La Excellence
— IAS Academy —

JULY, 2026

Prelims Fact Sheet

Your Monthly Guidance for UPSC Prelims



- Current Affairs Deep Dive
- History & Culture
- Environment & Ecology
- Polity & Economy
- Science & Technology

50+ Key Facts I Segregated Section wise

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1. Polity and Governance

1.1. Fast-Track Courts: Legal Basis, Functioning and Pendency Challenges

Context:

The proposal to expand Fast-Track Courts has renewed attention to their legal basis, jurisdiction and performance. Although intended to expedite trials, many FTCs continue to face heavy pendency, infrastructure shortages and judicial vacancies.

Explanation:



- **Fast-Track Courts (FTCs)** are special courts created through government schemes and judicial directions; there is no single central law governing all FTCs.
- They were initially recommended by the **11th Finance Commission** to clear long-pending criminal cases.
- **Fast-Track Special Courts** primarily try rape cases and offences under the **POCSO Act, 2012**.
- Under **Article 14**, creation of a special court must rest on a reasonable classification and serve a legitimate objective.
- In **State of West Bengal v. Anwar Ali Sarkar (1952)**, arbitrary selection of cases for special trial was invalidated.
- High Courts may designate courts for speedy trial, but case allocation must follow objective criteria.
- FTCs remain constrained by judicial vacancies, weak infrastructure, prosecution delays, forensic shortages and frequent adjournments.
- Speedy trial forms part of **Article 21**, but expedition cannot override due process and fair-trial safeguards.

1.2. Street Vendors Act and the Regulation of Urban Footpaths

Context:

Bengaluru's drive to clear street vendors from footpaths has raised questions about compliance with the **Street Vendors Act, 2014**. The issue involves balancing pedestrians' right to safe public spaces with vendors' constitutionally protected livelihood.

Explanation:



- The **Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act, 2014** regulates vending while protecting vendors from arbitrary eviction.
- It reflects the right to livelihood under **Article 19(1)(g)** and **Article 21**, subject to reasonable regulation.
- Every local authority must constitute a **Town Vending Committee (TVC)** comprising officials, local representatives and street vendors; at least **40% of its members must be vendors**.
- The TVC conducts surveys, identifies vendors and demarcates vending, restricted-vending and no-vending zones.
- Existing vendors cannot ordinarily be evicted or relocated until the survey is completed and vending certificates are issued.

- A **Certificate of Vending** permits vending at specified locations and under prescribed conditions.
- The Act protects livelihood but does not confer ownership over public land or an unrestricted right to occupy footpaths.
- Removal is permissible only through due process, relocation and rehabilitation provisions under the law.

1.3. Madhya Pradesh Cabinet Approves Draft Uniform Civil Code (UCC) Bill

Context:
The Madhya Pradesh Cabinet has approved the draft Uniform Civil Code (UCC) Bill, which proposes a common legal framework for personal laws across communities while exempting Scheduled Tribes.

Explanation:
- **Uniform Civil Code (UCC)** aims to replace religion-based personal laws with a **common civil law** governing marriage, divorce, inheritance, adoption and maintenance, deriving support from Article 44 (Directive Principles of State Policy).
- Personal laws in India currently differ across religious communities, while criminal laws are uniform nationwide.
- The draft Bill exempts **Scheduled Tribes**, recognizing constitutional protections under **Articles 342 and 366(25)** and tribal customary practices.
- The proposal bans polygamy, nikah halala, mandates registration of marriages, divorces and live-in relationships, and grants equal legal status to children irrespective of parents' marital status.

1.4. National Anti-Doping Act, 2022 and Amendment Act, 2025 Come into Force

Context:
The Government of India has enforced the National Anti-Doping Act, 2022 and the National Anti-Doping (Amendment) Act, 2025.

Explanation:
- Doping refers to the use of **prohibited substances or methods** to artificially enhance sports performance, violating the principle of **fair play**.
- The National Anti-Doping Act, 2022 provides statutory backing for testing, investigations, results management, education, and dispute resolution in anti-doping matters.
- The National Anti-Doping (Amendment) Act, 2025 strengthens institutional autonomy, transparency, accountability, and procedural safeguards.
- India's anti-doping framework is aligned with the **World Anti-Doping Code (WADA Code)** and fulfils obligations under the UNESCO International Convention against Doping in Sport (2005).
- **National Anti-Doping Agency (NADA)** is India's apex body for implementing anti-doping rules, while **World Anti-Doping Agency (WADA)** sets global anti-doping standards.

1.5. Supreme Court Restricts Use of Special Intensive Revision (SIR) Data to Electoral Purposes

Context:
The Supreme Court has issued notice to the Election Commission of India (ECI) and the West Bengal Government over allegations that data from the **Special Intensive Revision (SIR)** of electoral rolls is being used to deny welfare benefits and cancel caste certificates. The Court reiterated that SIR data is meant solely for electoral purposes and cannot be used to determine citizenship or for non-election administrative actions.

Explanation:

- **Special Intensive Revision (SIR)** is a comprehensive revision of electoral rolls conducted by the Election Commission of India **(Article 324)** to ensure voter lists are accurate and updated.
- Inclusion in an electoral roll is governed by the Representation of the People Act, 1950, while citizenship is determined only under the Citizenship Act, 1955.
- The ECI has no authority to adjudicate citizenship; doubtful citizenship cases must be referred to the competent authority under the Citizenship Act.
- Electoral roll deletion affects only the **right to vote** and cannot automatically deprive individuals of food security, welfare benefits, caste certificates, or other statutory entitlements.
- The Supreme Court emphasized that electoral data cannot be used for non-poll administrative purposes, safeguarding constitutional rights under **Articles 14, 21 and 326**.

1.6. UDISE+ 2025–26 Report on School Education in India

Context:

The Union Ministry of Education has released the **Unified District Information System for Education Plus (UDISE+) 2025–26 Report**, highlighting improvements in school education indicators such as teacher availability, enrolment, retention, digital infrastructure and gender representation across India.

Explanation:

- **UDISE+ (Unified District Information System for Education Plus)** is India's largest school education database, managed by the **Ministry of Education** to collect annual data from recognised schools across the country.
- It provides comprehensive information on **schools, teachers, students, infrastructure, enrolment, learning facilities and governance**, helping in evidence-based policymaking.
- The system supports monitoring of the **National Education Policy (NEP) 2020, Samagra Shiksha**, and progress towards **Sustainable Development Goal (SDG) 4 – Quality Education**.
- Key educational indicators include **Gross Enrolment Ratio (GER), Pupil-Teacher Ratio (PTR), Dropout Rate, Transition Rate and Retention Rate**, which measure access, participation and continuity in education.
- UDISE+ is also used for planning teacher deployment, improving school infrastructure, promoting digital education, ensuring gender equity and tracking inclusive education for children with disabilities.

1.7. Allahabad High Court Upholds Uniform Minimum Marriage Age Across Religions

Context:

The Allahabad High Court has ruled that the minimum age of marriage under the Prohibition of Child Marriage Act (PCMA), 2006 applies to all citizens irrespective of religion. The Court held that personal laws cannot override statutory provisions intended to prevent child marriage and protect children.

Explanation:

- **Child marriage** refers to the marriage of a person below the legally prescribed minimum age under the **Prohibition of Child Marriage Act (PCMA), 2006**.
- Under the **PCMA, 2006**, the minimum legal marriage age is **21 years for males** and **18 years for females**, applicable irrespective of religion.
- The Act seeks to **prohibit, prevent and punish child marriages**, while also providing relief, maintenance and custody for affected children.

- **Personal laws** govern matters such as marriage, divorce and inheritance for different religious communities, but they cannot override a **Central law** enacted for child protection.
- The **Protection of Children from Sexual Offences (POCSO) Act, 2012** defines every person below **18 years** as a child and criminalises sexual offences against children, reinforcing the statutory prohibition on child marriage.

1.8. Model Guidelines for Development and Regulation of Retirement Homes for Senior Citizens

Context:

The Ministry of Social Justice and Empowerment has issued Model Guidelines for the Development and Regulation of Retirement Homes to all States and Union Territories.

Explanation:

- The **Model Guidelines** provide a reference framework for States and Union Territories to regulate and develop retirement homes for senior citizens.
- **Land** and **Colonization** fall under Entry 18, List II (State List) of the **Seventh Schedule**, making regulation primarily a state responsibility.
- The guidelines prescribe **elder-friendly infrastructure**, including wheelchair-accessible ramps, lifts, handrails, power backup, ambulance services and panic alarm systems.
- Retirement home projects are covered under the **Real Estate** (Regulation and Development**) Act, 2016 (RERA)**, ensuring transparency, accountability and consumer protection.
- The initiative complements the **Maintenance and Welfare of Parents and Senior Citizens Act, 2007**, promoting dignity, independent living and quality care for India's ageing population.

1.9. Draft Advocates (Amendment) Bill, 2026 Released for Public Consultation

Context:

The Bar Council of India (BCI) has released the Draft Advocates (Amendment) Bill, 2026 for stakeholder and public consultation.

Explanation:



- The **Advocates Act, 1961** regulates the legal profession in India and provides for the constitution of the Bar Council of India (BCI) and State Bar Councils.
- The Bar Council of India (BCI) is a statutory body established under the Advocates Act, 1961, responsible for legal education, professional ethics, enrolment standards, and disciplinary oversight of advocates.
- A Draft Bill is released for public consultation before introduction in Parliament, allowing stakeholders to suggest changes and improving the quality of legislation through **participative law-making**.
- Comments have been invited until 31 July 2026, reflecting the government's commitment to a transparent and participative legislative process.
- After consultation, the draft may be revised, approved by the Union Cabinet, introduced in Parliament, and becomes law only after passage by both Houses and Presidential assent.

1.10. Maharashtra's Mukhyamantri Majhi Ladki Bahin Yojana under CAG Scrutiny

Context:

The **Mukhyamantri Majhi Ladki Bahin Yojana** in Maharashtra has come under scrutiny following **CAG observations** on excess expenditure, financial management, and verification of beneficiaries. Large-scale beneficiary removals after e-KYC verification have also raised concerns regarding the scheme's implementation.

Explanation:



- **Mukhyamantri Majhi Ladki Bahin Yojana** is a **Direct Benefit Transfer (DBT)** scheme providing **₹1,500 per month** to eligible women for financial empowerment.
- Eligible beneficiaries are **women aged 21–65 years**, resident of Maharashtra, with an **Aadhaar-linked bank account** and prescribed income criteria.
- **Direct Benefit Transfer (DBT)** transfers subsidies directly into beneficiaries' bank accounts to improve transparency and reduce leakages.
- **e-KYC (Electronic Know Your Customer)** uses Aadhaar-based identity verification to authenticate beneficiaries.
- **Comptroller and Auditor General (CAG)** is a constitutional authority under **Article 148**, auditing Union and State government finances to ensure accountability and financial propriety.

1.11. Supreme Court's Draft Regulations on the Use of Artificial Intelligence in Courts

Context:

The Supreme Court of India has released the Draft Regulations for use of Artificial Intelligence (AI) in Courts, 2026 for public consultation. The draft seeks to regulate AI use in judicial administration while ensuring that judicial decision-making remains exclusively human-led.

Explanation:



- **Artificial Intelligence (AI)** refers to computer systems capable of performing tasks requiring human intelligence, such as language processing, pattern recognition, and data analysis.
- The draft permits AI for administrative and assistive functions, including legal research, translation, transcription, case management, scheduling, accessibility, and court administration.
- AI is prohibited from performing judicial decision-making, predicting case outcomes, assessing witness credibility, determining guilt or innocence, sentencing, or generating final judicial orders.
- The framework mandates human oversight, transparency, accountability, and disclosure whenever AI tools assist court processes.
- It discourages the use of **black-box (non-explainable) AI** and emphasizes **Explainable AI (XAI),** data privacy, fairness, and protection against algorithmic bias.
- The regulations align with constitutional principles of natural justice, due process, judicial independence, and the right to a fair trial.

1.12. Government Tightens Regulation of Alcohol-Containing Medicinal Products

Context:

The Union Health Ministry has amended the Drugs Rules, 1945, making it mandatory for medicinal formulations containing more than 12% ethyl alcohol (v/v) in quantities above 30 ml to obtain licences. The move aims to prevent misuse of high-alcohol medicinal products and strengthen regulatory oversight.

Explanation:



- The Drugs and Cosmetics Act, 1940 and the Drugs Rules, 1945 regulate the manufacture, sale, distribution, and licensing of drugs and cosmetics in India.
- Schedule K of the Drugs Rules provides exemptions from certain licensing requirements for specified drugs and formulations under prescribed conditions.
- The amendment removes the exemption for medicinal formulations containing more than 12% v/v ethyl alcohol in containers exceeding 30 ml, bringing them under mandatory licensing.
- Such formulations may contain 80–90% alcohol, making them vulnerable to misuse for intoxication instead of therapeutic purposes.
- Ethyl alcohol (ethanol) is used in medicines as a solvent, preservative, and extraction medium, especially in herbal and tincture preparations.
- The amendment strengthens record-keeping, prescription monitoring, and regulated pharmaceutical supply, helping curb misuse while ensuring legitimate medical availability.

1.13. Four States Settle Long-Pending Narmada Water Dispute Dues

Context:

Gujarat, Madhya Pradesh, Maharashtra, and Rajasthan signed a historic agreement to settle outstanding financial dues arising from the **Narmada Water Disputes Tribunal (NWDT) Award, 1979**. The agreement resolves long-pending issues related to the **Sardar Sarovar Project**, **Indira Sagar Project**, rehabilitation costs, and cost-sharing among the beneficiary states.

Explanation:



- The **Narmada River** originates from **Amarkantak Plateau (Madhya Pradesh)** and flows west into the **Arabian Sea**, forming the **estuary of Bharuch (Gujarat)**.
- It is India's **largest west-flowing river**, traversing **Madhya Pradesh, Maharashtra, and Gujarat**, while benefiting **Rajasthan** through canal irrigation.
- The **Narmada Water Disputes Tribunal (NWDT)** was constituted in **1969** under the **Inter-State River Water Disputes Act, 1956**, and delivered its **Award in 1979**.
- The Award allocated **water shares**, **hydropower sharing**, and laid down **cost-sharing** arrangements among the four states.
- Major projects include the **Sardar Sarovar Dam**, **Indira Sagar Dam**, **River Bed Power House**, and **Canal Head Power House**.
- The **Narmada Control Authority (NCA)** oversees implementation of the NWDT Award, dam operations, and **Resettlement & Rehabilitation (R&R)** of project-affected families.

1.14. Right to Legal Representation and Professional Ethics of Advocates

Context:

The Faizabad Bar Association recently resolved not to provide legal representation to the accused in the Ram Temple embezzlement case. The decision has revived discussion on a 2010 Supreme Court judgment, which held that every accused person, irrespective of the nature of the crime, has a fundamental right to be defended by a lawyer.

Explanation:



- Article 22(1) of the Constitution guarantees every arrested person the right to consult and be defended by a legal practitioner of their choice.
- The right to legal representation is an essential component of natural justice, fair trial, and Article 21 (Right to Life and Personal Liberty).
- In A.S. Mohammed Rafi v. State of Tamil Nadu (2010), the Supreme Court held that Bar Associations cannot pass resolutions preventing advocates from defending any accused, calling such resolutions illegal and against professional ethics.
- The Bar Council of India (BCI) is a statutory body under the Advocates Act, 1961, responsible for regulating the legal profession and prescribing Standards of Professional Conduct and Etiquette.
- Under the BCI Rules, an advocate is generally bound to accept a legal brief unless there are valid reasons for refusal, ensuring equal access to justice.
- Indian criminal jurisprudence follows the principle that an accused is presumed innocent until proven guilty, and legal representation is necessary for a fair adjudication.
- Article 39A (Directive Principles of State Policy) directs the State to ensure equal justice and free legal aid, reinforcing access to legal representation irrespective of economic or social status.

1.15. SHE-LEAPS Platform for Lakhpati Didis

Context:

The government launched SHE-LEAPS to digitally support women-led Self-Help Group enterprises across rural India. It will track enterprise creation, income growth and livelihood performance under the Lakhpati Didi initiative.

Explanation:



- SHE-LEAPS stands for Self-Help Entrepreneur-Livelihoods and Enterprise Application for Prosperity and Sustainability.
- It is a digital platform for women SHG entrepreneurs involved in farm and non-farm rural enterprises.
- It was developed by Digital India Corporation and implemented under the LokOS platform.
- LokOS digitises activities of SHGs, Village Organisations and Cluster Level Federations.
- SHE-LEAPS captures real-time enterprise data, livelihood records, financial details and performance indicators.
- It supports enterprise creation, financial inclusion, value-chain integration and data-driven governance.
- The platform will help State Rural Livelihood Missions monitor women-led rural enterprises.
- Lakhpati Didi refers to SHG women earning at least ₹1 lakh annually.

1.16. Delhi High Court Declares NSE a Public Authority under the RTI Act

Context:

The Delhi High Court has upheld that the National Stock Exchange (NSE) is a **'public authority'** under **Section 2(h) of the Right to Information (RTI) Act, 2005**. The ruling makes the NSE subject to RTI obligations, including disclosure of information, subject to exemptions under the Act.

Explanation:

- The Right to Information (RTI) Act, 2005 promotes transparency, accountability and citizen participation by providing access to information held by public authorities.
- Section 2(h) defines a Public Authority as any authority or body established by the Constitution, law, government notification, or one that is owned, controlled or substantially financed by the government.
- A public authority must appoint Public Information Officers (PIOs) and provide information unless covered under exemptions in Sections 8 and 9 of the RTI Act.
- The National Stock Exchange (NSE) is India's largest stock exchange and functions as a Market Infrastructure Institution (MII) regulated by the Securities and Exchange Board of India (SEBI) under the SEBI Act, 1992 and the Securities Contracts (Regulation) Act, 1956 (SCRA).
- SEBI is the statutory regulator of India's securities market, while NSE provides the platform for trading in equities, derivatives and debt securities.

2. International Relations

2.1. U.S.–Saudi Arabia Civil Nuclear Cooperation Agreement

Context:
The United States has announced a civil nuclear cooperation agreement with Saudi Arabia, subject to safeguards and Saudi–Israel normalisation. The possibility of domestic uranium enrichment has raised concerns regarding nuclear proliferation and a regional arms race.

Explanation:



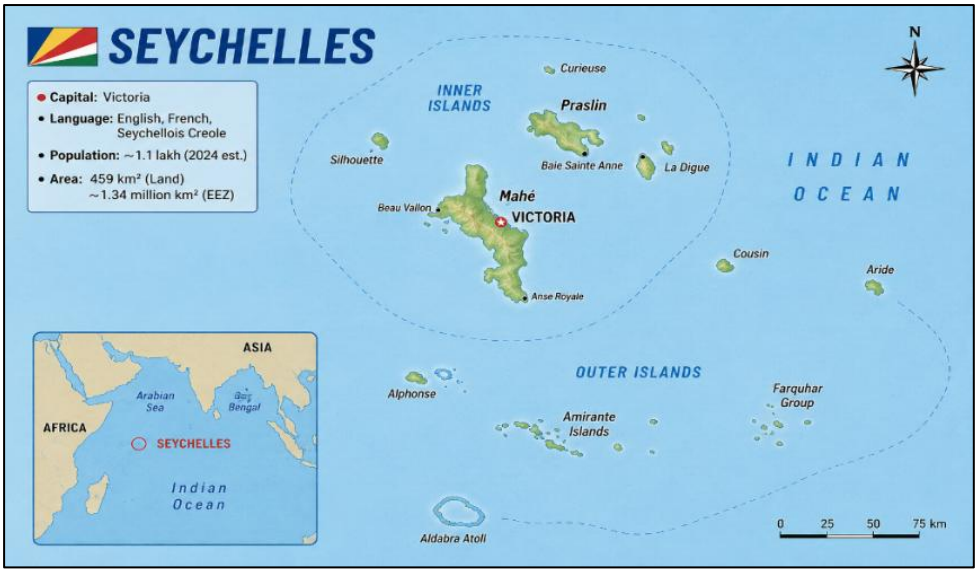
- Civil nuclear agreements permit cooperation in nuclear reactors, fuel, technology, training and electricity generation for peaceful purposes.
- **Uranium enrichment** increases the concentration of fissile **uranium-235**; higher enrichment levels create greater proliferation risks.
- The **IAEA safeguards system** uses inspections, surveillance and nuclear-material accounting to prevent diversion towards weapons.
- Saudi Arabia is a **non-nuclear-weapon State** under the **Nuclear Non-Proliferation Treaty (NPT)** and retains the right to peaceful nuclear energy subject to safeguards.
- The United States generally concludes nuclear cooperation arrangements under **Section 123 of the U.S. Atomic Energy Act.**
- Restrictions on **enrichment and reprocessing** are crucial because both are sensitive dual-use technologies.
- The proposed agreement is linked with the **Abraham Accords** and Saudi–Israel normalisation.
- Critics fear that enrichment capability could intensify strategic rivalry involving **Saudi Arabia, Iran and Israel.**

2.2. India–Seychelles Relations and the Indian Diaspora

Context:
Prime Minister Narendra Modi is visiting Seychelles, highlighting the importance of the Indian diaspora, maritime cooperation and India's role as a key development partner in the Indian Ocean Region. The visit is expected to further strengthen bilateral ties under India's SAGAR/MAHASAGAR vision.

Explanation:

- Seychelles is an archipelagic island nation in the Western Indian Ocean, strategically located along important Sea Lanes of Communication (SLOCs).
- Indians first migrated to Seychelles in the 18th century, and today the Indian diaspora (PIOs/NRIs) forms about 5% of its population, mainly of Gujarati and Tamil origin.
- India established diplomatic relations with Seychelles after its independence in 1976 and has remained a major development and security partner.
- Seychelles occupies an important place in India's Neighbourhood First Policy, Vision SAGAR (Security and Growth for All in the Region) and the broader MAHASAGAR (Mutual and Holistic Advancement for Security and Growth Across Regions) initiative.
- Bilateral cooperation covers maritime security, anti-piracy operations, counter-terrorism, Exclusive Economic Zone (EEZ) surveillance, capacity building, defence training, healthcare, education and infrastructure development.



2.3. China's Export Controls on EU Entities Amid Russia Sanctions

Context:

China has imposed export controls on 14 European Union entities in retaliation for the EU's sanctions on Chinese firms allegedly supporting Russia's war effort in Ukraine.

Explanation:

- **Export controls** are government restrictions on the export of specified goods, technology or software for **national security, foreign policy or non-proliferation** purposes.
- **Dual-use items** are goods, software or technologies with **both civilian and military applications**, such as advanced electronics, drones, semiconductors and machine tools.
- The European Union has imposed sanctions on entities allegedly aiding Russia in its war against Ukraine, including firms outside Russia.
- **Sanctions** include asset freezes, export restrictions, financial measures and trade prohibitions to influence state behaviour.
- China cites **national security** and **non-proliferation obligations** to justify its export controls while responding to the EU's measures.
- Such retaliatory actions can disrupt **global supply chains**, strategic industries and international trade in sensitive technologies.

2.4. India Opposes Plurilateral Agreements within the WTO Framework

Context:

During India's WTO Trade Policy Review, several members questioned its opposition to plurilateral agreements on e-commerce and investment facilitation



Explanation:

- The **World Trade Organization (WTO)** is based on **multilateralism**, where agreements generally apply to all members.
- The World Trade Organization (WTO) is headquartered in **Geneva, Switzerland.**
- **Plurilateral agreements** are negotiated by a limited group and bind only participating members.

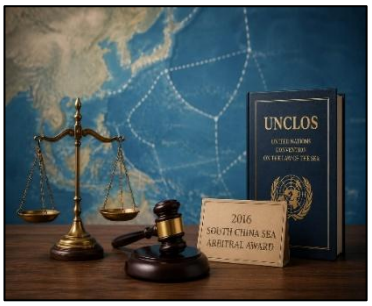
- India argues that their incorporation into WTO law requires **consensus**.
- The **Marrakesh Agreement** permits plurilateral agreements under **Annex 4**.
- India opposes the **Investment Facilitation for Development Agreement**, as investment is not considered a core trade issue.
- It has also questioned interim arrangements for the **Agreement on Electronic Commerce**.

2.5. 2016 South China Sea Arbitral Award and UNCLOS

Context:

The European Union and 14 countries have reaffirmed the 2016 South China Sea arbitral ruling, declaring China's expansive maritime claims inconsistent with international law. China has rejected the ruling, maintaining that it is "null and void" and has no binding effect.

Explanation:



- The South China Sea is a strategically important water body connecting the Pacific and Indian Oceans, through which nearly one-third of global maritime trade passes.
- China claims most of the sea through the **Nine-Dash Line**, overlapping with the **Exclusive Economic Zones (EEZs)** of countries such as the Philippines, Vietnam, Malaysia, Brunei, and Indonesia.
- In 2013, the Philippines initiated arbitration under Annex VII of the **United Nations Convention on the Law of the Sea (UNCLOS),** 1982.
- In 2016, the **Permanent Court of Arbitration (PCA),** The Hague, ruled that China's Nine-Dash Line has no legal basis under UNCLOS and that several disputed features are rocks or low-tide elevations, not full islands generating EEZs.
- UNCLOS defines Territorial Sea (12 nautical miles), Contiguous Zone (24 nautical miles), Exclusive Economic Zone (200 nautical miles), and Continental Shelf, forming the legal basis for maritime rights.
- The dispute highlights issues of freedom of navigation, rules-based international order, maritime security, and peaceful dispute settlement under international law.

2.6. 'Hummus Trail' and Universal Jurisdiction under the Geneva Conventions

Context:

A complaint has been filed in India seeking action against a former Israeli soldier visiting Himachal Pradesh for alleged war crimes committed in Gaza. The case has brought attention to the **'Hummus Trail'**, a popular travel route for Israeli tourists in India, and raised questions about India's obligations under the **Geneva Conventions** and the principle of **universal jurisdiction**.

Explanation:

- The **'Hummus Trail'** refers to popular destinations in India frequently visited by **Israeli tourists**, especially after completing their mandatory military service.
- Common destinations include **Kasol, Dharamkot, Rishikesh, Pushkar, Goa, Hampi, Varanasi and Kodaikanal**.
- India is a **State Party to the four Geneva Conventions (1949)** and enacted the **Geneva Conventions Act, 1960** to implement them.
- The Act criminalises **grave breaches (war crimes)** such as wilful killing of civilians and attacks on protected persons.

- **Universal jurisdiction** allows a country to investigate or prosecute certain grave international crimes **irrespective of where they were committed or the nationality of the accused.**
- If prosecution is not feasible, authorities may initiate **deportation or cooperate with other jurisdictions** under international law.

2.7. India Expands LNG Regasification Capacity: IGU World LNG Report 2025

Context:

According to the **International Gas Union (IGU) World LNG Report 2025**, India added **52.5 million tonnes per annum (MTPA)** of LNG regasification capacity across eight terminals, surpassing Spain to become the **world's fourth-largest regasification market**. The expansion supports India's strategy to increase the share of natural gas in its energy mix.

Explanation:



- **Liquefied Natural Gas (LNG)** is **natural gas cooled to about −162°C**, reducing its volume for economical storage and transportation.
- **Regasification Terminal** converts imported **LNG back into gaseous form** before supplying it through the **natural gas pipeline network**.
- **International Gas Union (IGU)** is a global organisation promoting sustainable development of the natural gas industry through the **World LNG Report**.
- **MTPA (Million Tonnes Per Annum)** is the standard unit for measuring LNG handling and regasification capacity.
- India aims to increase the **share of natural gas in the primary energy mix to 15% by 2030** (from around 6–7% currently) through **City Gas Distribution (CGD)**, industrial use, fertilizers, and power generation.
- Major LNG terminals include **Dahej (Gujarat), Hazira, Kochi, Ennore, Dabhol, Mundra, Jaigarh, and Chhara**.

2.8. China's Ban on Helium Exports and Its Strategic Significance

Context:

China has temporarily banned helium exports amid tightening global supply conditions and rising geopolitical tensions. The move is expected to worsen global helium shortages, affecting critical sectors such as semiconductors, healthcare, aerospace, and quantum technologies.

Explanation:



- **Helium (He)** is a **noble gas (Group 18)** with the **lowest boiling point (-269°C)**, making it indispensable as a **cryogenic coolant**.
- It is a **non-renewable natural resource**, produced through the **radioactive decay of uranium and thorium** in the Earth's crust and extracted mainly from **natural gas fields**.
- Major producers include the United States, Qatar, Russia, Algeria, and Canada, while China produces only a small share but is a major consumer.

- Helium is a critical mineral due to its irreplaceable role in MRI scanners, semiconductor wafer fabrication, aerospace, quantum computing, leak detection, fibre-optic manufacturing, and scientific research.
- Storage and transport are expensive because helium liquefies only at **ultra-low temperatures**, requiring **vacuum-insulated cryogenic containers** with minimal leakage.
- Supply disruptions expose the vulnerability of global critical supply chains, highlighting the importance of strategic reserves, resource security, and supply-chain diversification.

3. Economy

3.1. U.S. Section 301 Tariffs, Forced Labour Rules and India–U.S. Trade

Context:

The United States has imposed a **10% Section 301 tariff** on imports from India—lower than the 12.5% rate proposed earlier—after India amended its Foreign Trade Policy to prohibit imports of goods produced using forced labour. The move comes amid ongoing India–U.S. trade negotiations and a U.S. review under Section 301 of the U.S. Trade Act.

Explanation:

- **Section 301 of the U.S. Trade Act, 1974** empowers the **United States Trade Representative (USTR)** to investigate and act against unfair foreign trade practices that burden U.S. commerce.
- It allows the U.S. to impose additional tariffs, import restrictions or other trade measures against countries found violating fair trade principles.
- **Forced labour** refers to work extracted under coercion, threats or without voluntary consent, as defined by the **International Labour Organization (ILO) Forced Labour Convention, 1930 (No. 29)**.
- India recently amended its Foreign Trade Policy (FTP) through the Directorate General of Foreign Trade (DGFT) to prohibit the import of goods produced wholly or partly using forced labour.
- The amendment aligns India's trade regime with global **ESG (Environmental, Social and Governance)** standards and responsible supply-chain practices.
- **Most Favoured Nation (MFN)** under the WTO requires members to extend any tariff concession granted to one trading partner equally to all WTO members unless covered by permitted exceptions such as FTAs or customs unions.
- The policy shift may strengthen India's credibility in global value chains and support ongoing India–U.S. trade negotiations.

3.2. Government Revises Index of Core Industries (ICI) with New Base Year and Expanded Coverage

Context:

The Union Government has released a revised series of the Index of Core Industries (ICI) by changing the base year to 2022–23, expanding sectoral coverage and updating weights.

Explanation:

- The **Index of Core Industries (ICI)** measures the performance of core infrastructure sectors, which together have significant weight in the **Index of Industrial Production (IIP).**
- The base year has been revised from 2011–12 to 2022–23 to reflect the current industrial structure.
- The number of sectors has increased from eight to nine with the inclusion of the iron ore sector.
- The revised ICI now measures output on a gross output basis and updates sectoral weights in line with the revised IIP methodology.
- The coal sector now **excludes washed coal** and counts only raw coal to avoid double counting.
- The ICI is compiled monthly by **the Office of the Economic Adviser (OEA),** Department for Promotion of Industry and Internal Trade **(DPIIT),** Ministry of Commerce & Industry.

3.3. Union Cabinet Approves Semicon 2.0, Mobile Manufacturing, Urea Expansion and National Highway Projects

Context:

The Cabinet Committee on Economic Affairs (CCEA), chaired by the Prime Minister, approved the second phase of the India Semiconductor Mission (Semicon 2.0), an expanded Mobile Phone Manufacturing Scheme (MPMS), establishment of nine new gas-based urea plants, and two major National Highway projects in Varanasi.

Explanation:



- **Cabinet Committee on Economic Affairs (CCEA)** approves major economic and infrastructure projects.
- The CCEA is an **extra-constitutional body**, framed under **Article 77 of the Constitution.**
- **India Semiconductor Mission (ISM)** aims to build a domestic semiconductor ecosystem covering chip design, fabrication, packaging, minerals, gases, and R&D to reduce import dependence.
- **Mobile Phone Manufacturing Scheme (MPMS)** promotes domestic value addition, local sourcing, exports, and employment under the **Make in India** initiative.
- **National Investment Policy (NIP)** for urea encourages private investment to enhance indigenous fertilizer production and reduce imports.
- **Hybrid Annuity Model (HAM)** is a PPP model where project cost is shared between the government and the private developer, reducing financial risk.

3.4. Global Bids Invited under PLI Scheme for 10 GWh Advanced Chemistry Cell (ACC) Batteries

Context:

The Ministry of Heavy Industries has invited global bids to establish **10 GWh Advanced Chemistry Cell (ACC) battery manufacturing capacity** under the Production Linked Incentive (PLI) Scheme.

Explanation:



- **Advanced Chemistry Cell (ACC)** batteries are next-generation rechargeable batteries with high energy density, long life, and improved safety, used in **Electric Vehicles (EVs)** and **Battery Energy Storage Systems (BESS).**
- The **Production Linked Incentive (PLI) Scheme** provides financial incentives linked to incremental production to promote domestic manufacturing and global competitiveness.
- ACC batteries enable large-scale storage of electricity generated from **renewable energy** sources like solar and wind, ensuring grid stability.
- The scheme supports **Make in India, Atmanirbhar Bharat, energy security,** import substitution, and the development of a domestic battery manufacturing ecosystem.

3.5. India's Container Shipping Vulnerability and Domestic Container Manufacturing

Context:

Recent global shipping disruptions, particularly around the **Strait of Hormuz** and **Red Sea**, have exposed India's dependence on foreign-owned containers and shipping lines. In response, the Government has launched initiatives to boost **domestic container manufacturing** and strengthen India's maritime logistics resilience.

Explanation:



- A **shipping container** Twenty-foot Equivalent Unit (TEU) is a standardized cargo unit enabling **intermodal transport** by ships, rail, and trucks.
- India relies heavily on **foreign shipping lines**, which carry nearly **90 to95% of India's EXIM (Export-Import) cargo**, making supply chains vulnerable to global disruptions.
- Geopolitical chokepoints such as the **Strait of Hormuz**, **Bab el-Mandeb**, and the **Suez Canal** significantly affect freight costs, transit time, and container availability.
- The Union Budget 2026–27 announced a ₹10,000 crore Container Manufacturing Scheme to enhance domestic production and reduce import dependence.
- India is also promoting an indigenous container shipping ecosystem through the proposed **Bharat Container Shipping Line**, alongside port-led logistics under the **PM Gati Shakti** and **Sagarmala Programme**.
- Strengthening maritime logistics is essential for trade competitiveness, supply chain resilience, export growth, and economic security.

3.6. Central Government Bans Paraquat Dichloride Herbicide

Context:

The Union Ministry of Agriculture and Farmers Welfare has notified a nationwide ban on paraquat dichloride due to its severe toxicity, repeated poisoning deaths and absence of a specific antidote. India joins more than 70 countries that have banned or severely restricted the herbicide.

Explanation:



- Paraquat dichloride is a **non-selective herbicide** used to destroy weeds and clear fields after harvesting.
- Exposure through ingestion, inhalation or skin contact can cause serious organ damage and death.
- It has **no specific antidote**, making accidental and intentional poisoning particularly fatal.
- Pesticides are regulated under the **Insecticides Act, 1968** and the **Insecticides Rules, 1971**.
- Andhra Pradesh, Telangana, Odisha and Kerala had previously imposed bans or restrictions on it.
- The **Registration Committee** regulates their registration, manufacture, import, distribution and use.
- The ban prohibits its manufacture, import, transport, storage, distribution, sale and use.
- The draft notification allows **30 days for objections and suggestions**, following which the final prohibition may be enforced by States.

3.7. Cabinet Approves BHAVYA Rasayan Scheme for Dedicated Chemical Parks

Context:

The Union Cabinet has approved the Bharat Audyogik Vikas Yojana Rasayan (BHAVYA Rasayan) Scheme to establish three dedicated Chemical Parks with a total outlay of ₹3,030 crore during FY 2026–27 to FY 2030–31.

Explanation:



- **BHAVYA Rasayan** is a Central Sector Scheme announced in the Union Budget 2026–27 to establish **three Chemical Parks** through the Challenge Route.
- The scheme aims to strengthen India's chemical manufacturing ecosystem through world-class common infrastructure, improve global competitiveness and promote sustainable industrial growth.
- The Centre will provide up to ₹1,000 crore per park, subject to a minimum ₹500 crore contribution by the concerned State Government.
- Each Chemical Park must have at least 8 sq. km. (2,000 acres) of contiguous, encumbrance-free land with **plug-and-play infrastructure**.
- Common infrastructure includes **Common Effluent Treatment Plant (CETP),** Treatment, **Storage and Disposal Facility (TSDF),** hazardous waste management, solvent recovery, utilities, logistics and pipeline networks.
- The scheme promotes cluster-based industrial development, economies of scale, **Global Value Chains (GVCs)**, import substitution, export competitiveness, Atmanirbhar Bharat and environmentally sustainable chemical manufacturing.

3.8. RBI Reconsiders Durable Polymer Banknotes

Context:

The Reserve Bank of India has invited bids for a fresh trial of polymer ₹10 banknotes, reviving an initiative first attempted in 2012–13. Polymer notes are expected to last longer, improve security and reduce recurring currency-printing costs, though import dependence remains a concern.

Explanation:

- Polymer banknotes use a durable **polypropylene-based substrate** instead of cotton-based currency paper.
- They resist water, dirt, folding and tearing, giving them a longer circulation life than paper notes.
- Longer life can lower the RBI's recurring expenditure on printing, replacement, transport and destruction of soiled notes.
- Transparent windows, holographic features and complex designs improve **anti-counterfeiting security**.
- Worn polymer notes can be granulated and recycled into useful plastic products.
- Australia first introduced modern polymer banknotes in 1988; several countries subsequently adopted them.
- India's earlier trial involved proposed circulation in selected cities with different climatic conditions.
- Import dependence for polymer sheets may affect cost, supply security and domestic self-reliance.

3.9. NSE Launches Nifty500 Ahimsa Index for Ethical and Animal-Cruelty-Free Investing

Context:

The National Stock Exchange (NSE) has launched the Nifty500 Ahimsa Index, India's first stock market index based on animal-cruelty-free investing.

Explanation:



- A **thematic index** tracks companies based on a specific investment theme rather than the overall market.
- The **Nifty500 Ahimsa Index** includes companies from the Nifty 500 that satisfy the **Ahimsa Investment Movement (AIM)** framework, developed with the **Ahimsagain Foundation**.
- The **AIM framework** classifies companies into green, orange and red bands; only green category companies are included.
- The index excludes businesses involved in animal cruelty, including meat, poultry, leather, dairy, animal testing, and related sectors.
- It may serve as a benchmark for **Exchange-Traded Funds (ETFs), Index Funds,** and other passive investment products, reflecting the growing trend of ESG and ethical investing.
- Recently, BSE also launched the **Saatvik 100 Index,** promoting companies aligned with broader Saatvik principles.

3.10. Mission Golden Spice Launched to Develop Meghalaya's GI-Tagged Lakadong Turmeric

Context:

The Union Government has launched Mission Golden Spice, a ₹175.45-crore mission to strengthen the value chain of GI-tagged Lakadong Turmeric in Meghalaya.

Explanation:



- **Lakadong Turmeric** is a **Geographical Indication (GI)-tagged (2024)** turmeric grown mainly in the West Jaintia Hills and East Jaintia Hills of Meghalaya, renowned for its exceptionally high curcumin content (7–10%), compared to the global average of about 2–3%.
- **Curcumin** is the principal bioactive compound responsible for turmeric's anti-inflammatory, antioxidant and nutraceutical properties.
- The five-year project (2025–2030) aims to enhance cultivation, processing, branding and exports, positioning Lakadong turmeric as a premium global spice.
- **Mission Golden Spice** is a ₹175.45-crore, convergence-based initiative led by MDoNER and the North Eastern Council (NEC), with support from APEDA, Spices Board, National Turmeric Board, ICAR, NABARD and SFAC.
- The mission focuses on value-chain development, GI monetisation, processing, branding, exports, farmer-producer organisations and integrated curcumin extraction facilities.
- The initiative aligns with the vision of Atmanirbhar North East and promotes "Brand North East" through value addition and sustainable agricultural exports.

3.11. NITI Aayog Launches Investment Friendliness Index (IFI)

Context:

NITI Aayog has released the Investment Friendliness Index (IFI) to benchmark the investment ecosystem across States and Union Territories. The Index aims to promote competitive and cooperative federalism by encouraging reforms that improve the ease of investment and support the vision of Viksit Bharat @2047.

Explanation:

- NITI Aayog: Established in 2015, it is the Union government's policy think tank and promotes cooperation between the Centre and States.
- **The Investment Friendliness Index (IFI)** is a data-driven composite index assessing State's ability to attract and sustain investments.
- It evaluates 28 States and 8 UTs across **8 pillars**: Infrastructure, Business Climate, Resources, Government Policy, Regulatory Ease, Institutional Environment, Financial Health, and Environmental Resilience.
- The framework uses **84 indicators**, combining **secondary data** and **investor perception surveys**.
- States are classified as Top Performers, Frontrunners, Emerging Performers, and Aspiring States; Gujarat, Maharashtra, Tamil Nadu, Goa, and Odisha emerged as overall Top Performers.
- The Index promotes Ease of Doing Business (EoDB), policy predictability, investor confidence, peer learning, and cooperative federalism to enhance domestic and foreign investment.

3.12. Gujarat Unveils Green Data Centre Policy 2026–29

Context:

The Gujarat Government has launched the **Data Centre Policy 2026–29** to attract investments, promote green data centres, and achieve **7.5 GW data centre capacity**. The policy offers financial incentives while mandating renewable energy use and high sustainability standards.

Explanation:



- A **Data Centre** is a facility that stores, processes and manages digital data using servers, networking equipment and cooling systems.
- **Gujarat is the eighth state** to introduce a dedicated data centre policy after Tamil Nadu, Uttar Pradesh, West Bengal, Odisha, Maharashtra, Haryana, and Andhra Pradesh.
- **Dholera Special Investment Region (SIR)** is being developed as a hub for hyperscale and AI-enabled green data centres.
- **Green Data Centres** use renewable energy, advanced cooling technologies, and energy-efficient infrastructure to reduce carbon emissions.
- **Power Usage Effectiveness (PUE)** is a key indicator of data centre energy efficiency.
- Data centres support cloud computing, Artificial Intelligence (AI), Digital India, and the digital economy.

3.13. Cabinet Approves Mobile Phone Manufacturing Scheme (MPMS)

Context:
The Union Cabinet has approved the **Mobile Phone Manufacturing Scheme (MPMS)** with a budgetary outlay of **₹62,500 crore** for five years (FY 2026–27 to FY 2030–31). The scheme aims to boost domestic value addition, strengthen supply chains, promote Indian brands, and enhance India's global competitiveness in mobile phone manufacturing.

Explanation:
- **Mobile Phone Manufacturing Scheme (MPMS)** succeeds the **PLI Scheme for Large Scale Electronics Manufacturing (PLI-LSEM)** to accelerate electronics manufacturing.
- It provides **production-linked incentives** on eligible sales, higher incentives for **domestic sourcing** of components, and additional support for **design and R&D** to develop Indian brands.
- The scheme promotes **Make in India**, **Atmanirbhar Bharat**, technological sovereignty, and integration into **Global Value Chains (GVCs)**.
- It seeks to increase exports, generate employment, deepen domestic value addition, and strengthen India's electronics manufacturing ecosystem.

3.14. Government Mandates TReDS for Settlement of MSME Invoices by CPSEs

Context:
The Ministry of MSME has made it mandatory for all Central Public Sector Enterprises (CPSEs) to settle invoices of MSME suppliers through the Trade Receivables Discounting System (TReDS). The move aims to ensure timely payments, improve liquidity, and provide collateral-free working capital to MSMEs.

Explanation:



- Trade Receivables Discounting System (TReDS) is an RBI-regulated electronic platform that facilitates financing of trade receivables of Micro, Small and Medium Enterprises (MSMEs) through competitive bidding by banks and NBFCs.
- Under invoice discounting, an MSME can sell its approved invoice to a financier at a discount and receive immediate funds without waiting for the buyer's payment.
- TReDS provides collateral-free, without-recourse financing, improving working capital and reducing the impact of delayed payments.
- The platform is governed by the Reserve Bank of India (RBI) under the Payment and Settlement Systems Act, 2007. Current platforms include RXIL, M1xchange, Invoicemart, C2treds, and DTX.
- The mandate requires all CPSEs to route MSME invoices through TReDS and disclose compliance during annual audits, strengthening payment discipline, transparency, and ease of doing business.
- The initiative supports the objectives of the MSME Development Act, 2006, promoting timely payments and improving MSME access to formal finance.

3.15. India's Rising Battery Storage Requirement and Clean Energy Transition

Context:
India's energy storage requirement is projected to rise to **888 GWh by 2035-36**, driven by rising power demand, renewable energy integration, electric vehicles, data centres and AI. Experts stress that storage must become a core part of India's electricity system, not merely an add-on to solar and wind projects.

Explanation:



- India's power demand is rising rapidly and peak demand may touch **300 GW next year**, requiring reliable supply even when solar and wind generation fluctuate.
- **Energy Storage Systems (ESS)** store electricity when generation is high and release it when demand rises, especially during evening peak hours after solar generation falls.
- India's projected storage need of **888 GWh by 2035-36** includes **Battery Energy Storage Systems (BESS)** and **Pumped Storage Projects (PSP)**.
- **BESS** uses batteries, especially lithium-ion batteries, to store electricity, while **PSP** stores energy by pumping water uphill and releasing it through turbines.
- Storage supports **grid stability**, **renewable energy integration**, **ancillary services**, and reduces dependence on coal during peak demand.
- Key challenges include high financing costs, lack of operational data, battery degradation, safety risks, uncertain revenues and weak tender design.

3.16. Regulatory Gaps in Pesticide-Coated Seeds in India

Context:

A letter to Union ministries has raised concerns over the absence of clear rules for pesticide-coated seeds in India. It has urged mandatory labelling, safety checks and stronger regulation of hazardous chemicals used in seed processing units.

Explanation:



- Pesticide-coated seeds are seeds treated with insecticides, fungicides or other chemicals to protect them from pests and diseases during germination.
- Such treatment may improve crop survival, but it can create risks of accidental consumption, pesticide exposure and environmental contamination.
- Seed treatment can affect farmers, agricultural workers, soil organisms, beneficial insects and possibly food safety if residues persist.
- In India, pesticides are regulated under the Insecticides Act, 1968 and monitored by the Central Insecticides Board and Registration Committee (CIBRC).
- Seed quality is regulated under the Seeds Act, 1966, but specific rules on treated-seed labelling remain a concern.
- Seed processing units may use hazardous chemicals like concentrated sulphuric acid, requiring effluent treatment and worker safety norms.

3.17. India as the World's Second-Largest Steel Producer

Context:

India has become the world's second-largest steel producer, with crude steel output rising from 28 million tonnes in FY02 to 152 million tonnes in FY25. However, India still depends on imports for speciality steel, while also facing green-transition pressures such as the EU's CBAM.

Explanation:

- Steel is a key industrial material used in infrastructure, construction, railways, automobiles, defence and manufacturing.
- India's steel growth is driven by urbanisation, infrastructure expansion, domestic demand and capacity addition.
- India mainly produces basic steel, while speciality steel with advanced properties is imported for sectors like automobiles and high-end construction.
- The PLI Scheme for Speciality Steel aims to reduce import dependence and promote advanced steel manufacturing.
- Steel is a hard-to-abate sector due to high carbon emissions.
- EU-CBAM may affect Indian steel exports by imposing carbon-linked costs.



3.18. India Secures Global Food Standards Milestone at Codex Alimentarius Commission

Context:

The Codex Alimentarius Commission (CAC49) Geneva, adopted international standards for **Large Cardamom, Coriander, and Vanilla**, developed under the India-hosted Codex Committee on Spices and Culinary Herbs (CCSCH).

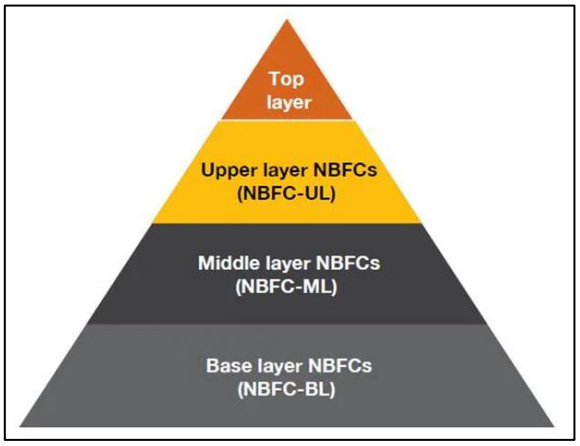
Explanation:

- **Codex Alimentarius Commission (CAC)** is a **FAO–WHO** joint body that develops **science-based international food safety and quality standards**.
- It aims to **protect consumer health** and ensure **fair practices in international food trade**.
- India hosts the **Codex Committee on Spices and Culinary Herbs (CCSCH)**; the **Spices Board** acts as its Secretariat.
- **Codex Standards** harmonise global quality, labelling, sampling and safety requirements, facilitating **market access** and reducing trade barriers.
- India was also accepted as **Co-Chair of the Electronic Working Group (EWG)** on risk analysis for new food products, strengthening its role in global food standard-setting.
- The **Electronic Working Group (EWG)** prepares technical guidance between Codex sessions through virtual collaboration.
- Large Cardamom is indigenous to India's **North-Eastern Himalayas**, while India is a leading producer and exporter of **Coriander**.

3.19. RBI's Revised Upper Layer NBFC Framework

Context:

Non-Banking Financial Companies are in news as the Reserve Bank of India (RBI) has revised the regulatory framework for Upper Layer Non-Banking Financial Companies (NBFC-ULs), changing the criteria for mandatory listing.



Explanation:

- Non-Banking Financial Companies (NBFCs) are companies registered under the Companies Act, 2013 that provide financial services such as loans, investments and asset financing but do not hold demand deposits like banks.
- NBFCs are regulated by the Reserve Bank of India (RBI) under the Reserve Bank of India Act, 1934.
- RBI follows a Scale-Based Regulation (SBR) framework that classifies NBFCs into Base Layer (NBFC-BL), Middle Layer (NBFC-ML), Upper Layer (NBFC-UL) and Top Layer (NBFC-TL) according to their size, risk and systemic importance.
- NBFC-ULs are subject to stricter prudential norms, governance standards, disclosure requirements and enhanced regulatory supervision.

4. Environment and Ecology

4.1. China's Great Green Wall and the Fight against Desertification

Context:

China's **Three-North Shelterbelt Programme**, popularly called the **Great Green Wall**, has helped slow desert expansion and increase vegetation cover in northern China. However, scientists caution that sustained ecological restoration and long-term monitoring remain essential.

Explanation:



- The Three-North Shelterbelt Programme (TNSFP), launched in 1978, is the world's largest afforestation programme and is scheduled for completion by 2050.
- It spans 13 provinces/regions across northern, northeastern, and northwestern China and targets the expansion of the **Gobi Desert**, Taklamakan Desert, and other arid regions.
- The programme employs the **Straw Checkerboard Technique**, in which straw is placed in square grids to stabilize sand dunes, reduce wind erosion, retain soil moisture, and improve sapling survival.
- China has reported that desertified land has reduced by over 1,000 sq km annually since 2000, while **forest cover increased from about 5% (1978) to around 14% (2022)** in the project region.
- The initiative contributes to China's commitments under the **United Nations Convention to Combat Desertification (UNCCD)** and promotes sustainable land management.
- UNCCS remains the only **legally binding** international agreement dedicated exclusively to combating desertification, land degradation, and drought (DLDD).

4.2. Landslide Early Warning Systems (LEWS) in India

Context:

Recent landslides in the Western Ghats, particularly in Wayanad, have renewed focus on establishing effective Landslide Early Warning Systems (LEWS) in India. Researchers from IIT Madras have developed a new warning model for the Himalayan region to improve disaster preparedness.

Explanation:



- A Landslide is the downward movement of rock, soil, or debris under the influence of gravity, triggered by factors such as heavy rainfall, earthquakes, slope instability, deforestation, mining, and human activities.
- A Landslide Early Warning System (LEWS) combines hazard mapping, rainfall thresholds, geotechnical sensors, weather forecasts, and real-time monitoring to issue advance warnings before slope failure.
- IIT Madras has developed a probabilistic forecasting model for the Himalayan region, using rainfall forecasts and slope-monitoring instruments such as tilt meters, pressure gauges, accelerometers, and moisture sensors.

- The Geological Survey of India (GSI) is the nodal agency for landslide hazard zonation, while the India Meteorological Department (IMD) provides rainfall forecasts essential for LEWS.
- The Himalayas and Western Ghats are India's major landslide-prone regions due to steep slopes, fragile geology, and intense monsoon rainfall.

4.3. Ken - Betwa River Linking Project and Rehabilitation Concerns

Context:

The **Ken–Betwa River Linking Project**, India's first inter-basin river linking project, has triggered protests by tribal families affected by the proposed **Dodhan Dam** in Madhya Pradesh. They are demanding fair compensation, proper rehabilitation and resettlement (R&R), and equitable distribution of benefits.

Explanation:



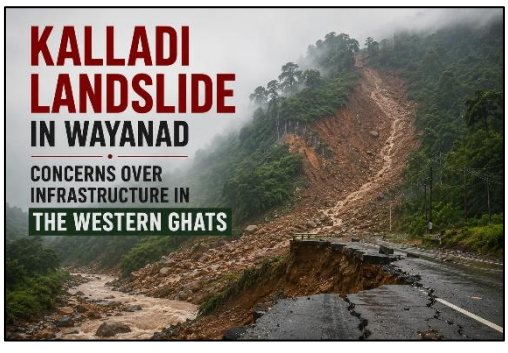
- The **Ken–Betwa Link Project (KBLP)** is India's **first river interlinking project** under the **National Perspective Plan (NPP)** for river interlinking.
- It aims to transfer surplus water from the **Ken River** to the **Betwa River** to address water scarcity in the **Bundelkhand** region of **Madhya Pradesh and Uttar Pradesh**.
- The project's key component is the **Dodhan Dam** on the **Ken River**, located inside the **Panna Tiger Reserve**.
- Expected benefits include **irrigation, drinking water supply**, and **hydropower generation**.
- Key concerns include **submergence of forest areas**, impact on **Panna Tiger Reserve**, **loss of biodiversity**, displacement of **tribal communities**, and issues related to **Rehabilitation and Resettlement (R&R)**.
- The project received **environmental, forest and wildlife clearances** subject to mitigation measures.

4.4. Kalladi Landslide in Wayanad and Concerns over Infrastructure in the Western Ghats

Context:

A landslide at **Kalladi in Wayanad, Kerala**, near the **Anakkampoyil – Kalladi - Meppadi tunnel road project**, has raised concerns over infrastructure development in the ecologically fragile **Western Ghats**. Experts attribute the disaster to a combination of intense rainfall, slope modification, tunnelling, and inadequate geological assessment.

Explanation:



- **Wayanad** lies in the **Western Ghats**, a **UNESCO World Heritage Site** and one of the world's **biodiversity hotspots**.
- The **Anakkampoyil–Kalladi–Meppadi Tunnel Road Project** aims to improve connectivity between **Kozhikode and Wayanad**.
- **Landslides** occur when soil or rock moves downslope due to gravity, often triggered by **intense rainfall**, earthquakes, slope cutting, or human activities.

- **Tunnelling, excavation, deforestation, and unscientific dumping of excavated material** can destabilize hill slopes.
- **Climate change** is increasing the frequency of **short-duration, high-intensity rainfall (cloudbursts)** in the Western Ghats, raising landslide risk.
- **Environmental Impact Assessment (EIA)** evaluates the environmental consequences of major projects before approval, while **geological and climate-risk assessments** are crucial in fragile mountain ecosystems.
- The incident highlights the need for **sustainable infrastructure**, strict compliance with **EIA conditions**, and scientific planning in ecologically sensitive regions.

4.5. India Records Highest Annual Addition of Animal Species in 2025

Context:

The Zoological Survey of India (ZSI) reported that India added a record 709 animal species to its national database in 2025. With this, India's recorded faunal diversity has reached 105,953 species and subspecies, about 5.3% of the global total.

Explanation:

- Zoological Survey of India (ZSI) is India's premier organisation for faunal taxonomy, surveys and biodiversity documentation.
- Zoological Survey of India (ZSI) Headquarters: Kolkata, West Bengal
- The report 'Animal Discoveries: New Species, New Records' records species new to science and species reported in India for the first time.
- Of the 709 additions, 483 were new to science and 226 were new records for India.
- Insects dominated the discoveries, especially Hymenoptera, Lepidoptera and Diptera.
- Kerala led the state-wise list, followed by West Bengal, Karnataka and Arunachal Pradesh.
- Major biodiversity zones include the Western Ghats, Eastern Himalayas, forests and coastal ecosystems.
- ZSI also launched Fauna of India Checklist 3.0 and Paleo India Portal for digital biodiversity and fossil documentation.

4.6. Restoring Struggling Tiger Reserves in India

Context:

As India's tiger population has reached 3,682, the Centre has identified 25 priority tiger reserves for habitat recovery, prey restoration and possible targeted reintroductions. The focus is shifting from merely increasing tiger numbers to balancing tiger conservation across landscapes.

Explanation:

- India's tiger population rose from 1,411 in 2006 to 3,682 in 2022, but growth is uneven.
- Some tiger reserves like Corbett, Bandipur and Kaziranga act as source populations, with high tiger density, good prey base and suitable habitat.
- Several reserves are sink populations, with poor prey, weak connectivity or very low breeding tiger presence.
- Carrying capacity refers to the maximum number of tigers a habitat can sustainably support.
- Overcrowded reserves push tigers into buffer areas, farms and villages, increasing human-wildlife conflict.

- Tiger recovery needs habitat quality, prey abundance, protection and landscape connectivity.
- A connected tiger landscape supports metapopulation, dispersal and genetic exchange.
- Reintroduction means bringing tigers back to areas where they disappeared; it is used only as a last resort after scientific assessment.

4.7. India in 2026 UN SDG Index

Context:
India has achieved its highest-ever rank in the 2026 UN SDG Index, rising to 94th among 167 countries with a score of 68.3. However, the report states that India remains off track to achieve several Sustainable Development Goals by 2030, with Zero Hunger emerging as a major challenge.

Explanation:
- The Sustainable Development Goals are 17 global goals adopted by the United Nations in 2015 under the 2030 Agenda for Sustainable Development.
- The 17 goals cover poverty, hunger, health, education, gender equality, clean water, clean energy, decent work, industry and innovation, reduced inequalities, sustainable cities, responsible consumption, climate action, marine life, terrestrial life, peace and justice, and global partnerships.
- The UN SDG Index, published by the UN Sustainable Development Solutions Network, measures countries' progress towards achieving these goals.
- India has improved from 99th rank in 2025 to 94th rank in 2026, its best position since the SDGs were adopted.
- Despite progress, India faces major challenges in Zero Hunger, health, gender equality, sustainable cities, life below water, life on land, and peace and justice.
- Only about one-third of India's SDG targets are expected to be achieved by 2030, while some indicators have stagnated or worsened.
- Hunger remains a key concern due to child stunting, child wasting, undernourishment and rising obesity.

4.8. Government Releases Revised CAFE III Fuel Efficiency Norms for Passenger Vehicles

Context:
The Central Government has released the **third draft of Corporate Average Fuel Efficiency (CAFE) Phase III norms** for stakeholder consultation.

Explanation:



- **Corporate Average Fuel Efficiency (CAFE)** norms prescribe the **maximum average CO_2 emissions/fuel consumption** allowed for a manufacturer's passenger vehicle fleet.
- Introduced under the **Energy Conservation Act, 2001**, and implemented by the **Bureau of Energy Efficiency (BEE)** under Ministry of Power.
- **CAFE I (2017–2022):** First fleet-average CO_2 standards for passenger cars.
- **CAFE II (2022–2027):** Stricter emission targets and broader vehicle coverage.
- **CAFE III (2027–2032):** Recognises **Carbon Neutrality Factors (CNFs)** for ethanol, CBG and biofuels, tightens emission limits, and introduces multi-year compliance blocks. Effective from **April 2027**
- Objective: Improve fuel efficiency, reduce transport emissions, and support India's **Net Zero 2070** goal.

4.9. IUCN Red List Update: Deep-Sea Molluscs Face Extinction Threat

Context:
The latest IUCN Red List of Threatened Species highlights that over 62% of endemic hydrothermal vent molluscs are threatened with extinction due to deep-sea mining. The update also reports changes in the conservation status of species such as the desert rain frog and numbat, reflecting both biodiversity loss and successful conservation efforts.

Explanation:



- The IUCN Red List of Threatened Species is the global standard for assessing the conservation status and extinction risk of species.
- The Red List categories include Least Concern (LC), Near Threatened (NT), Vulnerable (VU), Endangered (EN), Critically Endangered (CR), Extinct in the Wild (EW), and Extinct (EX).
- Molluscs are invertebrates under Phylum Mollusca, including snails, clams, mussels, octopus, squid, and chitons, and are vital for marine ecosystems and food security.
- A Numbat (*Myrmecobius fasciatus*) is a small, insect-eating marsupial that is endemic to Australia
- Hydrothermal vents are mineral-rich deep-sea ecosystems that support unique endemic species adapted to extreme conditions.
- Deep-sea mining generates sediment plumes and habitat destruction, threatening vent biodiversity despite governance by the International Seabed Authority (ISA) under the United Nations Convention on the Law of the Sea (UNCLOS).
- Marine Protected Areas (MPAs) and invasive species management have demonstrated positive conservation outcomes, as seen in the recovery of the numbat.

4.10. Basel Convention and Emerging Global Waste Streams

Context:
At the Basel Convention's OEWG-15 meeting in Geneva, countries advanced technical work on e-waste, textile waste and hazardous waste. However, disagreements continued over whether plastic waste should be further addressed under the Basel Convention or left to global plastics treaty negotiations.

Explanation:



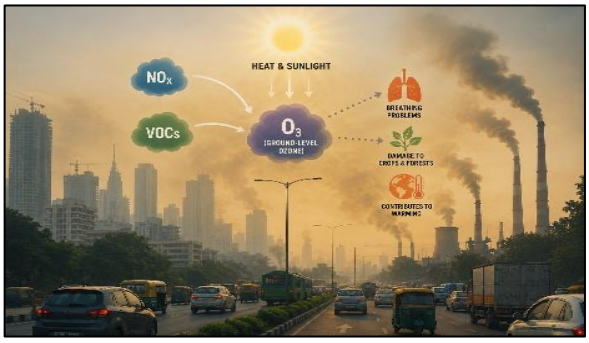
- The Basel Convention, 1989 controls the transboundary movement of hazardous wastes and their environmentally sound management.
- It aims to prevent developed countries from dumping hazardous waste in developing countries.
- Its key mechanism is Prior Informed Consent (PIC), under which waste can be exported only after the importing country gives consent.
- The Convention covers hazardous wastes, e-waste, biomedical waste, used oils, chemical wastes and certain plastic wastes.
- E-waste includes discarded electrical and electronic equipment containing metals, plastics and toxic substances.
- Textile waste is emerging as a concern because unusable second-hand clothes are often exported to developing countries.
- Plastic waste remains contentious due to overlap with ongoing negotiations for a Global Plastics Treaty.
- Hong Kong Convention deals with safe and environmentally sound ship recycling

4.11. Ground-Level Ozone Pollution in Indian Cities

Context:

A new CSE analysis of 2021–2026 data shows that ground-level ozone pollution is spreading across Indian cities. Delhi-NCR has emerged as the largest regional hotspot, while cities such as Chandigarh, Jaipur, Ahmedabad, Mumbai, Chennai, Bengaluru and Patna are also severely affected.

Explanation:



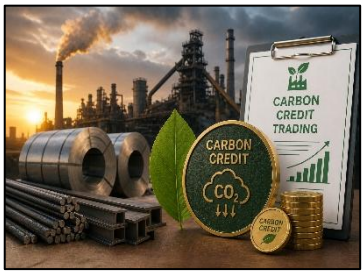
- Ground-level ozone (O_3) is a harmful secondary pollutant formed near the Earth's surface.
- It is not emitted directly; it forms when nitrogen oxides (NOx) and volatile organic compounds (VOCs) react in the presence of heat and sunlight.
- Major sources of NOx and VOCs include vehicles, industries, power plants, fuel burning, solvents and urban emissions.
- Unlike stratospheric ozone, which protects Earth from ultraviolet radiation, ground-level ozone is harmful to health.
- It can cause breathing difficulty, asthma aggravation, lung inflammation and reduced lung function.
- It also damages crops, forests and agricultural productivity.
- India's National Ambient Air Quality Standards (NAAQS) prescribe 100 µg/m³ as the safe limit for ozone over an 8-hour average.
- Ozone pollution peaks during summer, but recent trends show longer exposure and night-time persistence.
- It is also a short-lived climate pollutant, contributing to warming.

4.12. Iron and Steel Sector Brought Under India's Carbon Credit Trading Scheme (CCTS)

Context:

India has notified draft emission-intensity targets for **255 iron and steel units** under the **Carbon Credit Trading Scheme (CCTS)**, making steel the largest sector covered under the compliance carbon market from **FY 2026–27**.

Explanation:



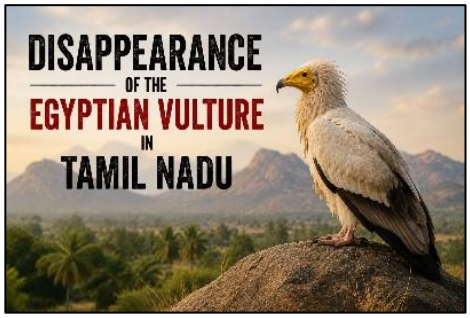
- **Carbon Credit Trading Scheme (CCTS)** is India's **compliance carbon market**, notified under the **Energy Conservation (Amendment) Act, 2022**, and implemented by the **Bureau of Energy Efficiency (BEE)**
- It follows an **Emission Intensity** approach, measuring **CO_2 emissions per unit of production**, unlike absolute emission caps.
- Units performing better than targets earn **Carbon Credit Certificates (CCCs)**, while non-compliant units must purchase credits.
- Steel contributes **10–12% of India's CO_2 emissions** and is the **second-largest steel producer** globally.
- Major steelmaking routes include **BF-BOF (Blast Furnace–Basic Oxygen Furnace)**, **DRI-IF (Direct Reduced Iron–Induction Furnace)** and **EAF (Electric Arc Furnace)**; EAF is relatively less carbon-intensive.
- The move aims to reduce emissions per tonne of steel while supporting India's decarbonisation commitments.

4.13. Disappearance of the Egyptian Vulture in Tamil Nadu

Context:

The Egyptian Vulture (*Neophron percnopterus*) has become locally extinct in The Nilgiris and no longer breeds in Tamil Nadu. Conservationists have called for coordinated conservation measures, including establishing an Egyptian Vulture Conservation Breeding Programme to revive the declining resident population in south India.

Explanation:



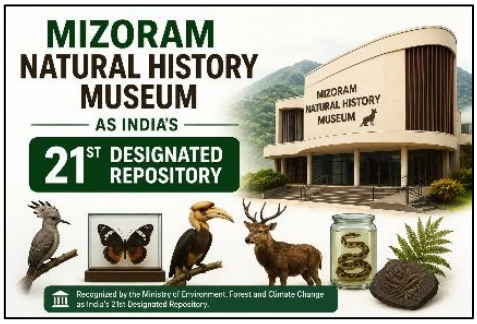
- **Egyptian Vulture (*Neophron percnopterus*)** is the **smallest Old-World vulture** and is listed as **Endangered** on the **IUCN Red List**.
- India hosts the resident subspecies **Neophron percnopterus ginginianus**, while migratory populations arrive from **Africa** and the **Middle East** during winter.
- It inhabits **rocky cliffs, villages, temple towns, grazing lands and open scrub habitats**, nesting mainly on cliffs.
- As a **scavenger**, it provides vital **ecosystem services** by disposing of animal carcasses and reducing disease transmission.
- Major threats include **habitat loss, poisoning, electrocution, collision with power lines**, decline in food availability, and **veterinary drugs such as diclofenac**, which have devastated vulture populations.
- Conservation measures include **captive breeding, habitat protection, safe carcass zones (Vulture Restaurants)**, and strict enforcement of the **diclofenac ban**.

4.14. Mizoram Natural History Museum as India's 21st Designated Repository

Context:

The Ministry of Environment, Forest and Climate Change has notified the Natural History Museum, Mizoram University, as India's **21st Designated Repository** under the **Biological Diversity Act, 2002**. It will preserve authenticated biological specimens from the Indo-Burma Biodiversity Hotspot.

Explanation:



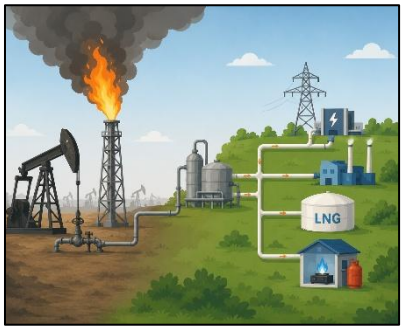
- **Biological Diversity Act, 2002** regulates access to India's biological resources and protects associated traditional knowledge.
- **Section 39** allows the Central Government to notify institutions as **Designated Repositories**.
- These repositories preserve **voucher specimens** and **type specimens** of plants, animals and microorganisms.
- **Voucher specimens** help verify species identity; **type specimens** act as the scientific reference for newly discovered species.
- Mizoram lies in the **Indo-Burma Biodiversity Hotspot**, rich in endemic flora and fauna.
- NHM will document taxa such as **pteridophytes, macrofungi, reptiles, amphibians, fishes, moths, beetles and butterflies**.
- It supports **ex-situ conservation**, genetic diversity protection and the **Kunming–Montreal Global Biodiversity Framework**.

4.15. Global Gas Flaring Increased for the Third Consecutive Year: World Bank Report

Context:

According to the World Bank's 2026 Global Gas Flaring Tracker Report, global gas flaring rose to 167 billion cubic metres (bcm) in 2025, with nine countries accounting for 83% of total flaring. The report highlights that reducing routine flaring can improve energy security, lower emissions and reduce economic losses.

Explanation:

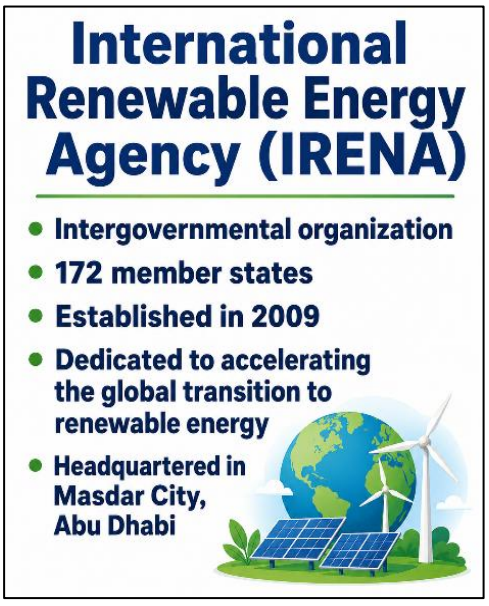


- Gas flaring is the burning of associated natural gas produced during oil extraction when it is not captured or utilised.
- Flaring releases carbon dioxide (CO_2) and methane (CH_4), contributing to climate change and wasting valuable energy resources.
- The Global Flaring and Methane Reduction Partnership (GFMR) is a World Bank-led initiative to reduce routine flaring and methane emissions.
- Routine gas flaring can be eliminated through gas capture, processing, pipelines and utilisation technologies.
- Captured gas can be used for electricity generation, Liquefied Natural Gas (LNG) production, industrial use and clean cooking fuel.
- Reducing flaring supports energy security, improves resource efficiency, lowers greenhouse gas emissions and advances SDG 7 (Affordable and Clean Energy) and SDG 13 (Climate Action).

4.16. Renewables and Fossil Fuel Cost Savings

Context:

According to IRENA, renewable energy projects commissioned in 2025 helped save about $480 billion in global fossil fuel costs. The report highlights that solar and wind power are becoming cheaper than new fossil-fuel-based electricity generation.



Explanation:

- Falling costs of solar panels, wind turbines, technology improvements and economies of scale have made renewables competitive.
- Renewables reduce dependence on imported coal, oil and natural gas, improving energy security.
- Since solar and wind have no fuel cost, they protect economies from gas price spikes and geopolitical shocks.

5. Geography

5.1. Seafloor Rifting Event Observed in the Indian Ocean

Context:

Scientists have, for the first time, directly observed an active **seafloor rifting event** in the Indian Ocean using underwater sensors. The event recorded magma movement, seafloor spreading, and a large underwater volcanic eruption, providing new insights into **plate tectonics** and the formation of oceanic crust.

Explanation:



- **Rifting** is the process in which the **Earth's lithospheric plates diverge**, allowing **magma** from the mantle to rise and create new **oceanic crust**.
- It commonly occurs along **Divergent Plate Boundaries**, especially at **Mid-Ocean Ridges**, leading to **seafloor spreading**.
- As tectonic plates separate, magma solidifies into **basaltic rock**, continuously expanding the ocean floor.
- The **Indian Ocean** hosts active spreading centres such as the **Central Indian Ridge, Carlsberg Ridge, and Southwest Indian Ridge**.
- Rifting is associated with **submarine volcanism, hydrothermal vents**, earthquakes, and the **Wilson Cycle** of ocean basin evolution.
- Direct observation of seafloor rifting improves understanding of **plate tectonics, earthquake and volcanic processes, marine geology**, and the evolution of Earth's crust.

5.2. Critical Minerals Recycling for India's Mineral Security

Context:

NITI Aayog has highlighted that recycling e-waste, battery waste and mine tailings can provide India a faster route to critical minerals security. This is important as domestic mining and exploration may take years to become commercially productive.

Explanation:



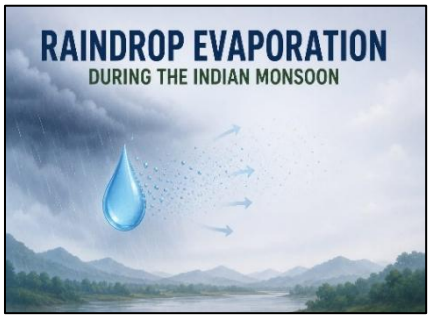
- Critical minerals are minerals essential for economic growth, clean energy, defence and advanced technologies, but have supply risks.
- India has identified 31 critical minerals, including lithium, cobalt, nickel, graphite, rare earth elements, copper and gallium.
- These minerals are vital for EV batteries, solar panels, wind turbines, semiconductors, electronics and strategic sectors.
- India currently depends heavily on imports for many critical minerals, creating supply-chain vulnerability.
- Urban mining means recovering valuable metals and minerals from waste such as e-waste and discarded batteries.
- Mine tailings are leftover materials after mineral extraction; they may contain recoverable critical minerals.
- Fly ash, steel slag, overburden dumps and industrial waste can also act as secondary sources.
- Recycling supports circular economy, reduces import dependence, lowers environmental damage and improves resource efficiency.

5.3. Raindrop Evaporation during the Indian Monsoon

Context:

A study by the Indian Institute of Tropical Meteorology (IITM), Pune has found that nearly 25% of monsoon rainfall evaporates before reaching the ground over parts of India. The findings will improve weather forecasting, monsoon prediction, and climate models by better representing rainfall processes.

Explanation:



- **Raindrop evaporation** is the process by which falling raindrops evaporate before reaching the Earth's surface, especially in **dry and warm sub-cloud layers**.
- During the **Southwest Monsoon (June–September)**, evaporation rates vary with **temperature, humidity, wind, and raindrop size**.
- Evaporation causes **evaporative cooling**, creating **cold pools** and **downdrafts**, which influence **cloud formation, convection, and rainfall intensity**.
- The study used **stable water isotopes (heavy oxygen and hydrogen isotopes)** to estimate rain mass lost through evaporation.
- Accurate estimation of raindrop evaporation helps improve Numerical Weather Prediction (NWP), climate models, monsoon dynamics, hydrological cycle studies, and water resource planning.
- The findings are significant for enhancing disaster preparedness, agricultural advisories, and understanding the impacts of climate change on India's rainfall patterns.

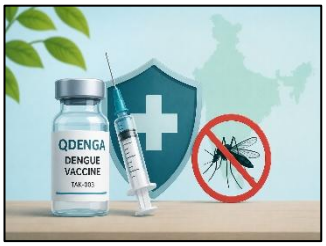
6. Science and Technology

6.1. India Approves Its First Dengue Vaccine (QDENGA/TAK-003)

Context:

The Drug Controller General of India (DCGI) has granted market authorization to Takeda Biopharmaceuticals India's QDENGA (TAK-003), making it the first dengue vaccine approved in India. The vaccine is approved for individuals aged 4–60 years and is administered as a two-dose schedule with a three-month interval.

Explanation:



- Dengue is a mosquito-borne viral disease caused by the **Dengue virus** (DENV-1, DENV-2, DENV-3, DENV-4) and transmitted mainly by **Aedes aegypti** mosquitoes.
- **QDENGA (TAK-003)** is a **live-attenuated tetravalent vaccine**, designed to provide protection against **all four dengue serotypes.**
- Unlike earlier vaccines, pre-vaccination screening is not required, and it can be administered irrespective of prior dengue infection.
- Dengue can progress to severe dengue (dengue haemorrhagic fever/dengue shock syndrome) due to antibody-dependent enhancement (ADE) during secondary infection with a different serotype.
- Prevention relies on **integrated vector management.**

6.2. Mission Drishti: World's First OptoSAR Satellite Loses Contact

Context:

Bengaluru-based space start-up **GalaxEye** has lost contact with **Mission Drishti**, described as the world's first **OptoSAR satellite**. The anomaly occurred after a **geomagnetic solar storm**, and recovery chances are presently low.

Explanation:



- **Mission Drishti** is India's largest privately developed **Earth observation satellite.**
- It was launched in May aboard **SpaceX Falcon 9** from **Vandenberg, California.**
- It combines **electro-optical sensors** and **Synthetic Aperture Radar (SAR)** on one satellite platform.
- **Electro-optical imaging** captures images using visible and infrared light, like a powerful space camera.
- **SAR** uses radar waves, so it can observe Earth even during night, clouds, smoke or bad weather.
- This combination is called **OptoSAR**, useful for agriculture, disaster management, defence, border monitoring and infrastructure mapping.
- The satellite faced problems during the final stage of **LEOP**, meaning Launch and Early Orbit Phase.
- A **geomagnetic solar storm** can disturb satellite electronics, communication systems and orbital stability.
- The incident shows that private space missions need strong space-weather protection and backup systems.

6.3. IIT Bombay Develops Efficient Method for Sustainable Drug Discovery

Context:
Researchers at IIT Bombay have developed a new chemical method to efficiently convert simple straight-chain carbon compounds into complex ring-shaped molecules. The breakthrough could make drug discovery faster, cheaper, and more sustainable by simplifying the synthesis of medicinal compounds.

Explanation:

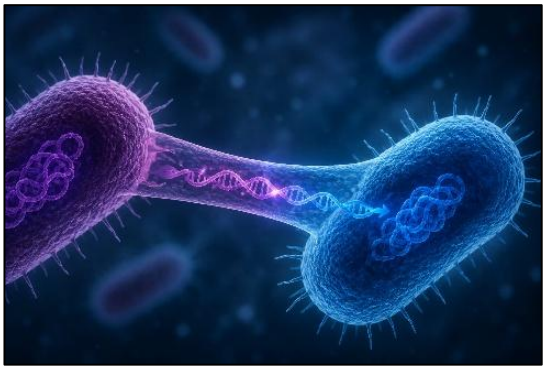


- Synthetic chemistry involves designing and synthesizing molecules for pharmaceuticals, agrochemicals, and advanced materials.
- Lactones are cyclic esters widely found in natural products and pharmaceuticals, exhibiting antibiotic, anticancer, antifungal, and anti-inflammatory properties.
- Conventional lactone synthesis often requires multiple reaction steps, increasing cost, time, and chemical waste.
- IIT Bombay's catalytic selective conversion efficiently transforms simple acyclic (straight-chain) compounds into lactones, improving yield and reducing reaction steps.
- The method aligns with Green Chemistry principles by enhancing atom economy, reducing waste, and lowering energy consumption.
- The breakthrough has applications in drug discovery, medicinal chemistry, and the synthesis of bioactive molecules.

6.4. Scientists Directly Observe Genetic Material Moving Between Microbial Species

Context:
Researchers at the Max Planck Institute visually tracked a circular intron RNA moving from the predatory bacterium *Vampirococcus archaeovorus* into its archaeal prey, *Methanothrix soehngenii*. It provides rare direct evidence of cross-domain horizontal transfer without a viral carrier.

Explanation:



- Horizontal gene transfer (HGT) is the movement of genetic material between organisms other than through parent - offspring inheritance.
- It differs from vertical gene transfer, which occurs from parents to descendants.
- HGT commonly occurs through transformation (uptake of free DNA), transduction (virus-mediated transfer) and conjugation (direct cell-to-cell transfer).
- "Jumping genes" are mobile genetic elements capable of changing their position within a genome or moving between organisms.
- The predator's 23S ribosomal RNA gene contains a self-splicing Group I intron - a sequence removed during RNA processing.
- After excision, the intron forms stable circular RNA, which resists degradation because it lacks exposed ends.
- Scientists used fluorescent nucleic-acid probes and microscopy to detect this RNA in the predator and dead prey cells.

- This provides direct visual evidence of RNA crossing from Bacteria to Archaea without a viral carrier.
- HGT can spread antibiotic resistance, virulence and metabolic traits, thereby accelerating microbial evolution.

6.5. WHO Report 2026: Growing Global Inequalities in Access to Cancer Care

Context:

The **World Health Organization (WHO)** and the **International Agency for Research on Cancer (IARC)** have released the **Global Status Report on Cancer 2026**, highlighting widening inequalities in cancer prevention, diagnosis, treatment, and supportive care. The report warns that global cancer cases could rise to nearly **35 million annually by 2050** if urgent action is not taken.

Explanation:



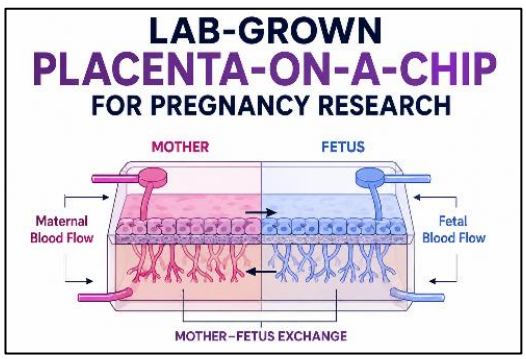
- **Cancer** is the **uncontrolled growth of abnormal cells**, and it is the **second leading cause of death globally** after cardiovascular diseases.
- The **World Health Organization (WHO)** is the UN's specialized agency for global public health, while the **International Agency for Research on Cancer (IARC)** is WHO's specialized cancer research agency.
- The **Global Status Report on Cancer 2026** assesses trends in **cancer incidence, mortality, prevention, diagnosis, treatment, and palliative care**.
- **Universal Health Coverage (UHC)** aims to ensure access to quality health services without financial hardship, yet fewer than one-third of countries include comprehensive cancer care in UHC packages.
- **Cancer burden** varies across regions, **Asia** records the highest number of cases due to its large population, whereas **low-income countries** experience disproportionately higher mortality because of delayed diagnosis and limited healthcare infrastructure.

6.6. Lab-Grown Placenta-on-a-Chip for Pregnancy Research

Context:

Researchers from **ICMR–National Institute for Research on Women's Health (ICMR-NIRRWH), Mumbai** and **IIT Bombay** have developed a **placenta-on-a-chip** model that closely mimics the human placenta. The innovation will help scientists study how drugs, nutrients, hormones and harmful substances pass from the mother to the foetus, enabling safer pregnancy research.

Background:



- **Placenta** is a temporary organ that develops during pregnancy and connects the foetus to the mother's uterus through the **umbilical cord**.
- It facilitates the exchange of **oxygen, nutrients, hormones and antibodies** while removing **carbon dioxide and metabolic wastes** from the foetus.
- The placenta also acts as a **selective biological barrier**, preventing many microbes and toxins from reaching the foetus, although some drugs and pathogens can cross it.

- **Placenta-on-a-chip** is an **organ-on-a-chip** technology that recreates the placental interface using **human placental cells**, **endothelial cells** and a **porous membrane** to simulate maternal–foetal exchange.
- The model can study the transfer of **drugs, nutrients, pollutants and infectious agents**, reducing dependence on **animal models**, which often fail to accurately replicate human pregnancy.
- It can improve research on pregnancy-related disorders such as **pre-eclampsia, gestational diabetes**, and **foetal growth restriction**, and support the development of safer medicines for pregnant women.

6.7. NASA's Robotic Rescue Mission for Swift Space Telescope

Context:

NASA launched a robotic rescue mission to prevent the ageing Neil Gehrels Swift Observatory from falling towards Earth. The mission aims to tow the telescope into a stable orbit using a specialised spacecraft.

Explanation:



- Neil Gehrels Swift Observatory was launched by NASA in 2004 to study gamma-ray bursts (GRBs).
- Gamma-ray bursts are extremely energetic explosions linked to the death of massive stars or compact object mergers.
- Swift operates in Low Earth Orbit (LEO), around 600 km altitude.
- Satellites in LEO experience gradual orbital decay due to atmospheric drag.
- Without sufficient propulsion, ageing satellites may lose altitude and eventually burn up in Earth's atmosphere.
- The rescue mission uses a robotic spacecraft designed to approach, latch on and tow Swift into a safer orbit.
- Such missions are part of on-orbit servicing, which includes satellite repair, refuelling, repositioning and debris management.
- It also reflects the growing importance of space sustainability and extending the life of costly scientific missions.

6.8. Nuclear Heat-Based Hydrogen Production using Cu–Cl Thermochemical Cycle

Context:

The Department of Atomic Energy has inaugurated the world's first hydrogen production facility using the Copper–Chlorine thermochemical cycle and nuclear heat from the Fast Breeder Test Reactor at Kalpakkam. It marks a major step in linking advanced nuclear energy with clean hydrogen production.

Explanation:

- Hydrogen is a clean energy carrier that can support decarbonisation in industry, transport and energy storage.
- Conventional hydrogen production often depends on fossil fuels, while green/clean hydrogen aims to reduce carbon emissions.
- The Copper–Chlorine (Cu–Cl) thermochemical cycle uses heat-driven chemical reactions to split water and produce hydrogen.
- It is considered promising because it works at relatively lower temperatures compared to some other thermochemical cycles.

- Nuclear process heat can provide reliable, carbon-free heat for hydrogen production.
- The facility uses heat from the Fast Breeder Test Reactor (FBTR) at IGCAR, Kalpakkam.
- Fast breeder reactors produce more fissile material than they consume and are central to India's three-stage nuclear programme.
- BARC developed the indigenous Cu–Cl hydrogen technology, while IGCAR leads fast breeder reactor research.

6.9. DRDO Conducts Maiden Flight Test of Project Kusha Long-Range Air-Defence Missile

Context:

DRDO successfully conducted the first flight test of the Project Kusha Long-Range Surface-to-Air Missile (LR-SAM) from Dr. APJ Abdul Kalam Island, Odisha.

Explanation:



- **Project Kusha** is an indigenous, long-range **surface-to-air missile system** developed by DRDO for the Indian Air Force
- The indigenous system is intended to intercept high-altitude aerial threats at ranges of up to 400 km, reducing dependence on imported systems such as the S-400.
- It is designed to counter fighter aircraft, cruise missiles, drones and other high-altitude aerial threats.
- It includes missiles, radars and a networked **command-and-control system**, providing layered air defence.
- It will complement the **Integrated Air Defence Weapon System**, comprising QRSAM, VSHORADS and directed-energy weapons.
- The system supports **Atmanirbhar Bharat**, strategic autonomy and reduced dependence on imported S-400 systems.

6.10. ICMR-INDIAB Study Highlights High Burden of Dyslipidemia in Indian Adults

Context:

An ICMR-INDIAB national study has found that nearly 9 in 10 Indian adults have at least one lipid abnormality, with low High-Density Lipoprotein (HDL) being the most common.

Explanation:



- **Dyslipidemia** is an abnormal level of blood lipids, including high LDL, low HDL, high triglycerides or high total cholesterol, increasing the risk of atherosclerosis and cardiovascular diseases (CVDs).
- **HDL** (High-Density Lipoprotein) is "good cholesterol" that removes excess cholesterol from arteries, while **LDL** (Low-Density Lipoprotein) is "bad cholesterol" that promotes plaque formation.
- Major risk factors include sedentary lifestyle, unhealthy diet, obesity, diabetes, hypertension, insulin resistance, tobacco use and genetic predisposition.
- Dyslipidemia is a major **modifiable risk factor** for coronary artery disease, stroke and peripheral arterial disease, making early screening, regular physical activity and a balanced diet essential.

6.11. Embodied AI: Advancing the Next Generation of Intelligent Robots

Context:
Recent advances by companies such as Boston Dynamics and Google DeepMind have accelerated the development of Embodied AI.

Explanation:

- **Embodied AI** integrates Artificial Intelligence with a physical body, enabling robots to perceive, learn, reason and act through interaction with the real-world using sensors, actuators and feedback.
- Unlike **Generative AI** (text, image and video models), Embodied AI must handle gravity, balance, locomotion, object manipulation and real-time decision-making.
- Major challenges include the **simulation-to-reality (Sim-to-Real) gap**, scarcity of real-world training data, hardware limitations and safe human-robot interaction.
- Emerging technologies include **Neuromorphic AI, Spiking Neural Networks (SNNs)** and **Evolutionary Algorithms**, improving energy-efficient learning, adaptive behaviour and autonomous robotics.
- The technology aims to bridge the gap between simulation-based learning and autonomous operation in dynamic environments.

6.12. Protein Biosensors Enable Faster Detection of Medical Emergencies

Context:
Researchers are developing protein biosensors that can rapidly detect multiple disease-related biomarkers, including proteins associated with sepsis. These devices could shorten diagnostic delays and support timely, point-of-care treatment.

Explanation:



- A **biosensor** combines a biological recognition element with a **transducer** that converts biological activity into a measurable signal.
- Proteins serve as **biomarkers** because their levels change during infections, cancer, heart attacks and inflammation.
- The first functional biosensor was the enzyme-based **glucose sensor** developed in 1962.
- Modern sensors increasingly use **aptamers** - synthetic DNA or RNA strands that bind selectively to target proteins.
- Aptamers are cheaper, stable and easier to manufacture than antibodies.
- Nanomaterials improve sensitivity and enable **multiplex detection**.
- Applications include sepsis diagnosis, wearables, cancer screening and food safety.

6.13. NASA Astronaut Anil Menon Begins Eight-Month ISS Mission

Context:
NASA astronaut Anil Menon has reached the International Space Station aboard Russia's Soyuz MS-29 spacecraft for his first spaceflight. He will conduct scientific research and technology demonstrations during the eight-month mission.

Explanation:



- Menon launched with **Roscosmos** cosmonauts Pyotr Dubrov and Anna Kikina from **Baikonur Cosmodrome**, Kazakhstan.
- **Soyuz MS-29** is a Russian crewed spacecraft that transports astronauts to the ISS.
- It docked with the station's **Prichal module**.
- Menon, a physician of Indian-Ukrainian heritage, represents **NASA**, not ISRO.
- The crew will serve under **ISS Expeditions 74 and 75** and return in April 2027.
- The ISS is a multinational research laboratory operating in **low-Earth orbit**.
- Experiments will examine **microgravity's effects** on human physiology and test technologies for long-duration space exploration.
- The mission reflects continuing **NASA - Roscosmos cooperation**.

6.14. DRDO Successfully Tests Pinaka Long-Range Guided Rocket

Context:

The **Defence Research and Development Organisation (DRDO)** successfully flight-tested the **Pinaka Long-Range Guided Rocket (LRGR)** from the **Integrated Test Range (ITR), Chandipur, Odisha**. The test validated its **60 km user-defined minimum strike range** and demonstrated high-precision targeting from the existing Pinaka launcher.

Explanation:

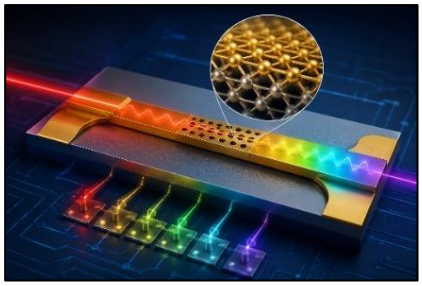


- **Pinaka** is an **indigenously developed Multi-Barrel Rocket Launcher (MBRL)** system designed for **area saturation** and precision strikes.
- It has been developed by **DRDO**, led by the **Armament Research and Development Establishment (ARDE)**, with contributions from **HEMRL**, **DRDL**, and **Research Centre Imarat (RCI)**.
- The **Long-Range Guided Rocket (LRGR)** uses **guidance and navigation systems** for improved accuracy compared to unguided rockets.
- A single **Pinaka launcher** can fire different variants of rockets with varying ranges, enhancing **operational flexibility**.
- Pinaka is intended to replace imported rocket artillery systems and strengthen **Aatmanirbhar Bharat** in defence.
- **Integrated Test Range (ITR), Chandipur (Odisha)** is a key DRDO facility for testing **missiles, rockets, and defence systems**.

6.15. Strain-Tunable Metals for Programmable Nanophotonic Devices

Context:

Researchers from the **Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bengaluru** have shown that the optical properties of metals can be changed by applying **mechanical strain**. This discovery may help build **programmable nanophotonic devices**, optical sensors and chip-compatible photonic circuits.



Explanation:

- Metals interact with light through their free electrons.
- In some metals, light can be trapped and concentrated at extremely small scales; this is called **plasmon resonance**.
- Earlier, scientists believed that a metal's optical properties were mostly fixed after choosing its material composition.
- **Simple idea:** Metals usually interact with light in a fixed way, but JNCASR scientists showed that if an ultrathin metal film like titanium nitride is slightly stretched or strained, its electrons behave differently. So, the metal can be "tuned" to reflect, absorb or trap light differently.
- **Simple example:** Just as tightening a guitar string changes its sound, applying strain to a metal changes how it responds to light. This can help make tiny light-based devices for sensors, cancer diagnosis, optical chips and programmable nanophotonic devices.

6.16. Mahendragiri: Project 17A Indigenous Stealth Frigate

Context:

The Indian Navy is set to commission **Mahendragiri (F38)**, the sixth **Project 17A indigenous stealth frigate**, at Visakhapatnam on 11 July 2026. The warship highlights India's progress in indigenous naval design, stealth technology and defence manufacturing.

Explanation:



- Project 17A is India's programme to build advanced indigenous stealth guided-missile frigates as successors to the Shivalik-class frigates.
- A frigate is a medium sized naval warship used for escort, patrol, anti-submarine warfare, anti-air warfare and maritime security operations.
- Stealth features reduce a ship's radar signature, making it harder for enemy sensors to detect and track.
- Mahendragiri was designed by the Indian Navy's Warship Design Bureau (WDB) and built by Mazagon Dock Shipbuilders Limited (MDL), Mumbai.
- It has over 75% indigenous content, supporting Aatmanirbhar Bharat, MSMEs and India's defence industrial base.
- It uses CODOG propulsion, meaning Combined Diesel or Gas, allowing efficient cruising and high-speed operations.
- It is equipped for anti-air, anti-surface and anti-submarine warfare, along with HADR, Search and Rescue and Indo-Pacific maritime security roles.

6.17. Netra AEW&C: India's Indigenous Airborne Early Warning and Control System

Context:

India's indigenous Netra Airborne Early Warning and Control (AEW&C) system has received Final Operational Clearance (FOC) after years of development and operational use. The milestone confirms its full operational capability and paves the way for induction of more advanced indigenous AEW&C aircraft.

Explanation:



- Airborne Early Warning and Control (AEW&C) is a flying radar station that detects, tracks, identifies and monitors enemy aircraft, drones, cruise missiles and other airborne threats over long distances while simultaneously directing friendly air operations.
- Unlike ground-based radars, AEW&C aircraft fly at high altitude, enabling them to detect low-flying aircraft beyond the radar horizon created by the Earth's curvature.
- AEW&C acts as a force multiplier, providing early warning, surveillance, command and control, battle management and supporting network-centric warfare.
- Major AEW&C/AWACS systems include the E-3 Sentry (USA/NATO), Saab Erieye/GlobalEye (Sweden), KJ-2000/KJ-500 (China), A-50 Mainstay (Russia) and E-2 Hawkeye (USA Navy).
- Netra AEW&C has been developed by the Centre for Airborne Systems (CABS) under the Defence Research and Development Organisation (DRDO) and is mounted on the Brazilian Embraer EMB-145I aircraft platform.
- India is among a select group of countries possessing indigenous AEW&C capability and is developing larger Netra Mk-1A systems to further strengthen long-range aerial surveillance.

6.18. Discovery of the Oldest Known Quasars in the Early Universe

Context:

Astronomers using the Euclid Space Telescope have discovered the oldest known quasars, dating back to the first 700 million years after the Big Bang. The findings provide new insights into the early growth of supermassive black holes and the formation of galaxies, while also posing fresh questions about how such massive objects formed so quickly.

Explanation:

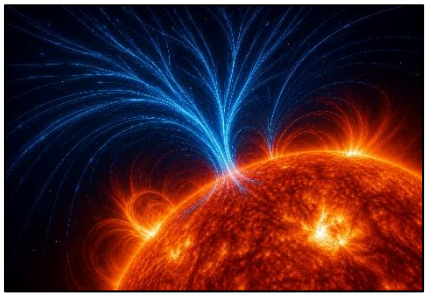
- A quasar is the incredibly bright core of a distant galaxy, powered by a giant black hole. As the black hole feeds on swirling gas and dust, it creates a superheated ring of matter that shines up to a thousand times brighter than an entire galaxy.
- A quasar isn't the black hole itself, but the massive light show surrounding it.
- As gas and dust spiral into the black hole through an accretion disk, enormous amounts of gravitational energy are converted into light, making quasars among the brightest objects in the Universe.
- Supermassive black holes are typically millions to billions of times the mass of the Sun and are believed to exist at the centres of most galaxies.
- The Big Bang marks the origin of the Universe about 13.8 billion years ago; studying distant quasars helps
- scientists understand the early evolution of galaxies and black holes.
- The Euclid Space Telescope, launched by the European Space Agency (ESA) in 2023, maps the large-scale structure of the Universe to study dark matter, dark energy, and the evolution of galaxies.

6.19. Magnetic Tree Hypothesis Validated Through Sun's Upper Atmosphere Study

Context:

Researchers from ARIES, in collaboration with Indian institutions and NASA, have discovered that the Sun's meridional plasma flow extends into the upper chromosphere, providing the first observational evidence supporting the magnetic tree hypothesis. The finding improves understanding of the solar dynamo and space weather, which can affect satellites, communication, navigation, and power grids on Earth.

Explanation:



- The Sun consists of the Photosphere (visible surface), Chromosphere, Transition Region, and Corona; its atmosphere is composed of hot ionized gas called plasma.
- **Meridional flow** is a slow poleward movement of plasma that transports magnetic fields across the Sun and helps regulate the 11-year solar cycle.
- The Solar Cycle is the periodic rise and fall of the Sun's magnetic activity approximately every 11 years, influencing sunspots, solar flares, and other energetic events.
- The **Solar Dynamo** generates the Sun's magnetic field through plasma motion and differential rotation, driving solar flares, Coronal Mass Ejections (CMEs), and space weather.
- The **Magnetic Tree Hypothesis** proposes that magnetic structures in the Sun's upper atmosphere remain connected to deeper solar layers, like branches connected to the trunk and roots of a tree.
- The study used the **Nobeyama Radioheliograph (Japan),** demonstrating how radio astronomy can probe the Sun's internal dynamics and validate the magnetic tree hypothesis.

6.20. Cyclospora Outbreak in the United States

Context:

The United States is witnessing a multi-state outbreak of Cyclospora infections, with contaminated leafy greens and fresh produce suspected as the primary source.

Explanation:

- Cyclospora cayetanensis is a protozoan parasite that causes **Cyclosporiasis**, a food- and water-borne intestinal disease.
- Infection occurs through ingestion of **sporulated oocysts** contaminating fresh fruits, vegetables, herbs, or water; person-to-person transmission does not occur because oocysts require days to weeks outside the body to become infective.
- Symptoms include prolonged watery diarrhoea, abdominal cramps, bloating, nausea, fatigue, and weight loss; incubation period is usually about one week.
- Diagnosis is by stool examination using specialized molecular or fluorescence-based techniques; treatment is commonly **Trimethoprim-Sulfamethoxazole (TMP-SMX).**
- The outbreak has highlighted the parasite's resistance to routine disinfection, diagnostic challenges, and the need for stronger food safety measures across the supply chain

6.21. Role of Leucine in Mitochondrial Energy Production

Context:

Recent research highlights that **leucine**, an essential amino acid, helps protect mitochondria and supports cellular energy production. It may prevent premature degradation of mitochondrial outer membrane proteins, thereby helping cells maintain energy balance.

Explanation:



- **Amino acids** are the building blocks of **proteins**, which perform vital functions in cells and organs.
- **Leucine** is an **essential amino acid**, meaning the human body cannot produce it and must obtain it from food.
- It belongs to **Branched Chain Amino Acids (BCAAs)**, along with **isoleucine** and **valine**.
- **Mitochondria** are called the **powerhouse of the cell** because they produce **ATP**, the cell's energy currency.
- Organs with high energy demand, such as the **heart, muscles, brain and nervous system**, depend heavily on mitochondria.
- Leucine helps maintain the **outer mitochondrial membrane** and protects mitochondrial proteins from premature degradation.
- A study using **Caenorhabditis elegans** showed leucine interacts with **SEL1L protein**, linked to removal of damaged proteins.
- This may help in understanding **metabolic disorders, ageing and age-related diseases**.

6.22. Space Oncology

Context:

Space oncology is an emerging field that studies how microgravity and space radiation influence cancer cells, with the aim of improving cancer research, drug discovery and treatment. Recent advances in space-based experiments are opening new possibilities for biomedical innovation.

Explanation:

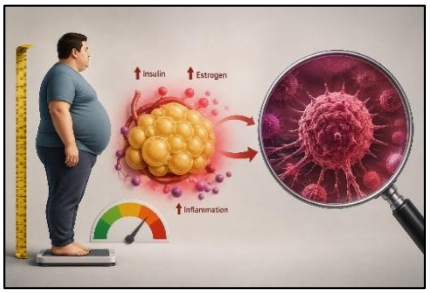
- Space oncology studies the effects of microgravity and cosmic radiation on cancer biology to improve diagnosis and therapy.
- Microgravity is a condition of near-weightlessness experienced in orbit, where gravitational forces are greatly reduced.
- In microgravity, cancer cells form 3D spheroids, which closely resemble human tumours and help in realistic drug testing.
- Space-based research can reveal changes in gene expression, cell signalling, protein synthesis, cell proliferation and metastasis.
- Microgravity also affects protein crystallisation and nanoparticle behaviour, aiding the development of more effective medicines.
- The International Space Station (ISS) serves as a major laboratory for biomedical and cancer research in space.
- Space experiments may accelerate drug discovery, personalised medicine, biomarker identification and precision oncology, while reducing dependence on animal testing.
- The Indian Space Research Organisation (ISRO) is increasingly supporting space-based life sciences and biomedical research through its expanding space programme.

6.23. Higher BMI and Cancer Risk

Context:

A new international study published in Nature Metabolism found that higher Body Mass Index (BMI) is linked to increased risk of 19 types of cancer. The findings are important as obesity is rising globally and is considered a major modifiable risk factor.

Explanation:



- Body Mass Index (BMI) is a simple measure of body fat based on a person's weight and height.
- It is calculated as weight in kilograms divided by height in metres squared (kg/m²).
- Obesity refers to excessive body fat accumulation that can harm health.
- Excess body fat may increase cancer risk by disturbing insulin levels, oestrogen levels, metabolism and immune functions.
- It can also cause chronic inflammation, which may support abnormal cell growth.
- The study linked higher BMI with cancers such as endometrial cancer, oesophageal adenocarcinoma, colorectal cancer, gallbladder cancer, leukaemia, non-Hodgkin lymphoma, bladder cancer and glioma.
- Obesity-related cancer risks may vary by sex, geography, ethnicity and cancer type.

7. Internal Security

7.1. MeitY Releases Digital Threat Report 2025–26 for India's BFSI Sector

Context:
The Ministry of Electronics and Information Technology (MeitY), in collaboration with CERT-In, CSIRT-Fin, and SISA, has released the second edition of the Digital Threat Report 2025–26 for India's Banking, Financial Services, Insurance (BFSI), and payments ecosystem.

Explanation:

- The BFSI (Banking, Financial Services and Insurance) sector is part **of India's Critical Information Infrastructure (CII)** and is increasingly vulnerable to cyber threats due to rapid digitalisation.
- The report **identifies AI asymmetry,** where attackers exploit Artificial Intelligence (AI) faster than defenders, enabling large-scale phishing, credential theft, deepfakes, social engineering, cloud exploitation, and supply-chain attacks.
- **It introduces the 4-Layer Gap Archetype Framework**, which analyses cyber breaches as a sequence of systemic failures rather than isolated incidents.
- **CERT-In**, designated under **the Information Technology (Amendment) Act, 2008,** is India's national agency for responding to cyber security incidents.
- **CSIRT-Fin** is the sectoral **Computer Security Incident Response Team** for the financial sector, coordinating cyber incident prevention and response across banking, insurance, securities, and pension entities.
- The report recommends continuous risk assessment, threat intelligence sharing, Digital Forensics and Incident Response (DFIR), Zero Trust Architecture, AI-enabled defence, and stronger cyber resilience to secure India's digital financial ecosystem.

7.2. Operation 'Hard Ball': International Crackdown on Transnational Crime Networks

Context:
A coordinated international law enforcement operation, **Operation Hard Ball**, has dismantled several transnational criminal networks involved in organised crime. The operation has renewed India - Canada cooperation against organised crime and terrorism following recent diplomatic tensions.

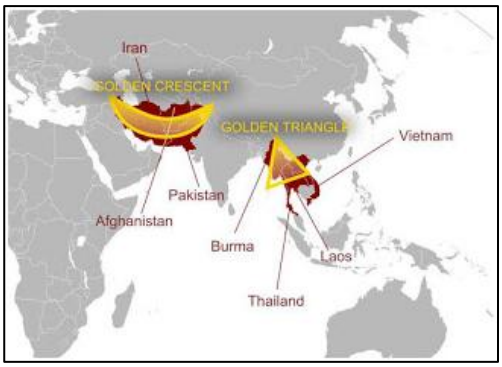
Explanation:

- **Transnational Organised Crime (TOC)** refers to criminal activities conducted across national borders by organised groups for financial or material gain.
- **Operation Hard Ball** involved coordinated action by law enforcement agencies from multiple countries against international criminal syndicates.
- Such syndicates engage in **drug trafficking, human trafficking, extortion, money laundering, cybercrime, illegal arms trade and terrorism financing.**
- The **United Nations Convention against Transnational Organized Crime (UNTOC), 2000 (Palermo Convention)** is the principal international treaty to combat organised crime.
- India is a **State Party to UNTOC** and cooperates through **Interpol**, bilateral Mutual Legal Assistance Treaties (MLATs) and intelligence sharing.
- Effective international cooperation strengthens extradition, financial investigations, asset recovery and prosecution of criminals operating across borders.

7.3. Myanmar Opium Flow and India's Eastern Border Security

Context:
The Narcotics Control Bureau has reported that Myanmar has emerged as an alternative global source of opium after the Taliban's drug ban in Afghanistan. India's eastern borders, especially the Manipur corridor, have become vulnerable to heroin and methamphetamine trafficking.

Explanation:



- Opium is obtained from the poppy plant and is used to produce narcotic drugs such as heroin.
- The Golden Triangle refers to the drug-producing region around Myanmar, Laos and Thailand.
- The Golden Crescent refers to Afghanistan, Pakistan and Iran, historically linked with opium production.
- Myanmar shares a long and porous border with India's Manipur, Mizoram, Nagaland and Arunachal Pradesh.
- The Free Movement Regime (FMR) earlier allowed limited cross-border movement among border communities, but it also raised security concerns.
- National Highway 102 through Manipur is significant for connectivity but can be misused for trafficking routes.
- Drug trafficking is linked to organised crime, insurgency financing, border management challenges and internal security threats.

7.4. FIU-IND Recognised at the Best Egmont Case Award (BECA) 2026

Context:
The Financial Intelligence Unit–India (FIU-IND) was adjudged the Runner-up at the Best Egmont Case Award (BECA) 2026 during the Egmont Group Plenary in Baku, Azerbaijan. The recognition was for uncovering a large-scale cyber fraud and money laundering network involving ₹868 crore through extensive domestic and international financial intelligence cooperation.

Explanation:



- Financial Intelligence Unit–India (FIU-IND) is the national agency under the Department of Revenue, Ministry of Finance, responsible for receiving, analysing, and disseminating information relating to suspicious financial transactions to combat money laundering and terrorist financing.
- The Egmont Group is a global network of Financial Intelligence Units (FIUs) that facilitates secure exchange of financial intelligence through the Egmont Secure Web (ESW) and currently has over 180 member jurisdictions.
- Money laundering is the process of disguising the proceeds of crime as legitimate assets and is regulated in India under the Prevention of Money Laundering Act (PMLA), 2002.
- Mule bank accounts are accounts used by criminals to transfer or conceal illicit funds, while cryptocurrency transactions increasingly feature in cross-border financial crimes.
- The Directorate of Enforcement (ED) investigates offences under PMLA, 2002, while the Indian Cyber Crime Coordination Centre (I4C) coordinates efforts against cybercrime.
- The case highlights the importance of Anti-Money Laundering and Counter Financing of Terrorism (AML/CFT) frameworks and international cooperation in tackling transnational financial crimes.

8. History & Culture

8.1. India to Restore Indonesia's UNESCO-listed Prambanan Temple Complex

Context:

Prime Minister Narendra Modi visited the **UNESCO World Heritage Prambanan Temple Complex** in Indonesia along with President Prabowo Subianto. The two leaders inaugurated the **Archaeological Survey of India (ASI)** conservation and restoration project, highlighting the shared civilizational heritage between India and Indonesia.

Explanation:



- **Prambanan Temple Complex** is a **UNESCO World Heritage Site** located near **Yogyakarta, Indonesia**.
- Built in the **9th century** by the **Sanjaya Dynasty**, it is the **largest Hindu temple complex in Indonesia**.
- The temple is dedicated to the **Trimurti - Brahma (Creator), Vishnu (Preserver), and Shiva (Destroyer)**, with **Shiva Temple** being the tallest.
- It reflects the spread of **Indian culture, Hinduism, and temple architecture** in **Southeast Asia**.
- The **Archaeological Survey of India (ASI)** undertakes heritage conservation in India and abroad, including **Borobudur** and now **Prambanan**.
- The project strengthens **India–Indonesia cultural diplomacy** and preservation of **shared civilizational heritage**.

8.2. Ravidassia Community Seeks Separate Religion Code in Census 2027

Context:

The Ravidassia community has renewed its demand for recognition as a separate religion in Census 2027. Community representatives argue that a distinct code would ensure accurate enumeration and protect their religious identity.

Explanation:

- **Ravidassias** are followers of Guru Ravidas, a 15th–16th-century **Bhakti saint** who preached equality and envisioned caste-free **Begampura**.
- Predominantly a Dalit community, they are concentrated in Punjab's **Doaba region**.
- **Dera Sachkhand Ballan** is their principal religious institution.
- Following Sant Ramanand's killing in Vienna in 2009, the Dera declared Ravidassia a separate religion in 2010.
- It adopted **Amritbani Guru Ravidas Ji** as scripture and **Har** as its symbol.
- Census 2011 separately reported six major religions; others were grouped under **Other Religions and Persuasions**.
- Recognition may improve demographic data, welfare planning and cultural visibility.

8.3. Akal Takht: Sikhism's Highest Temporal Seat

Context:

The Akal Takht has summoned Sikh ministers and legislators in Punjab over their support for an anti-sacrilege law without adequate consultation with major Sikh religious institutions. The development highlights the institution's enduring moral, religious and political influence in Sikh public life.

Explanation:



- Akal Takht means the "Throne of the Timeless One" and is the highest temporal seat of Sikh authority.
- It is located opposite the Harmandir Sahib (Golden Temple) in Amritsar.
- It was established by Guru Hargobind, the sixth Sikh Guru, between 1606 and 1609.
- Guru Hargobind introduced the doctrine of Miri-Piri: *Miri* signifies temporal authority, while *Piri* represents spiritual authority.
- The Akal Takht is one of Sikhism's five Takhts, or authoritative seats.
- Its head is called the Jathedar, who may issue religious edicts called hukamnamas and summon members of the Sikh community.
- A person found guilty of religious misconduct may be declared tankhaiya and assigned tankhah, or religious atonement.
- Punishment may include sewa, public apology, boycott or excommunication.
- Its authority is moral and religious, not enforceable through ordinary courts or police

8.4. UNESCO Warns Pakistan over Reconstruction at Taxila World Heritage Site

Context:

UNESCO has asked Pakistan to reverse reconstruction work at two historical sites in Taxila, warning that the alterations compromise their authenticity and integrity. Failure to comply could lead to the sites being placed on the List of World Heritage in Danger or even delisted from the World Heritage List.

Explanation:



- **UNESCO World Heritage Landmark**: Taxila is an ancient city located in present-day Pakistan that was officially inscribed as a UNESCO World Heritage Site in 1980.
- **Gandhara Civilization Epicenter**: The city flourished extensively as a major centre of the Gandhara Civilization, Buddhist learning, trade, and art between the 6th century BCE and the 5th century CE.
- **Global Academic Hub**: It featured one of the world's earliest universities, drawing legendary historical thinkers like Chanakya and Panini to study and teach advanced sciences.
- **Greco-Buddhist Artistic Fusion**: Its unique geographical position at a crossroads of trade routes blended Greek, Persian, and Indian cultures into a distinct artistic style.
- **International Legal Protection**: Like all registered properties, the site is legally protected under the 1972 Convention Concerning the Protection of the World Cultural and Natural Heritage.
- United Nations Educational, Scientific and Cultural Organization (UNESCO) is a specialized UN agency headquartered in Paris, France, dedicated to building peace and security worldwide by promoting international collaboration in education, arts, sciences, and culture.

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