposition processes in muddy marine environments.

Additional Insights

- Mud waves contribute to the complex morphodynamics in soft sediment environments.
- They show interactions between wave energy and sediment properties resulting in damping or modulation of surface waves.
- Mud wave dynamics are important for coastal management, resource extraction, and environmental monitoring.
- Mud waves are **deep-sea sedimentary bedforms** created by **bottom currents**, not wind.
- They can be **kilometres long**, often oriented **perpendicular** to bottom currents.
- Strongly associated with **contourite deposits** (sediments deposited by contour-following deep currents).
- Mud waves **can migrate** slowly over time despite cohesive sediments, though at much slower rates than sandy dunes.

15. Italy

Context: At least 26 migrants died on August 13 when two boats sank off the coast of Italy's Lampedusa island, with around 10 others still missing, the coastguard and UN officials said.

Arrangement of waterbodies in north to south direction:

- **Ligurian Sea** → located between northwestern Italy and Corsica (farthest north).
- **Strait of Bonifacio** → between Corsica (France) and Sardinia (Italy).
- **Messina Strait** → between Sicily and mainland Italy.
- **Malta Channel** → between Sicily and Malta (farthest south among these).



16. Vietnam

Context: Vietnam aims to get rich by 2045 and become Asia's next "tiger economy" — a term used to describe the earlier ascent of countries like South Korea and Taiwan.

Vietnam – Geography and River Systems Geographic Location

- Vietnam is a Southeast Asian country located on the eastern edge of the Indochinese Peninsula. It extends along the South China Sea, sharing borders with China to the north, Laos and Cambodia to the west, and has a long coastline to the east.
- Vietnam is situated mostly in the tropical zone, but the Tropic of Cancer (23.5°N latitude) passes through the northern part of the country.
- This means the northernmost regions of Vietnam experience a subtropical climate influenced by the Tropic of Cancer, while the majority of the country lies within the tropics.

Mekong River and Vietnam

- The Mekong River, one of the major rivers of Southeast Asia, flows from Tibet through countries including China, Myanmar, Laos, Thailand, Cambodia, and finally into Vietnam.

- The river forms the Mekong Delta in southern Vietnam, which is a fertile and densely populated region crucial for agriculture and fisheries.
- The Mekong River touches the boundary of Vietnam only once, entering the country through the Mekong Delta before flowing into the South China Sea.
- It does not cross Vietnam's boundary twice; rather, it enters from Cambodia and spreads into a complex deltaic system inside Vietnam.



17. Burkina Faso

Context: Many farmers have fled the violence or been forced to leave their crops untended as the threat of ambush made them too dangerous to pick. As a result, cotton production fell by more than a quarter in one year, from 386,794 tonnes in 2023 to 286,623 in 2024, according to official figures.

Neighbours of Burkina Faso:

- Burkina Faso is a landlocked country in West Africa. It shares borders with Mali (north & west), Niger (east), Benin (southeast), Togo (south), Ghana (south), and Côte d'Ivoire (southwest).



18. Philippines

Context: There are more than 3,000 “Nikkei-jin”, offspring of Japanese who were in the Philippines before or during the Second World War. Japan has in recent years begun helping in “recovering their identity”, said Norihiro Inomata, country director for the Philippine Nikkei-jin Legal Support Center (PNLSC).

Philippines

- The Philippines is an archipelagic country located in Southeast Asia, consisting of more than 7,600 islands. It lies in the western Pacific Ocean and is bordered by several important bodies of water, including the South China Sea, the Philippine Sea, and the Celebes Sea.

Luzon Strait

- The Luzon Strait is a wide body of water that separates the northernmost part of the Philippines (the island of Luzon) from Taiwan.
- It does not separate the Philippines and Indonesia; Indonesia lies much further south and is separated from the Philippines mainly by the Celebes Sea and other smaller seas.

Babuyan Islands and Territorial Disputes

- The Babuyan Islands are a group of islands located north of Luzon in the Philippine Sea, at the northern boundary of the Philippines.
- They are not located in the South China Sea but rather to the northeast of Luzon.
- The islands are not disputed between the Philippines and China.
- The South China Sea itself contains other territorial disputes involving the Philippines and China, but the Babuyan Islands are within undisputed Philippine territory.



19. Limpopo River

Context: President Cyril Ramaphosa urged South Africans to join hands and find solutions to the country's many problems, launching a months-long "national dialogue" on August 15 dismissed by critics as a costly talk shop. Africa's most industrialised nation is still grappling with poverty and inequality 30 years after the end of apartheid.

Limpopo River

- The Limpopo River is one of the major rivers in southern Africa, extending approximately 1,750 kilometers (1,087 miles). It is vital for both ecological and economic reasons, supporting diverse ecosystems and providing water for agricultural and domestic use.

Geographic Course

- **Source:** The river originates in the highlands of South Africa, formed by the confluence of the Crocodile and Marico rivers.
- The river flows in a broad arc, initially heading north and northeast, then turning east and southeast.
- It serves as a natural border between South Africa and Botswana for about 640 km.
- Further along, it marks part of the boundary between South Africa and Zimbabwe.
- Finally, the river flows through Mozambique before emptying into the Indian Ocean near the town of Xai-Xai.



20. Massif Central of France

Context: French Prime Minister Francois Bayrou on August 15 condemned an act of "anti-Semitic hatred" after a memorial tree planted in tribute to a young French Jewish man tortured to death in 2006 had been cut down outside Paris.

Massif Central of France

- The Massif Central is a vast highland region located in south-central France, covering about 15% of mainland France (approximately 90,665 square kilometers or 35,006 square miles). It is an extensive area of mountains and plateaus characterized by an ancient geological history and significant volcanic activity.

Geography and Location

- Boundaries:**
 - West:** lowlands of Aquitaine
 - North:** Loire Basin and Paris Basin
 - East:** Rhône-Saône valley
 - South:** Mediterranean coastlands of Languedoc
- The region mostly consists of plateaus at elevations ranging between 600 and 900 meters (2,000 to 3,000 feet) above sea level.
- The highest peak is Puy de Sancy, reaching 1,885 meters (6,184 feet), which is the tallest point in the Massif Central.

Geology and Volcanism

- It is an ancient massif formed approximately during the Variscan or Hercynian orogeny (about 360 to 250 million years ago).
- The Massif Central is composed mainly of granitic and metamorphic rocks.
- The region is known for having a dense concentration of extinct volcanoes – estimated around 450, including monogenic volcanoes and large stratovolcanoes like those in the Auvergne volcano range.
- The Chaîne des Puys volcanic chain, near Clermont-Ferrand, contains over 100 small volcanoes and is a notable geological feature protected as the Auvergne Volcanoes Regional Natural Park.
- Volcanic activity and tectonic uplift during the Paleogene and Neogene periods shaped the current rugged landscape.

Physical Features and Landforms

- Besides volcanic peaks, the Massif Central features limestone plateaus known as Causses, deeply cut by gorges, such as the famous Gorges du Tarn canyon.
- The massif includes major river sources such as the Loire, Allier, Cher, and Creuse which flow outward, providing vital water resources.

Climate, Vegetation, and Economy

- The Massif Central's climate varies due to elevation, typically exhibiting a continental climate with cold winters and mild summers.
- Vegetation ranges from forests and heathlands to alpine meadows.
- The region is less industrialized compared to other parts of France but supports agriculture, forestry, and tourism, especially related to its natural parks and volcanic landscapes.

Cultural and Historical Importance

- The Massif Central has been historically isolated due to rugged terrain, which preserved unique cultural practices and dialects.
- It contains archaeological sites dating back to prehistoric times.
- Cities such as Clermont-Ferrand, Le Puy-en-Velay, and Mende are important urban centers within the massif.



21. Tonga

Context: A powerful 6.2 magnitude earthquake hits Tonga.

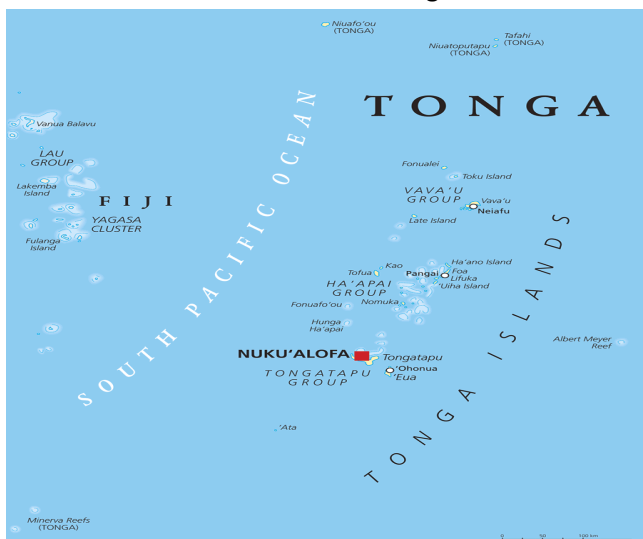
Tonga

Geographic Location

- Tonga is an island country located in the South Pacific Ocean, forming part of the Polynesian subregion of Oceania.
- It lies approximately 2,000 kilometers (1,240 miles) northeast of New Zealand and near the International Date Line, which influences its time zone settings and calendar day transitions.
- Tonga consists of approximately 170 islands, with around 45 inhabited.

Tonga Trench and Geological Setting

- Tonga is situated along the Tonga Trench, one of the deepest oceanic trenches in the world, reaching depths of about 10,882 meters (35,702 feet).
- The trench is part of a subduction zone where the Pacific Plate is being thrust beneath the Indo-Australian Plate.
- This tectonic setting makes Tonga prone to strong seismic activity, including frequent earthquakes, and volcanic eruptions, shaping the island's geology and landscape.
- The Tonga Trench and associated undersea features contribute to the country's vulnerability to tsunamis and other marine geohazards.



22. Little Belt, Great Belt, and Samsø Belt

Context: Danish Prime Minister Mette Frederiksen said on August 16 that Israeli leader Benjamin Netanyahu has become a “problem”, adding she would try to put pressure on Israel over the Gaza war as her country currently holds the European Union presidency.

Little Belt, Great Belt, and Samsø Belt

- The Little Belt, Great Belt, and Samsø Belt are straits located in Denmark and are part of the Danish straits system connecting the Baltic Sea to the North Sea through the Kattegat.

Little Belt (Lillebælt)

- A strait between the Jutland Peninsula (mainland Denmark) and the island of Funen (Fyn).
- Approximately 50 km (31 miles) long and varies in width from 800 meters to 28 km.
- It is one of the narrowest straits in Denmark, with a particularly narrow section called Snævringen ("The Narrowing") where it is about 1 km wide.
- Depth varies, with the deepest point known as Marens Hul, reaching 81 meters.
- The Little Belt plays a critical role in water exchange between the Baltic Sea and the Kattegat, with about 10% of this flow passing through it.
- Two bridges called the Little Belt Bridges cross this narrow section, serving road and rail traffic.

Great Belt (Storebælt)

- A wider strait than Little Belt, located between the Danish islands of Funen (Fyn) and Zealand (Sjælland).
- Approximately 40 miles (64 km) long.
- It connects the Baltic Sea with the Kattegat strait.
- The Great Belt Fixed Link, completed in the late 1990s, comprises a suspension bridge, a railway tunnel, and another bridge, facilitating transit between the islands of Zealand and Funen.

- The East Bridge is notable for one of the longest suspension bridge spans in the world (about 1,624 meters).

Samso Belt (Samsø Belt)

- The Samso Belt is a narrower strait located to the north of the Great Belt.
- It separates the island of Samso from mainland Jutland and neighboring islands.
- It forms part of the transition zone between the Kattegat, Baltic Sea, and the internal Danish waters.
- The region includes a number of protected areas and wildlife reserves, supporting a rich biodiversity with various marine species, including harbor porpoises and specialized benthic fauna.
- Samso Belt is important for local navigation and environmental conservation efforts.

Importance of These Straits

- Together, Little Belt, Great Belt, and Samso Belt form key waterways for shipping and ecological exchange between the North Sea and Baltic Sea.
- The straits have strategic maritime significance for Denmark and the broader Northern European region.
- They serve as habitats for diverse marine life, including important fish species and migratory birds, with parts protected under international conservation frameworks like Natura 2000.



23. Atlantic Meridional Overturning Circulation

Context: Over the last 12,000 years, the Atlantic's great heat mover – the AMOC – stayed mostly on an even keel. Scientists now have a quantitative picture of that long stretch, and the story mixes calm background with a few sharp bends.

Atlantic Meridional Overturning Circulation (AMOC) What is AMOC?

- The Atlantic Meridional Overturning Circulation (AMOC) is a major component of Earth's ocean circulation system, characterized by the northward flow of warm, salty surface water in the Atlantic Ocean and the southward flow of cold, deep water. It acts as a giant ocean conveyor belt, redistributing heat and influencing climate globally.

How AMOC Works

- Warm surface waters from the tropics flow northward toward the North Atlantic.
- As the water cools and becomes saltier due to evaporation, its density increases, causing it to sink in regions such as the Nordic Seas and form deep water.
- This deep, cold water returns southward at lower depths, completing the circulation loop.
- The process transfers heat from the tropics to higher latitudes, moderating temperatures, especially in Northwestern Europe.

Importance of AMOC in Climate

- **Regulates Climate:** AMOC influences weather patterns and air temperatures over the Atlantic basin, especially sustaining relatively mild European climates.
- **Contributes to Carbon Cycle:** It plays a vital role in transporting carbon dioxide from the atmosphere to deep ocean layers, acting as a global carbon sink.
- **Supports Marine Ecosystems:** AMOC circulation distributes nutrients necessary for ocean life, affecting fisheries and biodiversity.

Threats and Potential Changes

- Climate change is causing increased melting of the Greenland ice sheet, adding freshwater to the North Atlantic, reducing salinity and water density.
- This disrupts the sinking of cold water, potentially weakening the AMOC and slowing down the circulation process.
- Predictive models suggest the AMOC has already weakened compared to pre-industrial levels and may continue to decline in the 21st century.
- Severe weakening or collapse of AMOC could lead to:
 - Colder winters in parts of Europe
 - Changes in rainfall patterns impacting regions like West Africa, South America, and the Amazon rainforest
 - Sea-level rise along the US east coast
 - Disrupted marine ecosystems and weakened carbon uptake ability.
- Scientific studies and climate models have shown that a significant weakening of the **Atlantic Meridional Overturning Circulation (AMOC)** can indeed disrupt global weather patterns. This can lead to reduced rainfall and shifts in monsoon systems in regions like South Asia and West Africa, which are vital for agriculture.
- The AMOC is a critical component of the global climate system. It functions like a vast conveyor belt, transporting warm surface waters from the tropics northward and returning colder, denser deep waters southward. This process is essential for redistributing heat from the equator toward the poles and directly influences large-scale **atmospheric circulation patterns**, which in turn govern monsoon systems.

24. Algeria

Context: Earthquake of 5.8 magnitude strikes Algeria's Tebessa province.

Political Features

- **Location:** Largest country in North Africa.

- **Land Boundary:** Tunisia (Northeast), Libya (East), Niger & Mali (South), Mauritania & Western Sahara (Southwest), Morocco (West).
- **Maritime Boundary:** Mediterranean Sea (North).

Geographical Features

- **Relief:** Tell in the North, the highlands and the Saharan Atlas in the center, and the Sahara in the South.
- **Climate:** Mediterranean in north to desert type in south.
- **Tlemcen:** Known for Moorish architecture, called "city of cherries."
- **M'zab Valley:** 5 fortified oases towns is a UNESCO World Heritage site.



25. Egypt

Context: Against the backdrop of BRICS 2026 in India, a stronger India–Africa–UAE (IAU) trilateral framework is emerging with the entry of new members including the UAE, Egypt, and Ethiopia in the group.

Egypt

Tropic of Cancer and Lake Nasser

- The Tropic of Cancer is the latitude 23° 26' N, marking the northernmost point where the Sun

appears directly overhead during the June solstice.

- Lake Nasser is a large artificial reservoir in southern Egypt, created by the Aswan High Dam. The lake stretches approximately 550 kilometers in length and 35 kilometers in width at its widest, near the Tropic of Cancer.
- **Geographical and travel sources confirm that the Tropic of Cancer passes through the region of Lake Nasser, with cruises and landmarks explicitly crossing this line.**

Egypt's Land Boundary with Saudi Arabia

- Egypt is located in northeastern Africa; Saudi Arabia is situated across the Red Sea on the Arabian Peninsula.
- The two countries are separated by the Red Sea, and the closest point between them is the Strait of Tiran (about 6.4 km wide).
- **There is no direct land boundary between Egypt and Saudi Arabia. The two have agreed on maritime boundaries in the Red Sea, but not a land border.**
- Recent discussions have considered building bridges or tunnels between Egypt's Sinai Peninsula and Saudi Arabia, but as of 2025, no land border exists.



26. Canada-USA Border

Context: Recently, Canada faced its second-worst wildfire season on record.

Canada-USA Border

- The international border between Canada and the United States is the longest land border in the world between any two countries, stretching approximately 8,891 kilometers (5,525 miles).
- This border is famously undefended and marked by peaceful cooperation, spanning from the Atlantic Ocean in the east to the Pacific Ocean in the west and up to Alaska in the northwest.
- The border includes a visibly clear boundary known as the "border vista," a man-made cleared track through forest land that marks the boundary line.
- **While the entire Canada-USA border is the longest, it is not the longest single continuous straight-line border; parts are straight latitude lines such as the 49th parallel, but the entire border is irregular in shape.**
- This fact supports that Canada and the USA have the longest international border in total length globally.

Canada's Maritime Geography and Davis Strait

- Canada is separated from Greenland by the Davis Strait, a broad marine passage that lies between southeastern Baffin Island (Canada) and southwestern Greenland.
- Davis Strait connects Baffin Bay to the north with the Labrador Sea to the south, acting as a key part of the Arctic's complex waterway system, including the Northwest Passage which links the Atlantic and Arctic Oceans.
- **It is a broad strait approximately 400 miles (650 km) long and between 200 to 400 miles wide, making it one of the broadest straits in the world.**
- Its waters are known for fierce tides and are significant for marine navigation and geological formations such as underwater basins and ridges formed by ancient tectonic activity.



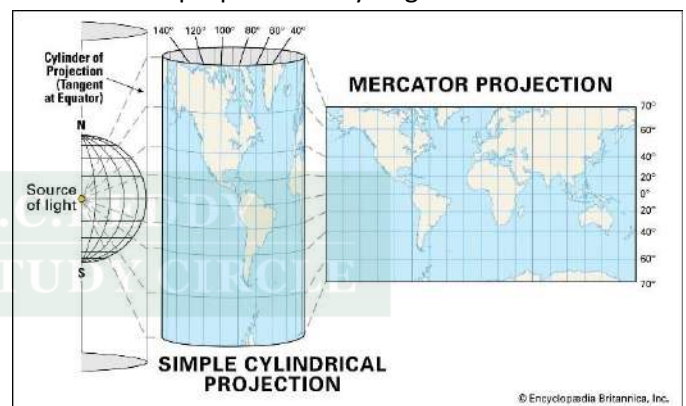
27. Mercator Projection Map

Context: The African Union (AU) has endorsed a global campaign to replace the Mercator projection map with one that depicts Africa's true size.

About Mercator Projection Map:

- **What it is?**
 - A cylindrical map projection, introduced in 1569.
 - Designed for **navigation** — allows sailors to follow a straight line of constant compass bearing.
- **Developed by:** Gerardus Mercator (1512–1594), Flemish mathematician and cartographer.
- **Key Features:**
 - **Type:** A cylindrical projection mathematically derived to project the spherical Earth on a flat surface.
 - **Straight-line Navigation (Rhumb Lines):**
 - Any straight line drawn represents a **line of constant compass bearing** (loxodrome).
 - Made it ideal for **maritime navigation** in the Age of Exploration.
- **Grid Structure:**
 - **Meridians:** Equally spaced, parallel, vertical lines.

- **Parallels of Latitude:** Horizontal, straight lines — spacing increases with distance from the Equator.
- Grid intersections form perfect right angles.
- **Scale:**
 - True scale only along the **Equator**.
 - Distortion **increases with latitude**, especially near the poles.
- **Conformality:**
 - Preserves **shapes and angles**, making it useful for navigators.
 - But **area (size)** is highly distorted.
- **Issues & Distortions:**
 - **Africa & South America** appear much smaller than reality.
 - **Europe, North America, and Greenland** look disproportionately larger.



28. Nigeria

Context: At least 50 people were killed and 60 abducted after gunmen attacked a mosque and homes in Katsina state, northwest Nigeria during dawn prayers.

About Nigeria:

- **Location:** Situated on the **western coast of Africa**.
- **Capital:** Abuja (since 1991).
- **Neighbouring Nations:** Niger, Chad, Cameroon, Gulf of Guinea (Atlantic Ocean) and
- **Key Geographical Features:**
 - Rivers & Basins:
 - **Niger River** and its tributary **Benue River** form the main drainage system.

- **Niger Delta** is one of the world's largest wetlands.
- **Mountains & Plateaus:**
 - **Jos Plateau** in central Nigeria with extinct volcanoes.
 - **Chappal Waddi (2,419 m)** – highest peak, part of the **Cameroon Highlands**.
 - Other ranges: **Shebshi Mountains, Udi-Nsukka Escarpment**.
- **Plains & Soils:**
 - **Sokoto Plains** (northwest) and **Borno Plains** (northeast).
 - Fertile **savanna soils** in central regions, forest soils in the south.
- **Climate:** Ranges from **arid (north)** to **humid equatorial (south)**.
- **Natural Resources:** Abundant **petroleum and natural gas deposits** – backbone of Nigeria's economy.



29. Botswana

Context: Botswana's President Duma Boko said August 21 that his country signed an agreement with Qatar's Al Mansour Holdings, which will commit \$12 billion in investments to accelerate national development goals.

Botswana

Location and Geography

- Botswana is a landlocked country in Southern Africa, bordered by South Africa to the south and southeast, Namibia to the west and north, Zambia to the north, and Zimbabwe to the northeast.
- It covers an area of approximately 581,730 square kilometers, roughly the size of France, making it the world's 48th largest country.
- About 70% of Botswana's territory lies within the Kalahari Desert, making the landscape largely flat and semi-arid to arid.
- The country features notable ecosystems such as the Okavango Delta, one of the world's largest inland deltas, and protected areas like the Chobe National Park and Moremi Game Reserve.
- Botswana's capital and largest city is Gaborone.



30. Equator passes through African nations

Context: On 21 August 2025, Uganda announced that it had agreed in principle to a deal with the United States to accept deported migrants, provided they do not have criminal records and are not unaccompanied minors.

Equator passes through African nations:

- The Equator passes through: Gabon, Republic of the Congo, Democratic Republic of the Congo, Uganda, Kenya, Somalia, and São Tomé & Príncipe (island nation), and also northern part of Tanzania.

**31. Druzhba (Friendship) Pipeline**

Context: Ukrainian attack suspends Russian oil flows to Hungary, Slovakia.

About Druzhba (Friendship) Pipeline:

- It is one of the biggest crude oil pipeline networks in the world.
- Total Length: 5500 kms
- The Druzhba pipeline begins in Russia and transports oil through Belarus and Ukraine to Slovakia and Hungary.

	Oil/Gas Pipelines	Connecting points
1	Druzhba Oil Pipelines	Russia to Eastern/Central Europe
2	Keystone Pipelines	Canada to USA
3	Trans Adriatic Pipeline	Greece to Italy
4	Turk Stream Pipeline	Russia to Türkiye

32. Spain

Context: Massive wildfires across Spain this summer have burned about 350,000 hectares in just two weeks during an early August heatwave.

Spain: Country Profile**Geographic Overview**

- Spain is the largest country in Southern Europe and occupies most of the Iberian Peninsula. Its territory also includes the Balearic Islands in the Mediterranean and the Canary Islands in the Atlantic. Spain also has city enclaves in North Africa—Ceuta and Melilla.
- Spain shares land borders with France, Portugal, Andorra, and Gibraltar, and is close to Morocco, across the Strait of Gibraltar.

Islands

- **Balearic Islands:** Mediterranean chain, Spanish in language and governance, includes Majorca, Minorca, Ibiza, and Formentera.
- **Canary Islands:** Located in the Atlantic Ocean, near Africa, also part of Spain.

The Strait of Gibraltar

- A 36-mile-long channel, narrowing to 8 miles at its tightest, separating southern Spain from northern Morocco. This passage links the Mediterranean Sea with the Atlantic Ocean and stands as a symbol of Spain's strategic geographical importance.

Political and Cultural Highlights

- Capital: Madrid; Language: Spanish (with regional languages such as Catalan, Basque, and Galician).
- Government: Parliamentary monarchy, currently headed by King Felipe VI.
- Spain is famed for its World Heritage Sites, diverse regions with strong local identities, and a history that has shaped Europe and the Americas.

33. Moldova

Context: French President Emmanuel Macron, German Chancellor Friedrich Merz and Polish Prime Minister Donald Tusk will visit Moldova on its 34th Independence day (August 27) to “reaffirm their full support” for its “security, sovereignty, and European path,” Paris said on August 22. The visit is at the invitation of President Maia Sandu.

Moldova:

- Moldova, officially the Republic of Moldova, is a landlocked country in Eastern Europe positioned between Romania to the west and Ukraine to the north, east, and south. The country has a rich history, diverse population, and a notable cultural heritage, but it faces various economic and demographic challenges today.

Geography and Population

- **Area:** About 33,843 square kilometers, making it one of the smaller European nations.
- **Capital:** Chişinău is Moldova's largest city and serves as its cultural, economic, and administrative center.
- **Population:** Approximately 2.4 million people, with Romanian as the official language and significant Russian, Bulgarian, Gagauz, and Ukrainian-speaking minorities.
- **Landscape:** Rolling steppe, fertile soils, and a temperate climate support Moldova's strong agricultural tradition.
- **Transnistria:** An unrecognized breakaway region on the east bank of the Dniester River has

maintained de facto independence from Moldova since 1990.

- **Urbanization:** Moldova has rapidly urbanized, with 46% of its population in urban areas as of 2024.



34. Caspian Sea

Context: The Central Bureau of Investigation (CBI) on August 23 coordinated the return from Azerbaijan of a fugitive wanted by the Jharkhand Police in an extortion case through Interpol channels.

Caspian Sea

- The **Caspian Sea** is the largest enclosed inland body of water in the world, lying at the crossroads of Eastern Europe and Western Asia. Its unique geographic, geological, and ecological features make it a region of both scientific interest and strategic economic importance.

Geographic Overview

Map of Caspian Sea drainage area: Russia, Kazakhstan, Turkmenistan, Iran, Azerbaijan, Georgia, Armenia, Uzbekistan, Iraq, Turkey

- **Location:** The Caspian Sea is situated between Europe and Asia, east of the Caucasus Mountains

and west of the Central Asian steppe, north of Iran's plateau, and south of Russia's plains.

- **Bordering Countries:** It is surrounded by five countries—Russia (northwest), Kazakhstan (northeast), Turkmenistan (southeast), Iran (south), and Azerbaijan (west).
- **Surface Area:** About 371,000 sq km (143,000 sq mi), roughly equal to the area of Japan, and accounts for over 40% of the world's surface lake water.
- **Length and Coastline:** The sea stretches about 1,030 km from north to south and has a shoreline of approximately 7,000 km.



Physical Features

- **Division:** The Caspian Sea is commonly divided into three regions: Northern Caspian (shallow, low salinity), Middle Caspian (irregular depressions, moderate depth), and Southern Caspian (deepest, higher salinity, up to 1,025 m).
- **Elevation:** Its surface lies about 28 m below mean sea level, making the seabed one of the world's lowest relief depressions.
- **Islands and Rivers:** The sea features numerous islands, most notably Ogurja Ada and the Tyuleniy Archipelago. It receives water primarily from over 130 rivers, the largest being the Volga, Ural, Kura, and Terek rivers.

- **Type:** It is an endorheic basin (having no natural outflow), with water loss occurring primarily through evaporation, leading to “brackish”—neither fully fresh nor saline—water conditions.

35. Venezuela

Context: Venezuela President Nicolas Maduro hit out at the U.S. deployment of three warships off his country's coast to curb drug trafficking, calling the operation an “illegal” attempt at regime change. Earlier this week, a source said three Aegis-class guided missile destroyers were heading to international waters off the country.

Venezuela:

- Venezuela, officially the Bolivarian Republic of Venezuela, is a country located on the northern coast of South America. It is bordered by the Caribbean Sea and the Atlantic Ocean to the north, Colombia to the west and southwest, Brazil to the south, and Guyana to the east. The capital city is Caracas, and Venezuela is known for its vast oil reserves, diverse geography including the Andes mountains, vast plains, and extensive coastlines.

Geography and Climate

- **Venezuela lies entirely in the tropics, mostly north of the Equator.**
- It features a range of terrains such as mountains, rainforests, rivers, and lakes.
- The climate varies from tropical along the coast and plains to cooler tropical highland climate in the mountains.
- Lake Maracaibo is a large brackish bay connected to the Caribbean Sea in northwestern Venezuela.
- **While it lies near the border with Colombia, it does not separate Venezuela from Colombia. The actual land border between Venezuela and Colombia lies west and southwest of Lake Maracaibo. The lake is**

entirely within Venezuelan territory, mainly in the state of Zulia.



36. Kilauea

Context: Hawaii's Kilauea Volcano, one of the world's most active, has started erupting again.

About Kilauea

- It is one of **six active volcanoes** in the Hawaiian Islands. It is a **shield volcano** and is known for **effusive lava flows** rather than explosive eruptions.
- It is located within the **Hawaii Volcanoes National Park**, alongside **Mauna Loa** (the largest volcano in the world).
- Although smaller than Mauna Loa, Kilauea is **more active**, erupting frequently since **1983**.

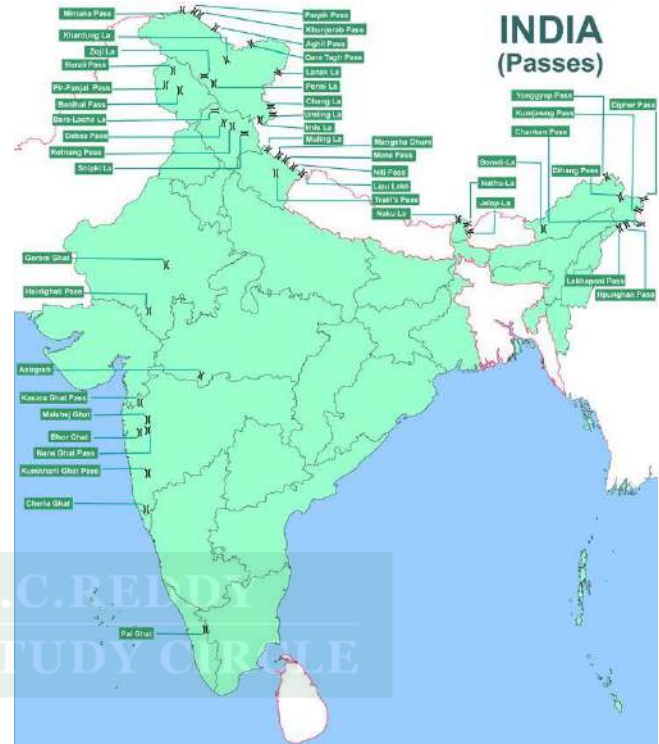
	Volcanoes	Locations
1	Kilauea	USA
2	Kanlaon	Philippines
3	Lewotobi Laki-Laki	Indonesia
4	Sundhnúkur	Iceland

37. Mountain passes

Context: China has agreed in principle to resume trade through the Shipki-La pass in Himachal Pradesh's Kinnaur district.

Mountain passes from west to east:

- Zoji La** → Jammu & Kashmir (westernmost, in Greater Himalayas).
- Shipki La** → Himachal Pradesh (Sutlej valley).
- Nathu La** → Sikkim (links to Chumbi Valley, China).
- Bomdi La** → Arunachal Pradesh (eastern Himalayas, near Tawang).



38. Fiji

Context: Fiji Prime Minister Sitiveni Rabuka is on a three-day visit to India, his first in the current capacity, to strengthen bilateral relations and deepen people-to-people ties.

About Fiji:

- What it is?**
 - Sovereign island nation** in Melanesia, Oceania, officially known as the Republic of Fiji.
 - Known for strategic location in the South Pacific and rich natural resources.
- Location:**
 - Lies in the **South Pacific Ocean**, about **2,000 km** northeast of New Zealand.

- Surrounded by the **Koro Sea**, part of Oceania's Pacific archipelago.
- **Capital:** Suva – situated on the island of Viti Levu.
- **Key Features:**
 - **Archipelago:** 330+ islands, ~110 permanently inhabited, along with 500 islets.
 - **Major Islands:** Viti Levu & Vanua Levu (home to 87% of the population).
 - **Geography:** Volcanic origin with geothermal activity (notably on Vanua Levu & Taveuni).
 - **Demography:** Austronesian & Melanesian ancestry with Polynesian influences.
 - **Currency:** Fijian Dollar (FJD).
 - **Official Languages:** English, Fijian, Hindi.



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39. Tawi River

Context: India warned Pakistan about a potential flood in river Tawi as a “humanitarian gesture”.

About Tawi River

- **Origin:** It originates from the Kailash Kund glacier (Kali Kund) near Bhaderwah in Doda district.
- **Tributary:** Left bank tributary of Chenab River.
- **Importance:** Considered as the “Lifeline” of Jammu city.

	Rivers	Tributaries
1	Kaveri	Hemavati, Kabini, Bhavani, Noyyal, and Amaravati
2	Narmada	Kolar, Dudhi, Tawa, and Sher
3	Krishna	Bhima, Tungabhadra, Ghataprabha, Malaprabha, and Musi
4	Godavari	Pranhita, Indravati, Manjira, and Sabari

40. Oman

Context: Oman has set a target to attract one million Indian tourists annually, up from 7 lakh visitors in 2024, as part of its tourism diversification strategy supported by better connectivity and liberal visa policies.



About Oman:

- A country on the southeastern coast of the Arabian Peninsula at the confluence of the Persian Gulf and Arabian Sea.
- **Capital:** Muscat
- **Borders:** Yemen, Saudi Arabia, UAE, Gulf of Oman and Arabian Sea
- **Key Features:**
 - **The Tropics of Cancer passes through Oman.**
 - Rugged **Hajar Mountains** and fertile coastal plains (Al-Bāṭinah, Dhofar).
 - **Desert interior forming part of Rub' al-Khali (Empty Quarter).**
 - Strategic location near the **Strait of Hormuz.**
 - Known historically for **frankincense and seafaring trade.**
 - **Climate:** Hot & dry interior, humid coasts and Dhofar influenced by monsoon.

41. East China Sea

Context: China rejected Japan's protest over its development of gas fields in the disputed East China Sea, where both nations' Exclusive Economic Zone (EEZ) claims overlap.

East China Sea:

- The **East China Sea** is a marginal sea located in the western Pacific Ocean, off the eastern coast of China. It covers an area of approximately 1,249,000 square kilometers (482,000 square miles), making it a significant body of water in East Asia.

Location and Boundaries

- **The sea is bounded:**
 - To the **west** by the Asian mainland (China).
 - To the **east and southeast** by the Japanese islands of **Kyushu** and the **Ryukyu Islands**.
 - To the **south** by the island of **Taiwan** and the **South China Sea**.
 - To the **north**, it opens into the **Yellow Sea** and connects to the Sea of Japan through the Korea Strait.

- Major countries bordering the East China Sea include **China, South Korea, Japan, and Taiwan.**

Rivers empty into the East China Sea:

- **Yangtze River (1):** This is the longest river in Asia and the third-longest in the world. It flows east across China and empties into the East China Sea near Shanghai.
- **Qiantang River (2):** Located in Zhejiang province, this river is famous for its tidal bore. It flows into Hangzhou Bay, which is an inlet of the East China Sea.
- **Huangpu River (3):** This is a major tributary of the Yangtze River. It flows through Shanghai and joins the Yangtze just before the Yangtze empties into the East China Sea.

While,

- **Yellow River (Huang He) (4):** The Yellow River is the second-longest river in China. It flows into the **Bohai Sea**, which is a gulf of the Yellow Sea, not the East China Sea.

**42. Netherlands**

Context: Sweden and the Netherlands have urged EU sanctions on Israel and Hamas, including suspending the EU-Israel trade deal. Their letter to foreign chief Kaja Kallas called for targeting Israeli Ministers, settlers, and Hamas leaders. The issue will be discussed by EU Foreign Ministers on August 30.

Netherlands

- The **Netherlands** is a country in Northwestern Europe, bordered by the North Sea to the north

and west, Germany to the east, and Belgium to the south. It is known for its flat landscape, extensive canal systems, windmills, and vibrant cities like Amsterdam, Rotterdam, and The Hague.

Important Geographical Facts

- The Rhine River is one of the major European rivers that flows through Switzerland and Germany before entering the Netherlands. In the Netherlands, the Rhine splits into several branches in the Rhine-Meuse-Scheldt delta and finally empties into the North Sea.
- The Netherlands shares its **longest border with Germany**, approximately 570 km long, running from the north near the Ems river estuary to the south at the tripoint with Belgium.
- The country does not share any border with Liechtenstein, which is a small, landlocked country located in Central Europe, bordered only by Austria and Switzerland.



43. Saudi Arabia

Context: The 7th meeting of the India-Saudi Arabia Joint Committee on Defence Cooperation (JCDC) was held in New Delhi on August 28, 2025.



Saudi Arabia shares land borders with seven countries:

- Jordan to the northwest.
- Iraq to the north and northeast.
- Kuwait to the northeast.
- Qatar to the east.
- United Arab Emirates (UAE) to the east.
- Oman to the southeast.
- Yemen to the south

44. Brazil

Context: Brazil is considering retaliatory trade measures against the United States, including tariffs, after President Donald Trump imposed 50% levies on a range of Brazilian imports, government sources said on August 30.



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Key Geography Facts of Brazil

- **Brazil** is the largest country in South America and occupies almost half the continent's landmass.
- It is unique in that **both the Equator and the Tropic of Capricorn** pass through its territory:
 - The Equator crosses northern states such as Amapá, Amazonas, Pará, and Roraima.
 - The Tropic of Capricorn passes through southern states including São Paulo, Paraná, Mato Grosso do Sul, and Rio Grande do Sul.
- **Land Borders:** Brazil has borders with **10 countries** in South America:
 - Argentina, Bolivia, Colombia, Guyana, Paraguay, Peru, Suriname, Uruguay, Venezuela, and France (French Guiana).

- **Unique Border Fact:** Brazil shares its borders with every mainland South American country except Chile and Ecuador.

45. Indonesia

Context: An angry mob set fire to a local parliament building in an Indonesian provincial capital, leaving at least three persons dead and five others hospitalised, officials said.

Positions of Sea from north to south:

- **Sulu Sea** (north, west of the Philippines)
- **Celebes Sea** (south of Sulu, between Philippines & Indonesia)
- **Molucca Sea** (further south, in eastern Indonesia)
- **Banda Sea** (southernmost, surrounded by Maluku Islands in Indonesia)





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ART AND CULTURE

1. Bal Gangadhar Tilak

Context: On the death anniversary of Lokmanya Bal Gangadhar Tilak, Union Home Minister paid tribute, highlighting his role in transforming Swaraj into a mass movement.

About Bal Gangadhar Tilak:

Who He Was?

- Known as **Lokmanya Tilak**, he was a **revolutionary nationalist, journalist, scholar, and freedom fighter**.
- Famously called the “**Father of Indian Unrest**” by British colonial authorities.

Background:

- **Born:** July 23, 1856, in Ratnagiri, Maharashtra.
- **Education:** Studied at Deccan College, Pune. Graduated with a **B.A. and LL.B.**
- Co-founded **Deccan Education Society** and **Fergusson College** to promote Indian-run education.

Contributions to the Freedom Movement:

1. **Swaraj as Birthright:** Popularised the slogan “**Swaraj is my birthright and I shall have it.**”
2. **Newspapers:** Founded **Kesari (Marathi)** and **The Mahratta (English)** to educate and mobilise the public.
3. **Cultural Nationalism:** Revived **Ganesh Utsav (1893)** and **Shivaji Jayanti** as tools of mass mobilisation and Hindu unity.
4. **Extremist Phase Leader:** Led the **Lal-Bal-Pal trio** (with Lala Lajpat Rai and Bipin Chandra Pal) during the assertive phase of nationalism.
5. **Writings and Scholarship:** Authored ‘**Gita Rahasya**’, ‘**Arctic Home in the Vedas**’, and ‘**Orion**’, showcasing his command over history, religion, and astronomy.
6. **Home Rule Movement (1916):** Collaborated with Annie Besant to launch the **Home Rule**

League, demanding self-governance within the British Empire.

Controversies and Imprisonment:

- **Sedition Charges:**
 - Imprisoned multiple times for writings that incited resistance against British rule.
 - Most notably jailed in **1897 and 1908** for inciting rebellion through his journalistic work.
- **Differences with Moderates:**
 - Advocated **direct action** and opposed the moderate methods of prayer and petition during the split in the **Surat session (1907)** of INC.

Death:

- **Died:** August 1, 1920, in Mumbai.
- His death marked the end of an era, but his ideals continued to inspire the **non-cooperation and civil disobedience movements**.

2. Arya Samaj Marriage

Context: The Allahabad High Court has asked the Uttar Pradesh government to probe how fake Arya Samaj Societies are operating across the state, conducting marriages without verifying age and violating the anti-conversion law.

Arya Samaj Marriage

- **Arya Samaj** was founded by **Swami Dayanand Saraswati** in **1875** as a **Hindu reformist movement**.
- It promoted **inter-caste and interfaith marriages** and allowed conversions through a “**shuddhi**” (purification) ritual.
- The **Arya Marriage Validation Act, 1937** legally recognised such marriages, even between different castes or religions, if both parties declared themselves Arya Samajis.

Why Do Couples Prefer It?

- Arya Samaj weddings are **quick, simple, and legally recognised** under the **Hindu Marriage Act, 1955** (for Hindus, Buddhists, Jains, and Sikhs).
 - People from other religions can marry by first converting through a quick shuddhi ritual.
 - Unlike the Special Marriage Act (SMA), Arya Samaj weddings do not require a 30-day public notice, helping couples avoid harassment.
- **Why It's Controversial Now:** Many states (like Uttar Pradesh and Madhya Pradesh) have passed anti-conversion laws requiring: Pre- and post-conversion declarations, A 60-day notice, Official inquiries.
 - These rules clash with Arya Samaj's informal conversion process, making such marriages potentially illegal.
 - Courts have found that some Arya Samaj organisations solemnised child marriages, used fake documents, or ignored conversion laws.
- The Supreme Court and several High Courts have **questioned the legality of these marriages, with investigations ordered.**
- Arya Samaj encourages inter-caste/interfaith marriages and conversions via shuddhi.
- The 1937 Act recognised such marriages legally under certain declarations.
- Hindu Marriage Act, 1955 covers Hindus, Buddhists, Jains, and Sikhs.
- Unlike the Special Marriage Act (SMA), Arya Samaj weddings do not require a 30-day public notice, helping couples avoid harassment.

3. National Film Awards

Context: The 71st National Film Awards were announced.

About

- The best male actor award was shared by **Shah Rukh Khan for Jawan** and **Vikrant Massey for 12th Fail**.

- **12th Fail** won the best feature film award.
- **Rani Mukerji** was awarded the best female actor for her role in **Mrs Chatterjee vs Norway**.

National Film Awards

- **The National Film Awards (NFA) were established in 1954 to promote cinematic excellence in India.**
- They are presented every year by the Government to celebrate excellence in filmmaking.
 - These awards recognise the best films, performances, and technical achievements across various languages and genres.
- **Eligibility:** Films certified by the Central Board of Film Certification (CBFC) between January 1 and December 31 of the previous year are eligible.
- The awards are announced by a **jury appointed by the Directorate of Film Festivals** and are **presented by the President of India**.
- **The first Best Actor and Best Actress awards** were given to Uttam Kumar and Nargis, respectively, in 1968.
 - **The Best Actress award** was initially called 'Urvashi' and the **Best Actor award** was called 'Bharat'.

4. Sharada Script

Context: The first-ever exhibition showcasing Sharada, the ancient script that originated in Kashmir and was traditionally used by Kashmiri Pandits, was held during the Chinara Book Festival.

Sharada Script

- Sharada script (also spelled Śāradā or Sarada) is an ancient abugida writing system that belongs to the Brahmic family of scripts. It was used primarily for writing Sanskrit and Kashmiri, and flourished in the northwestern regions of the Indian subcontinent, especially in Kashmir, from around the 8th to the 12th century CE.

Historical Context

- **Origins and Name:** Developed around the 8th century CE, the script is named after the Hindu goddess Śārādā (Saraswati), the deity of learning and the main deity of the Sharada Peeth temple in Kashmir.
- **Spread and Usage:** Originally widespread in Kashmir, Punjab, Himachal Pradesh, and even regions of Afghanistan. It was a key script for Brahminical, religious, and secular use.
- **Cultural Significance:** Sharada was not only the script of Hindu scriptures, such as the Vedas, but was also employed for philosophical works and poetry.
- **Decline:** After the 12th century, the script's use declined, becoming restricted mainly to Kashmiri Pandits, who continue to use it occasionally for religious and astrological purposes. Its later forms influenced the creation of other scripts, notably Gurmukhi (used for Punjabi).

Script Characteristics

- **Type:** Abugida, where each consonant has an inherent vowel sound altered by diacritics.
- **Components:**
 - **Consonants and Vowels:** Contains independent vowels, diacritic marks, and special phonetic signs.
 - **Special Forms:** Includes diacritics for nasalization and other features.
- **Visual Features:** The script's shapes are distinct from Devanagari though both share a Brahmic root.

Literary and Historical Usage

- **Religious Texts:** Sharada was the medium for many manuscripts and inscriptions, including Vedic, Puranic, and poetic works.
- **Secular Use:** Poetry, chronicles, philosophical treatises.
- **Epigraphy:** Inscriptions as far as Afghanistan and Himachal Pradesh demonstrate its wide historical reach.

Script Evolution and Digital Presence

- **Influence:** Gurmukhi script, among others, evolved from Sharada. Regional variations appeared, especially from the 10th century onward.
- **Unicode Standard:** Sharada was added to the Unicode Standard in 2012, helping in its digital preservation and study.
- **Current Use:** Today, used mainly by scholars and cultural organizations for studying and reviving Kashmiri heritage.

5. Kakori Conspiracy Case

Context: Prime Minister of India paid tribute to the revolutionaries of the Kakori incident on its 100th anniversary, honouring their courage and sacrifice in India's freedom struggle.

What Was the Kakori Conspiracy Case?

- The Kakori Conspiracy Case (also known as the Kakori Train Robbery) was a landmark event in the Indian freedom struggle, taking place on 9 August 1925. Orchestrated by members of the radical Hindustan Republican Association (HRA), the incident involved the armed robbery of a government train near the town of Kakori, near Lucknow, Uttar Pradesh, with the aim of securing funds for revolutionary activities against British colonial rule.

Background and Motivations

- **Era:** Early 1920s, marked by growing dissatisfaction with non-violent nationalist methods and an upswing in revolutionary, armed resistance.
- **Organization:** Hindustan Republican Association (HRA), formed in Kanpur in 1924, focused on a federal republican governance for India.
- **Objective:** The primary goal was to seize British tax money and use it to finance the purchase of arms, promote radical independence activities, and galvanize the Indian public against colonial rule.

Key Events

- **Robbery:** On 9th August 1925, ten HRA revolutionaries stopped the “Number 8 Down” train running from Shahjahanpur to Lucknow at Kakori by pulling the emergency chain. They looted the guard cabin, which contained government money collected from taxes at railway stations—approximately ₹8,000.
- **Violence:** While the revolutionaries did not target passengers, one passenger, Ahmed Ali, was killed in crossfire, which turned the case into manslaughter.
- **Escape and Crackdown:** After the robbery, the revolutionaries fled, but the British launched a swift and comprehensive crackdown, arresting most of the accused within a month.

Key Revolutionaries Involved

- Ram Prasad Bismil (lead planner)
- Ashfaqulla Khan
- Chandrashekhar Azad (evaded capture; later reorganized HRA as HSRA)
- Rajendra Lahiri
- Sachindra Nath Bakshi
- Manmath Nath Gupta
- Others included Keshab Chakravarty, Mukundi Lal, Govind Charan Kar, Thakur Roshan Singh, and Sachindranath Sanyal.

The Trial and Aftermath

- **Number of Accused:** 29 formally tried, over 40 arrested across India.
- **Legal Defense:** The revolutionaries were defended by prominent lawyers like Gobind Ballabh Pant and Chandra Bhanu Gupta. Ram Prasad Bismil famously argued his own case.
- **Verdict:**
 - Four were sentenced to death: Ram Prasad Bismil, Ashfaqullah Khan, Rajendra Lahiri, Thakur Roshan Singh.
 - Several others got life terms and were sent to the Cellular Jail in Andamans (Kala Pani), others received long prison sentences.
- Chandrashekhar Azad remained at large until his death in 1931.

- **Public Reaction:** The severity of the sentences drew widespread outcry and protests across India, with failed petitions, hunger strikes, and appeals to the British authorities.

Impact & Significance

- **Symbol of Revolutionary Spirit:** The Kakori incident became a rallying point, inspiring later revolutionaries and shifting the focus of the freedom movement towards more direct resistance.
- **Reorganization:** After the incident, HRA was reorganized as Hindustan Socialist Republican Association/Army (HSRA) with an even more radical approach, involving figures like Bhagat Singh and Sukhdev.
- **Legacy:** Promoted ideals of self-sacrifice, bravery, and patriotic defiance. The executed revolutionaries are revered as martyrs in Indian history.

Note: Shiv Verma and Jatin Das were noted revolutionaries, but they were associated with later revolutionary events (like the Hindustan Socialist Republican Association and the Lahore Conspiracy Case), not the Kakori Conspiracy itself.

6. Dhirio

Context: Goa MLAs across party lines recently called for the legalisation of bull fighting, known locally as dhirio or dhiri, arguing it is a vital part of the state’s cultural heritage.

Dhirio

- It is also spelled Dhiri and refers to traditional bullfighting events in Goa, where two bulls are pitted against each other.
 - The bulls fight head-to-head until one retreats or is injured.
- It is historically tied to post-harvest festivities and church feasts.
 - Bulls were named (e.g., Tyson, Rambo) and had fan followings.

Legal Status

- It was banned in 1996 by the Bombay High Court at Goa under the Prevention of Cruelty to Animals Act, 1960 due to concerns over animal welfare.
- In 2014, the Supreme Court passed an order prohibiting all animal races and fights
 - Despite the ban, clandestine fights continue, especially in South Goa's coastal villages.

	Traditional animal sports	Associated states
1	Rekhla	Tamil Nadu, Andhra Pradesh
2	Ramoji	Odisha
3	Maramadi	Kerala
4	Dhirio	Goa

7. Jyotiba Phule

Context: Prime Minister of India announced a year-long series of events to mark the 200th birth anniversary of Mahatma Jyotiba Phule, celebrating his legacy in social reform, women's empowerment, and caste equality.

Jyotiba Phule**Early Life and Background**

- Jyotirao Govindrao Phule (commonly known as Jyotiba Phule) was born on April 11, 1827, in Pune, Maharashtra, into the socially marginalized Mali caste.
- He experienced caste discrimination early in life, which shaped his commitment to social reform and equality.

Social Reform and Contributions

- Champion of Education and Equality:** Jyotiba Phule was a trailblazer in challenging caste hierarchies and advocating for social justice, particularly the rights of women, Dalits (Scheduled Castes), and other marginalized communities.
- First School for Girls:** In 1848, along with his wife Savitribai Phule, he opened the first school for

girls in Pune, a revolutionary act at a time when women's education was discouraged.

- Satyashodhak Samaj:** In 1873, Phule founded the Satyashodhak Samaj (Society of Truth Seekers), an organization devoted to promoting social equality, combating caste discrimination, and championing education for all.
- Work Against Social Evils:** He opposed untouchability, sati (widow burning), and supported widow remarriage, opening orphanages and shelters for destitute women.
- Legacy as "Mahatma":** Jyotiba Phule was honored with the title "Mahatma" (great soul) in 1888 for his lifelong dedication to social upliftment.

Books Written by Jyotiba Phule

- Jyotiba Phule's writings were instrumental in raising awareness and mobilizing support for progressive reforms. Major works include:

Book Title	Year	Theme/Impact
Gulamgiri ("Slavery")	1873	Critique of caste-based oppression and likening it to slavery; calls for Dalit unity.
Shetkaryacha Asud ("Cultivator's Whip")	1881	Highlights exploitation and plight of farmers by upper-caste landlords.
Tritiya Ratna ("The Third Jewel")	1855 (play)	Written to promote enlightenment and liberation from social evils through education.
Brahmananche Kasab ("The Craft of the Brahmins")	1869	Critiques Brahmin orthodoxy, rituals, and caste dominance.
Other Essays/Works	Various	Numerous articles and pamphlets on education, gender equality, and social injustice.

Impact and Legacy

- **Pioneer of Social Justice:** Phule's activism paved the way for later reformers like Dr. B.R. Ambedkar and the anti-caste and women's movements in India.
- **Inspiration:** His efforts in opening schools and orphanages and his powerful writings remain central to the empowerment of the underprivileged in India.
- **Modern Relevance:** His vision influences policies and movements advocating equality, education, and the eradication of caste and gender-based discrimination.

Note: *Futke Nashib (Broken Fate)* was written by Gopal Ganesh Agarkar; *Atmawrutta* was written by Dhondo Keshav Karve (Maharshi Karve), and *Jatibhed* was written by Gopal Hari Deshmukh (Lokahitwadi).

8. Aurobindo Ghosh (Sri Aurobindo)

Context: Prime Minister of India paid tribute to Sri Aurobindo on his birth anniversary (15 August 1872), highlighting his role as a philosopher, spiritual leader, and freedom fighter who linked nation-building with spiritual evolution.

Aurobindo Ghosh (Sri Aurobindo)

Early Life and Education

- **Birth:** Born Aurobindo Ghose on August 15, 1872, in Kolkata, India.
- **Education:** Studied in England from age seven; attended St. Paul's School and King's College, Cambridge. Excelled in classics and languages.

Role in Indian Nationalism

- **Freedom Fighter:** Upon returning to India (1893), Aurobindo joined the Baroda Educational Service, then plunged into the nationalist movement, advocating for independence from British rule.
- **Publisher and Journalist:** Edited influential periodicals like *Bande Mataram* and *Dharma*, spreading the message of Swaraj and resistance.

- **Revolutionary Activity:** Helped organize the Anushilan Samiti, played a key role in the extremist faction of the Indian National Congress, and was charged in the Alipore Bomb Case (1908), spending a year in solitary confinement.
- **Shift to Spirituality:** During incarceration, experienced profound spiritual realizations and gradually withdrew from active politics, relocating to Pondicherry (1910) to continue his work in philosophy and spirituality.

Philosophy and Spiritual Work

- **Integral Yoga:** Developed and taught a spiritual practice known as Integral Yoga, aiming for the transformation of human life into divine life on earth.
- **Sri Aurobindo Ashram:** Founded in Pondicherry in 1926, with Mirra Alfassa ("The Mother") as collaborator. Became a global center for spiritual learning.
- **Legacy:** Aurobindo's vision emphasized India's spiritual gift to the world, international unity, and evolutionary progress of consciousness.

Literary Achievements

Aurobindo Ghosh was a prolific writer, producing philosophical, spiritual, poetic, and political works:

Book Title	Year	Notes
The Life Divine	1939–1940	Treatise on his philosophical system of Integral Yoga
Essays on the Gita	1922	Interpretative essays on the Bhagavad Gita
The Synthesis of Yoga	1948	Systematic exposition of yoga principles
Savitri: A Legend and a Symbol	1950	Epic spiritual poem, regarded as his greatest literary work
Collected Poems and Plays	1942	Compilation of poetry and dramatic works

The Human Cycle	1949	Study on social and spiritual evolution
The Ideal of Human Unity	1949	Vision for global harmony and unity
On the Veda	1956	Analysis of ancient Vedic texts

- **Other works:** Karmayogin, Upanishads, Letters on Yoga, The Mother, Record of Yoga, and numerous essays and translations.

Death and Legacy

- **Death:** Passed away on December 5, 1950, at the Ashram in Pondicherry.
- **Auroville:** International community founded to realize his vision for human unity and spiritual evolution.
- **Influence:** Continues to inspire spiritual seekers, freedom fighters, philosophers, and writers worldwide.

9. Piprahwa relics

Context: During a recent Assembly session, CM Yogi Adityanath announced that the Piprahwa relics, repatriated to India after 127 years, will be returned to their original site in Piprahwa, Uttar Pradesh, with restoration plans underway.

About

- The relics—Buddha's ash, bone fragments, gold ornaments, and gems—were **excavated in 1898 by W.C. Peppé**.
- The government now plans to develop the **20-hectare area into a theme park** with a stupa for the relics, meditation zones, and attractions depicting Buddha's early life.
 - The proposed theme park at Piprahwa will be built in front of the **ASI-protected Piprahwa stupa**, linked to the **Shakya kingdom and Kapilvastu**, Buddha's childhood home.
- **Piprahwa village** is located in **Uttar Pradesh's Siddharthnagar district**, near **Lumbini**—the birthplace of Lord Buddha.
 - It is a lesser-known site on the state's Buddhist circuit.

10. Vitthalbhai Patel

Context: All India Speakers' Conference held in New Delhi, marking the 100th anniversary of Vitthalbhai Patel's election as the first Indian Speaker of the Central Legislative Assembly.

About Vitthalbhai Patel

- **Contribution as Speaker (1925–1930):** In 1925, he became the first Indian to be elected as President (Speaker) of the Central Legislative Assembly.
 - He asserted the **independence of the legislature from the executive**, laying the foundations for parliamentary autonomy.
 - He created the **Legislative Department**, an innovation that was later accepted by the Constituent Assembly and continues under presiding officers in both Parliament and State legislatures.
- **Climbing the Political Ladder:** He won a seat in the **Bombay Legislative Council (1912)** after securing eligibility through property ownership.
 - Advocated **free and compulsory elementary education (1917)** for Bombay Presidency—though the Bill was never implemented, it reflected his reformist zeal.
 - Entered the **Imperial Legislative Assembly in 1920**, where he became one of the most active members, posing 62 questions in a single session.
- **Differences with Gandhiji:** He disagreed with Mahatma Gandhi's suspension of the Non-Cooperation Movement in 1922.
 - He became a founding member of the **Swaraj Party (1923)**, a "**pro-changer**" group that believed in entering legislatures to expose colonial rule from within.

Legacy of Vitthalbhai Patel

- The office of the Speaker of Lok Sabha derives much of its institutional legacy from the President of the Central Legislative Assembly during colonial times.

- Thus, Vitthalbhai Patel is often seen as a precursor to the modern Lok Sabha Speaker.

11. Raja Prithu and the Kamarupa Kingdom

Context: The Assam Cabinet decided that a new flyover being constructed in the heart of Guwahati would be named after Prithu, a 13th-century Kamrup ruler.

About

- **Bakhtiyar Khilji/Khalji (c. 1200 CE)** was a Turko-Afghan military general under **Muhammad of Ghor**.
- In **1206 CE**, he launched an expedition into Kamrup (present-day Assam), but suffered defeat.
- His forces were reportedly annihilated, but the **identity of the local ruler remains disputed**.
- Later historians (esp. **Kanak Lal Barua, 1933**) linked this victory to a ruler named **Prithu of Kamarupa**.

About Raja Prithu and the Kamarupa Kingdom

- In the early 13th century, Kamrupa was ruled by **Raja Prithu Rae of the Khen Dynasty**, believed to be of humble origins and descended from **Narakasura**.
- **Kamarupa** was the **first historical kingdom of Assam**, existing roughly from the **4th century CE to the 13th century CE**.
- It was located in the **Brahmaputra valley**, with **Pragjyotishpura** (modern Guwahati) as its capital.

12. Guru Tegh Bahadur

Context: Indian Railways will commemorate the 350th Martyrdom Day of Guru Tegh Bahadur Ji to aware the younger generation about his teachings

and sacrifices.

About Guru Tegh Bahadur

- **Early Life:** He was born on **1 April 1621** in Amritsar and was the **youngest son of Guru Hargobind Sahib**, the sixth Sikh Guru.
 - Guru Teg Bahadur was known as **Teyag Mal** in his youth and he later earned the title “Tegh Bahadur” by his father.
 - In **1664**, he became the ninth Sikh Guru.
- **Contributions:** He established **Anandpur Sahib**, strengthened Sikh institutions, and added over **700 hymns** to the **Guru Granth Sahib**, leaving a profound spiritual legacy.
- **Teachings:** His hymns in the Guru Granth Sahib emphasize **spiritual liberation, human rights, and equality**.
 - Guru Tegh Bahadur advocated tolerance and opposed tyranny.

Historical Significance

- Guru Tegh Bahadur, revered as **Hind ki Chadar (Shield of India)**, sacrificed his life to protect religious freedoms.
- In **1675**, he was martyred in Delhi, defending the Kashmiri Pandits against forced conversions under **Aurangzeb’s rule**.
- The site of his martyrdom is now marked by **Gurudwara Sis Ganj Sahib**.



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MISCELLANEOUS

1. Necropolitics

Context: Necropolitics is highlighting how states expose marginalised groups to violence and neglect, normalising their suffering.

Concept of necropolitics

- It explores how political power determines whose lives are protected and whose deaths are normalized or even orchestrated.
- It was coined by **Cameroonian scholar Achille Mbembe**.
- It was built on **Michel Foucault's idea of biopolitics** — which manages life through institutions and public health.
- It focuses on the governance of death, exposing how certain populations, such as refugees, the poor, racialized groups, and queer communities, are systematically abandoned or targeted.

Features

- Necropolitics functions through key mechanisms that devalue certain lives:
 - State terror suppresses dissent via surveillance, violence, or imprisonment.
 - Collaboration with militias or criminal groups blurs lines between state and non-state violence.
 - Enmity becomes central to governance, legitimizing killing.
 - War and terror turn into self-sustaining economies.
 - Targeted exploitation displaces vulnerable communities.
 - Death is inflicted through torture, starvation, drone strikes, and more.

- These actions are justified through ideologies like nationalism, religion, or utilitarianism.

Instances

- **Achille Mbembe** highlights how colonial legacies, state terror, and neoliberal regimes create “death worlds,” where people live in conditions so degraded they become the “living dead.”
 - Examples range from Kashmir's normalized violence and COVID-19 migrant crisis to Gaza's devastation and sterilisation drives against marginalised women.
- Necropolitics thrives not only in war zones but in everyday bureaucratic violence, revealing a system where death is not accidental but administratively managed.

2. Zamzam Camp and Abu Shouk Camp

Context: UN highlighted grim picture of world's worst humanitarian crisis in the refugee camps in Sudan.

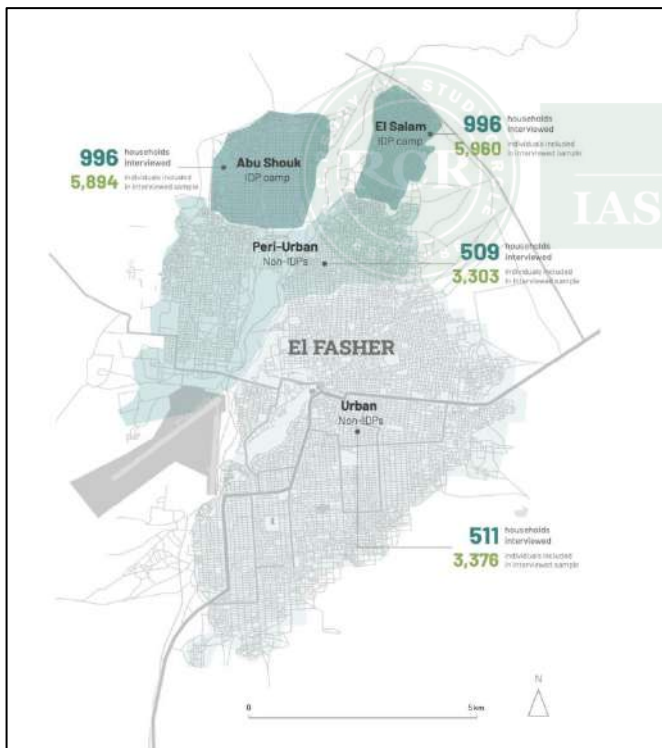
Zamzam Camp and Abu Shouk Camp:

Zamzam Camp and Abu Shouk Camp are major displacement/refugee camps in North Darfur, Sudan. In 2025, both camps drew significant international attention due to:

- **Escalating Armed Conflict:** Sudan's Darfur region has seen renewed violence, particularly due to fighting between the Sudanese Armed Forces (SAF) and the Rapid Support Forces (RSF), as well as attacks by other militias.
- **Direct Attacks and Massacres:** Both camps, home to tens of thousands of internally displaced persons (IDPs), have been targeted in shelling and violent attacks. Reports detail dozens killed in artillery and ground assaults, with the RSF accused of attacking civilians and taking control of at least one camp.

Humanitarian Impact

- **Civilian Casualties:** Hundreds of civilians, including women and children, have been killed or wounded in recent attacks on the camps.
- **Mass Displacement:** The violence has forced even more people to flee, overwhelming other aid stations and camps in the region.
- **Famine and Starvation:** Zamzam Camp especially has become symbolic of an emerging famine, with aid agencies warning of imminent starvation and “total food collapse.” Humanitarian access has consistently been blocked or made nearly impossible due to fighting and insecurity.
- **International Concern:** The United Nations and NGOs have repeatedly called for urgent humanitarian access and protection for civilians as the scale of crisis, displacement, and rights abuses has increased.



3. World's First Planned Migration from Tuvalu to Australia

Context: Tuvalu, a Pacific island nation, is set to undergo the world's first planned migration of its entire population to Australia due to rising sea levels caused by climate change.

About World's First Planned Migration from Tuvalu to Australia:

- **What is it?**
 - Under the **Falepili Union Treaty (2023)**, Australia will grant **280 Tuvaluans permanent residency annually**, allowing them to relocate due to climate threats.
 - The program ensures access to healthcare, education, housing, and employment in Australia.
- **Need for Migration:**
 - **Rising sea levels** threaten Tuvalu's existence, with **NASA predicting** most land could be submerged by **2050**.
 - Average elevation is just **2 meters**, making it highly vulnerable to **floods, storms, and erosion**.
- **Key Features:**
 - Ballot-based selection for migrants (first phase saw 8,750 registrations).
 - Combined with other pathways, up to **4% of Tuvalu's population may migrate yearly**.
 - Aims to ensure “**mobility with dignity**” as climate impacts worsen.

About Tuvalu:

- **Location:**
 - A **Polynesian island nation** in the **Pacific Ocean**, midway between **Australia** and **Hawaii**.
 - Comprises **9 coral atolls**, with a total land area of **25.14 sq km**.
- **Capital:** Funafuti
- **Population:** ~11,000 (2022 census), making it the second-least populous country after Vatican City.
- **Key Features:**
 - **Economy:** Relies on fishing licenses, foreign aid, and remittances from seafarers.
 - **Climate Vulnerability:** Faces extreme risk from sea-level rise, pushing for global climate action.
 - **UN Member:** Joined in 2000, advocates for small island states' rights.



4. Nüshu

Context: Passed down through generations of women in the remote and idyllic county of Jiangyong, it is now gaining popularity nationwide among Chinese women who view it as a symbol of strength.

What is Nüshu?

- **Nüshu** ("women's script") is a unique, centuries-old syllabic writing system created and used exclusively by women in Jiangyong County, Hunan Province, China. Emerging as a form of secret communication, Nüshu gave women—often denied formal education or literacy—a means to express themselves and maintain strong personal bonds, especially during times of hardship or separation.

Origins and History

- **Roots:** While its exact origins are unclear, Nüshu likely dates back to at least the Song dynasty (960–1279 CE), and some traditions claim even earlier beginnings.
- **Peak Usage:** The script reached its zenith during the late Qing dynasty (1644–1911).
- **Rediscovery:** Only discovered by scholars outside Hunan in the 1980s, leading to efforts to preserve and revitalize its use.
- **Cultural Significance:** The script was passed down from mothers to daughters, sisters, and

"sworn sisters" in secret, often in the form of letters, poetry, embroidered cloth, and personal artifacts.

Script Characteristics

- **Structure:** Nüshu is phonetic and syllabic, with 600–700 characters representing the sounds of Xiangnan Tuhua, the region's local Chinese dialect. It often ignores tonal distinctions, making it a radical simplification compared to logographic Chinese characters.
- **Visual:** Its slender, elegant rhomboid-shaped characters were often written on paper, fans, clothing, or belts; they are distinguished from the square shapes of standard Chinese script.
- **Intended Use:** Used for expressing personal sentiments, commiserating over the difficulties of female life in feudal China, and forging enduring bonds between women.

Social Purpose and Impact

- **Female Solidarity:** Nüshu empowered women to share their experiences, grief, hope, and aspirations away from patriarchal scrutiny. It was instrumental in creating "sworn sisterhoods" and sustaining cross-village female friendships, especially after marriage.
- **Emotional Outlet:** Much of Nüshu literature consists of laments, poems, and songs, offering catharsis and a sense of belonging during socially restrictive times.
- **Secrecy:** The script's obscurity and exclusivity allowed it to be kept hidden from men and broader society for centuries.

Preservation and Legacy

- **Intangible Heritage:** Listed as a National Intangible Cultural Heritage by China in 2006.
- **Revival Efforts:** Museums, schools, and documentaries (e.g., "Hidden Letters") have renewed interest and promoted teaching Nüshu to new generations.
- **Research and Documentation:** Collections and dictionaries have been published, led by scholars such as Zhou Shuoyi and Zhao Liming.

5. Toda Tribe of the Nilgiri Hills

Context: The Toda tribe of the Nilgiri Hills is leading preservation efforts for India's endangered languages under the Scheme for Protection and Preservation of Endangered Languages (SPPEL).

Toda Tribe of the Nilgiri Hills

- The Toda tribe is a small, indigenous pastoral community inhabiting the remote Nilgiri Hills in Tamil Nadu, southern India. Known for their unique culture, language, and distinct way of life centered around buffalo herding, the Todas are one of the oldest tribal groups in the region.

Population and Location

- The Toda population numbers around 1,500 to 2,000 members, mainly residing in the Nilgiri Biosphere Reserve, part of the Western Ghats, a UNESCO World Heritage Site.
- Their traditional settlements, called munds, are scattered across the hilly terrain, characterized by their iconic barrel-shaped thatched huts.

Culture and Social Structure

- Pastoral Economy:** The Toda economy revolves around herding and dairying of water buffalo, which are central to their livelihood and cultural practices.
- Unique Housing:** Toda huts are barrel-vaulted with curved roofs, traditionally made from wood, bamboo, and grass, reflecting distinctive vernacular architecture.
- Religion and Rituals:** Toda religion centers on the sacred buffalo, involving elaborate rituals, festivals, and poetic songs dedicated to buffalo cults. They worship a pantheon of gods, with special reverence for deities connected to natural elements and buffalo.
- Language:** The Toda language belongs to the Dravidian family but is highly unique and somewhat isolated from other Dravidian tongues. It continues to be orally preserved within the community.

- Social Practices:** Historically, the Toda practiced polyandry, often with brothers sharing a wife, and had customs involving female infanticide, but these have declined in modern times.

Challenges and Changes

- Loss of Grazing Land:** Expansion of tea plantations, eucalyptus afforestation, and agricultural activities have reduced traditional buffalo grazing areas, threatening pastoralism.
- Cultural Preservation:** Efforts are ongoing to preserve Toda culture, language, and rituals, including NGOs and academic documentation.
- Christian Conversion:** A small segment of the Toda, called Christian Todas, adopted Christianity in the 20th century, maintaining friendly ties but with distinct religious practices.

Contribution and Recognition

- Toda embroidery, a traditional craft, is celebrated as a cultural hallmark.
- Their rich oral traditions, religious practices, and unique lifestyle have attracted global anthropological interest.
- Toda territory forms part of the Nilgiri Biosphere Reserve, contributing to India's biodiversity and cultural heritage.

6. National Anubhav Awards 2025

Context: The National Anubhav Awards 2025 is going to be held at Vigyan Bhawan, New Delhi, marking the 10th anniversary of the awards.

About the Awards

- Launch Year:** 2015
- Purpose:** To incentivise and encourage retired government employees to share their work experiences and administrative insights.
- Eligibility:**
 - Employees who are retiring within the next **8 months**, or who have retired within the past **3 years**, can submit their write-ups on the **Anubhav Portal**, which are then

evaluated by the Department of Pension & Pensioners' Welfare (DoPPW).

- **Evolution**

- **2015:** Started with **5 National Anubhav Awards**.
- **2023:** Introduced **10 Anubhav Jury Awards**, increasing total awards to **15 annually** for wider participation.

Note: Eligibility for these awards is specifically for retiring employees of the Central Government of India. The eligibility is not extended to all Indian citizens or to Overseas Citizens of India (OCI) cardholders.

7. Global Outlook Council on Water Investments

Context: The President of South Africa announced the launch of the Global Outlook Council on Water Investments (GOCWI).

Global Outlook Council on Water Investments

- The Global Outlook Council on Water Investments is an international initiative focused on addressing the challenges and opportunities related to financing water infrastructure and sustainable water management worldwide. The council serves as a platform to mobilize capital, enhance collaboration, and promote innovative financial mechanisms geared toward achieving global water security.

Background and Importance

- Water is a critical resource sustaining life, agriculture, industry, and ecosystems. Yet, achieving universal access to clean water and sanitation requires massive investment—estimated to be several times current global funding levels.
- The council recognizes the urgent need to accelerate quality investments in water infrastructure, addressing issues such as climate resilience, sanitation, pollution control, and efficient water resource management.

Key Objectives

- Foster cooperation among governments, private investors, international financial institutions (IFIs), and non-government organizations to close the water investment gap.
- Promote innovative financing models, including blended finance, public-private partnerships (PPPs), and mobilization of patient capital like sovereign wealth funds and impact investors.
- Advocate for policy reforms and enabling environments that reduce investment risks and improve the financial viability of water infrastructure projects.
- Encourage the development of multi-purpose and climate-resilient water projects that integrate economic, social, and environmental benefits.

Stakeholders and Partners

- Key actors involved include the World Water Council, World Bank, UN agencies (e.g., UN-Water), OECD, International Monetary Fund (IMF), regional development banks, and financial industry players.
- Collaboration among national finance ministries, regulatory bodies, and private sector participants is essential to drive effective investment strategies.
- The council also engages with academic institutions and leading think tanks to generate evidence-based policy advice and advocacy messages.

Actions and Outcomes

- The council supports the creation and rollout of investment-ready water infrastructure projects, improving transparency, project preparation, and risk assessment.
- Focuses on scaling up investments aligned with Sustainable Development Goals (SDGs), especially SDG 6 (clean water and sanitation).
- Encourages knowledge sharing and capacity building to strengthen national and local water governance and financial management capabilities.

Challenges Addressed

- Overcoming fragmentation and lack of project pipeline in water infrastructure.
- Dealing with political, regulatory, and credit risks that deter private capital.
- Bridging the gap between short-term financial returns expected and long-term societal benefits.
- Incorporating climate adaptation and mitigation considerations into water investments.
- The Council was launched in 2024 under South Africa's G20 Presidency to scale up water investment.
- While the GWIP does aim to build upon successful models like the **Africa Water Investment Programme (AIP)**, its goal is to create a new global platform, not to simply "transform" the AIP itself.
- The GWIP is a platform to facilitate investments; it is **not a permanent intergovernmental body** under the UN General Assembly. Its operations are supported by a diverse group of partners, including governments, development banks, and the private sector, but it does not have the formal status described.

8. Bronco Test

Context: The BCCI has reportedly introduced a rugby-centric Bronco fitness test for Indian players in an effort to ensure consistently high fitness standards.

About

- It will now be used alongside the established **Yo-Yo test and 2-kilometer time trial** to assess players' readiness for international competition.
- **The Bronco Test** is a high-intensity aerobic running drill designed to measure a player's stamina, speed, and cardiovascular conditioning.
 - It involves shuttle runs of 20, 40, and 60 meters, the goal is to finish the test within six minutes.

- **The Yo-Yo Test** has been a key component of India's fitness regime since 2017, it involves running between two cones placed 20 metres apart, with the pace increasing at each level.
 - Players are allowed a 10-second recovery period after every 40-metre run. To pass, a minimum score of **17.1 is required**.
- **While the Yo-Yo Test** focuses on interval recovery and agility, the Bronco Test is designed to assess continuous aerobic endurance.
 - Together, the two tests offer a **more comprehensive assessment** of a player's overall fitness.
- **2 KM Time Trial:** The BCCI also continues to utilise a 2-kilometre time trial, with specific benchmarks set for different roles: fast bowlers must complete it in 8 minutes 15 seconds.

9. National Youth Award (NYA) 2024

Context: The Ministry of Youth Affairs & Sports has invited nominations for the National Youth Award (NYA) 2024.

About

- The Award is designed to inspire young individuals aged 15 to 29 to strive for excellence in national development and social service.
- The National Youth Award, usually conferred during the National Youth Festival, is given in two categories: Individual and organisation.
- The maximum number of awards given each year is 20 for individual categories and 5 for organisational categories.
 - It may, however, vary at the **discretion of the sanctioning authority** in deserving cases.
- **Award to individuals will comprise a medal, a certificate and award money of ₹1,00,000.**
 - **Award to voluntary youth organisations** will comprise a medal, a certificate and award money of ₹3,00,000.

10. Shadow Schooling

Context: A government report from the Comprehensive Modular Survey (CMS) on education revealed that 33% of school students in India take private coaching, showing rising dependence on “shadow schooling.”

About Shadow Schooling:

What it is?

- The practice where students supplement regular school education with **private coaching or tutoring** outside the formal system.
- Called “shadow” because it mirrors school subjects but is offered privately, often for a fee.

Features:

- **Parallel system** alongside formal schooling.
- Covers the same syllabus but provides **extra practice, exam strategies, and individual attention**.
- Driven by **competitive exams, parental aspirations, and quality concerns in schools**.

Trends (as per 2025 CMS report):

- **National average:** 27% students take coaching → rises to **30.7% in urban areas** and **25.5% in rural**.
- **Spending gap:** Urban families spend nearly **₹3,988 annually per child**, rural families **₹1,793**.
- **Higher secondary:** Urban households spend **₹9,950 per student**, almost double rural levels (**₹4,548**).
- **Growth with age:** Coaching expenses rise from **₹525 (pre-primary)** to **₹6,384 (higher secondary)**.
- **Funding:** 95% of students rely on **household resources**, only 1.2% benefit from **government scholarships**.

11. National Annual Report and Index on Women's Safety

Context: The National Annual Report and Index on Women's Safety (NARI) 2025 was recently released by the National Commission for Women (NCW).

About

- It was conducted across **31 cities** with the **participation of 12,770 women**.
- **Developed by:** Pvalue Analytics, The NorthCap University, Jindal Global Law School, and published by Group of Intellectuals and Academicians (GIA).
- **Objective:** To capture both crime data and women's perceptions of safety.

Key Findings

- **National Safety Score:** It placed the national safety score at **65%**, categorising cities as “much above”, “above”, “below” or “much below” this benchmark.
- **Safest Cities:** Kohima, Visakhapatnam, Bhubaneswar, Aizawl, Gangtok, Itanagar, Mumbai.
- **Least Safe Cities:** Patna, Jaipur, Faridabad, Delhi, Kolkata, Srinagar, Ranchi.
- **Factors for Safety:** Stronger gender equity, civic participation, women-friendly infrastructure, better policing.
- **Factors for Low Safety:** Patriarchal norms, weak institutional responsiveness, and urban infrastructure gaps.



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4	CA July 2025	07.09.2025
5	CA August 2025	21.09.2025
6	CA September 2025	12.10.2025
7	CA October 2025	16.11.2025
8	CA November 2025	14.12.2025
9	CA December 2025	12.01.2026
10	CA January 2026	15.02.2026
11	CA February 2026	15.03.2026
12	CA March 2026	12.04.2026
13	CA April 2026-20 days	10.05.2026

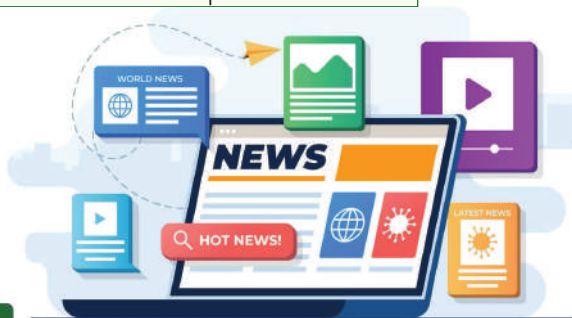
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