



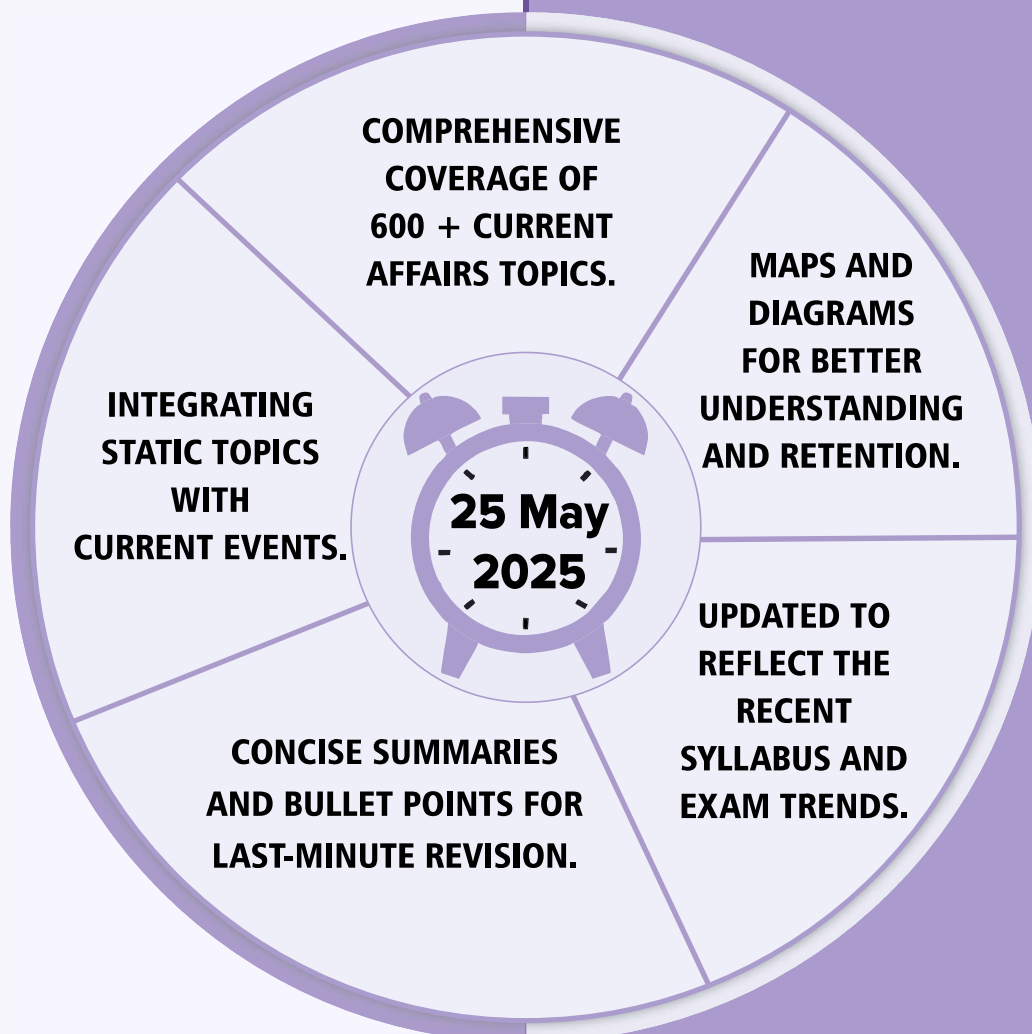
VAJIRAM & RAVI
Institute for IAS Examination

2025

Part - II

Dec 2024 - 10 April 2025

Prelims Quick Revision



Prelims Quick Revision 2025

Part 2

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POLITY AND GOVERNANCE

PLACES OF WORSHIP ACT, 1991

Context: The Supreme Court (SC) recently ordered a ban on civil courts registering new suits related to the ownership and title of religious places; ordering surveys of disputed sites.

About the Places of Worship Act, 1991

- It was enacted **to maintain the religious character of places of worship in India as they existed on August 15, 1947**, the day India gained independence.
- The law aims **to prevent disputes regarding the ownership and religious identity of such places** by freezing the status of these sites as they were on that date.

Key Provisions of the Act

- **No Conversion of Religious Places (Section 3):** A place of worship cannot be changed from one religion to another or from one sect to another within the same religion. Example: A temple cannot be turned into a mosque, or a mosque into a church, and so on.
- **Religious Status of Places of Worship (Section 4):** Whatever a religious place was on **August 15, 1947**, it must remain the same. Any ongoing court cases related to changing a religious place's status (as of that date) will automatically end.
- **Exceptions to the Above Rules (Section 4(3)):** The Act does not apply to:
 - Religious places that are **protected as historical monuments or archaeological sites** under the Ancient Monuments and Archaeological Sites and Remains Act, 1958.
 - Cases that were already decided by courts before this law came into effect.
 - Disputes that were settled by agreement between the involved parties before this law.
 - Conversions of religious places that happened before this law and were accepted by all involved.
 - Conversions that cannot be challenged because the time limit for filing a case has passed.
- **Exception for Ram Janmabhoomi-Babri Masjid (Section 5)**
- **Punishment for Violating the Law (Section 6):** If someone tries to change a religious place's character, they can be jailed for up to three years and fined.

APPLICABILITY OF POSH ACT TO POLITICAL PARTIES

Context: The Supreme Court recently heard a PIL on the applicability of the Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013, to political parties.

Key Provisions of POSH Act

- **Defines Sexual Harassment:** Unwelcome acts, including physical, verbal, and nonverbal conduct, such as requests for sexual favors, making sexually coloured remarks, and showing pornography, etc.
- **Circumstances that would constitute sexual harassment:** Implied or explicit promises of preferential treatment in employment, threats of detrimental treatment, threats about employment status, interference with work, creating an intimidating or hostile environment, and humiliating treatment likely to affect health or safety.
- **Defines an employee:** All women employees, whether employed regularly, temporarily, contractually, on an ad hoc or daily wage basis, as apprentices or interns, can seek redressal to sexual harassment in the workplace.
- **Expands the definition of 'workplace':** Beyond traditional offices to include all kinds of organisations across sectors, even non-traditional workplaces (for example, telecommuting) and places visited by employees for work.
- **Applicability:** This includes all public and private establishments in India that engage in commercial, vocational, educational, entertainment, industrial, or financial activities, both organized and unorganized sectors, and non-governmental organizations.

Internal Complaints Committee (ICC) and Local Committees (LC)

- Employers with more than 10 employees must establish an ICC to handle formal sexual harassment complaints from women.
- The ICC has powers similar to a civil court, including summoning witnesses and demanding documents.
- **Composition of ICC:**
 - An ICC must have at least four members, with at least half being women:
 - A Presiding Officer (a senior-level woman employee).
 - Two members from employees with experience in social work or legal knowledge.
 - One external member from an NGO to prevent undue influence from senior management.
- In 2017, the Ministry of Women and Child Development (MoWCD) launched **SHe-Box**, an online platform directing complaints to the employer's ICC.
- Every district must also form an LC to handle complaints from workplaces with fewer than 10 employees and the informal sector, including domestic workers.
- **Role of ICCs and LCs:** These bodies must conduct inquiries per the POSH Act and follow principles of natural justice.
- **Complaints can be resolved in two ways:** **Conciliation** between the complainant and respondent (excluding financial settlements) or **Inquiry and action** based on the findings.

PRIOR SANCTION UNDER PMLA

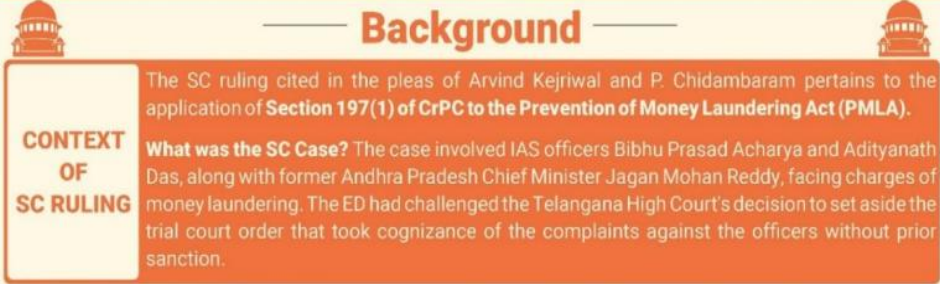
Context: Arvind Kejriwal and P. Chidambaram sought a trial stay in the Delhi High Court, citing an SC ruling requiring ED to get prior sanction to prosecute public servants for money laundering.

What is Prior Sanction Provision?

- **Section 197 of the Code of Criminal Procedure, 1973 (CrPC)** mandates prior government sanction before courts can take cognizance of offenses allegedly committed by judges, magistrates, or public servants in the course of their official duties.
- This provision safeguards public servants from frivolous or malicious prosecution, enabling them to discharge their responsibilities effectively without undue fear.

Key Features

- **Requirement of Government Sanction:** by courts is mandatory before proceeding with cases involving public servants who were "acting or purporting to act in the discharge of official duty" at the time of the alleged offense.
- **Exceptions to Sanction Requirement:** Sanction is not needed for certain serious offenses, such as **crimes against women** (e.g., rape, sexual harassment) and **grave offenses like human trafficking**, as specified in the explanation to Section 197. A similar provision exists under **Section 218 of the Bhartiya Nagarik Suraksha Sanhita, 2023 (BNSS)**.



Background

The SC ruling cited in the pleas of Arvind Kejriwal and P. Chidambaram pertains to the application of **Section 197(1) of CrPC to the Prevention of Money Laundering Act (PMLA)**.

CONTEXT OF SC RULING

What was the SC Case? The case involved IAS officers Bibhu Prasad Acharya and Adityanath Das, along with former Andhra Pradesh Chief Minister Jagan Mohan Reddy, facing charges of money laundering. The ED had challenged the Telangana High Court's decision to set aside the trial court order that took cognizance of the complaints against the officers without prior sanction.

SC'S KEY OBSERVATIONS

Applicability of Section 197(1) to PMLA: The court held that Section 65 of PMLA allows the application of CrPC provisions to PMLA proceedings unless inconsistent with PMLA. Section 197(1) of CrPC is consistent with PMLA and, therefore, applicable.

Public Servants under Section 197(1): The IAS officers met the criteria of being public servants, and the alleged offenses were connected to their official duties.

Overriding Effect of Section 71 of PMLA: The ED argued that Section 71 of PMLA, which gives it overriding power over other laws, excluded CrPC provisions. The SC disagreed, stating that Section 65 of PMLA ensures CrPC provisions, such as Section 197(1), remain applicable and cannot be overridden by Section 71.

Implications: Cognizance of offenses under PMLA against Acharya and Das was invalid as prior sanction under Section 197(1) was not obtained.

- **Example:** No sanction is needed to prosecute a public servant for sexual harassment under the POSH Act, 2013.
 - **Limitations of the Protection:** The provision does not provide blanket protection for all actions by public servants while in service. **Only acts or omissions directly linked to the discharge of official duties are covered.**
 - **Example:** Accepting bribes or indulging in personal misconduct is not covered under Section 197.
- (For More Information on PMLA, Refer to Prelims Quick Revision Part 1 - Page 225)*

CENTRE WANTS STATES TO MAKE SNAKE BITES NOTIFIABLE DISEASE

Context: The Union Health Ministry has urged states to classify snakebites as a notifiable disease, requiring both private and public hospitals to report cases.

- A notifiable disease is a disease that is legally required to be reported to the government by both private and public hospitals.

Benefits of Declaring Snakebite a Notifiable Disease

- Making snakebites notifiable is expected to lead to proper surveillance.
- This will help determine the precise numbers of snakebite cases and deaths across India.
- The government can use this information to effectively manage, prevent, and control snakebite cases
- Adequate antivenoms can be provided to various regions.
- Proper training can be imparted in areas where snakebites are frequent.

Snakebites in India

- India has over 310 snake species, 66 venomous and 42 mildly venomous. Of these, 23 species are medically significant, with the majority of bites by the "Big Four".
- **"Big Four" Snakes:** Most bites are caused by: Indian Cobra (*Naja naja*), Russell's Viper (*Daboia russelii*), Saw-scaled Viper (*Echis carinatus*), Common Krait (*Bungarus caeruleus*)
- Commercial polyvalent antivenom is effective against bites from these four species and covers 80% of snakebites.
- High-risk states regarding snakebites include Bihar, Jharkhand, Madhya Pradesh, Odisha, Uttar Pradesh, Andhra Pradesh, Telangana, Rajasthan, and Gujarat.

National Action Plan for Prevention and Control of Snakebite Envenoming (NAPSE)

- To address this, the government launched the NAPSE in 2024, aiming to halve snakebite deaths by 2030.
- It provides a broad framework for states to develop their own action plan for management, prevention and control of snakebites through the 'One Health' approach.
- NAPSE recommends making snake bites a notifiable disease.

IMPEACHMENT OF JUDGES

Context: Opposition in Rajya Sabha (RS) is planning to move an impeachment motion against Allahabad High Court Judge Justice Shekhar Kumar Yadav.

About Removal (Impeachment) of Judges

- The impeachment of a Supreme Court (SC) or High Court (HC) judge in India is governed by Articles 124(4) and 218 of the Constitution respectively.
- A judge of a High Court can be removed from office only by the President, but this can happen only after Parliament approves an impeachment motion.
- The President issues the removal order following an address by Parliament, which must be passed in the same session by a special majority in both Houses.
- The grounds for removal are: **Proven misbehavior, Incapacity**
- A High Court judge can be removed in the same manner and on the same grounds as a Supreme Court judge.

Procedure for Removal (As per Judges (Inquiry) Act, 1968)

- A removal motion must be signed by at least **100 Lok Sabha members or 50 Rajya Sabha members** and submitted to the Speaker (LS) or Chairman (RS).
- The Speaker/Chairman may **either accept or reject the motion**.
- If admitted, a three-member inquiry committee is formed, comprising: The Chief Justice of India (or a SC judge), A Chief Justice of a HC, A distinguished jurist
- The committee investigates the charges against the judge.
- If the committee finds the judge guilty of misconduct or incapacity, Parliament can proceed with the impeachment motion.
- The **motion must be passed by each House with a special majority** (a majority of the total membership and at least two-thirds of those present and voting).
- After both Houses approve, an address is sent to the President, who then issues the removal order.

Previous Impeachment Attempts in India

- Since Independence, six impeachment attempts have occurred, none resulting in removal.
- Only two committees investigating Justices V Ramaswami (1993) and Soumitra Sen (2011) found judges guilty.

INDIA INTERNET GOVERNANCE FORUM (IIGF)

Context: The IIGF 2024 was held in New Delhi, supported by the Ministry of Electronics and Information Technology (MeitY) and the National Internet Exchange of India (NIXI).

About India Internet Governance Forum (IIGF)

- It is the Indian chapter of the United Nations Internet Governance Forum (UN IGF). It is a **global multi-stakeholder platform** that fosters dialogue on public policy issues related to the Internet.
- **Established in 2021**, IIGF aims to **maximize the opportunities of the Internet while addressing associated challenges and risks**.
- IIGF promotes collaborative discussions among representatives from government, civil society, industries, technical communities, think tanks, and industry associations.
- It is **supported by a 14-member multi-stakeholder committee**.
- IIGF is known for its inclusive and collaborative approach, IGF plays a vital role in shaping policies for an open, secure, and accessible Internet, addressing issues such as cybersecurity, digital inclusion, data privacy, and emerging technologies.
- The theme for the IIGF 2024 is "Innovating Internet Governance for India."

About UN Internet Governance Forum (IGF)

- **About:** IGF is a multi-stakeholder governance platform endorsed by the UN, that facilitates discussions on public policy issues related to the Internet. It was established under the 2005 World Summit on the Information Society Tunis Agenda.
- **Mandate:** Convened by the UN Secretary-General to identify emerging issues, foster discussions, and offer recommendations.
- **Formation & Evolution:** Officially endorsed by the United Nations in 2006, with its first meeting in Athens, Greece. Initially given a five-year mandate, it was extended for another five years (2011-2015) and later renewed for ten more years in 2015.
- **Key Functions:** Enhances understanding of Internet opportunities and risks, promotes capacity building for developing nations, and fosters inclusive participation in global Internet governance. It lacks decision-making authority.
- **Recent Forum:** The 19th IGF was held in Riyadh, Saudi Arabia (December 2024) with the theme "Building Our Multi Stakeholder Digital Future."

AMRIT GYAN KOSH PORTAL

Context: Recently, the Union Minister of Personnel, Public Grievances & Pensions launched the "Amrit Gyan Kosh" Portal.

About Amrit Gyan Kosh Portal:

- It is jointly developed by the **Capacity Building Commission** and **Karmayogi Bharat**.

- It is a platform to promote self-reliance in governance training and strengthen governance training.
- It covers diverse policy themes such as health, education, agriculture and digital governance.
- It is **developed on the iGOT platform** and serves as a comprehensive repository of best practices in governance and policy implementation.
- It aligns with 15 of the 17 Sustainable Development Goals (SDGs), covering critical themes such as health, education, agriculture, and digital governance.
- The curated resources enable faculty to align their teaching with global standards while addressing India's unique administrative challenges.

What is Karmayogi Bharat?

- It is a **Special Purpose Vehicle (SPV)** established **under Mission Karmayogi**, the Gol's initiative for capacity building of civil servants.
- It plays a crucial role in **managing and operating the iGOT Karmayogi platform**, which provides digital learning opportunities for government officials.
- **Institutional Role:** It is a core part of the Mission Karmayogi framework, responsible for delivering online training to civil servants.
- **Legal Structure:** Incorporated as a **not-for-profit company** under Section 8 of the Companies Act, 2013, and is 100% government-owned.
- **Responsibilities:**
 - Operates and maintains the iGOT Karmayogi platform and other digital assets.
 - Ensures the anytime, anywhere, any-device accessibility of learning resources.
 - Owns and manages the Intellectual Property Rights (IPR) of all software, content, and processes.
 - Implements a subscription-based revenue model to sustain the platform.

NATIONAL PANCHAYAT AWARDS 2024

Context: The National Panchayat Awards Conferment Ceremony 2024, organized by the Ministry of Panchayati Raj, took place at Vigyan Bhawan, New Delhi.

About National Panchayat Awards:

- These awards are pivotal in **recognizing and encouraging Panchayats** for their efforts in poverty alleviation, health, child welfare, water conservation, sanitation, infrastructure, social justice, governance, and women empowerment.
- The primary objective is **to encourage these Panchayats to excel further and inspire other rural local bodies to achieve their best**, ultimately ensuring ease of living and sustainable, inclusive development in rural areas.
- These awards are typically presented on 24th April (National Panchayati Raj Day) every year.
 - **National Panchayati Raj Day is celebrated on April 24th** every year, since 2010, to commemorate the 73rd Amendment Act 1992, which came into effect in 1993.
- The Ministry of Panchayati Raj has grouped the 17 SDGs into 9 LSDG themes and revamped the National Panchayat Awards based on these themes: Poverty-Free and Enhanced Livelihoods Panchayat, Healthy Panchayat, Child-Friendly Panchayat, Water-Sufficient Panchayat, Clean and Green Panchayat, Self-Sufficient Infrastructure in Panchayat, Socially Just and Socially Secured Panchayat, Panchayat with Good Governance, Women-Friendly Panchayat.

Award Categories	
Deen Dayal Upadhyay Panchayat Satat Vikas Puraskar	Top 3 Gram Panchayats(GPs)/Equivalent Bodies for outstanding performance under each of the 9 award themes.
Nanaji Deshmukh Sarvottam Panchayat Satat Vikas Puraskar	Top 3 Gram, Block, and District Panchayats for their overall performance across all 9 award themes
Gram Urja Swaraj Vishesh Panchayat Puraskar	Top 3 GPs/Equivalent Bodies for excellence in adopting and using renewable energy sources.

Carbon Neutral Vishesh Panchayat Puraskar	Top 3 GPs/Equivalent Bodies for achievements in carbon neutrality through renewable energy adoption.
Panchayat Kshamta Nirmaan Sarvottam Sansthan Puraskar	3 institutions that have provided significant institutional support to Gram Panchayats in achieving Local Sustainable Development Goals (LSDGs).

PM GRAMIN DIGITAL SAKSHARTA ABHIYAN (PM-GDISHA)

Context: The PMGDISHA aimed to promote digital literacy in rural India, targeting 6 crore households has ended, with 6.39 crore individuals getting trained by March 31, 2024.

About PMGDISHA

- It is a **digital literacy initiative** launched in **2017** by the **Ministry of Electronics and Information Technology (MeitY)** to **empower rural populations** in India by making them digitally literate.
- It is a **Central Sector Scheme, implemented by CSC e-Governance Services India Limited.**
- **Objective:** To bridge the digital divide, empower rural citizens, and enable their participation in nation-building by fostering inclusion and helping marginalized communities leverage technology for daily tasks and the digital economy.
- **Target:** To train **6 crore people in rural India**, reaching 40% of rural households, by providing **digital literacy to one person from each eligible household.**
- **Alignment with SDGs:** Contributes to Goal 4 (Quality Education) and Goal 9 (Industry, Innovation, and Infrastructure).
- **Eligibility:**
 - **One person per household, aged 14-60 years, is eligible for training.**
 - The scheme prioritizes marginalized groups such as **Scheduled Castes (SC), Scheduled Tribes (ST), Below Poverty Line (BPL) families, women, differently abled persons, and minorities of rural households.**
 - Priority is given to those who are non-smartphone users, from Antyodaya households, college dropouts, and adult literacy mission participants.
 - Digitally illiterate students from class 9 to 12 (if their schools do not provide ICT training)
- **Training Content:** The training content was made available in 22 scheduled languages and English. It included using digital devices (computers, smartphones), sending & receiving emails, browsing the internet, accessing government services, searching for information, and performing digital payments.
- After training of the candidate, a third-party assessment of the trained candidates was carried out by recognized certifying agencies.

HENDERSON DOCTRINE

Context: In a recent case, the Supreme Court (SC) explained Henderson doctrine, a natural corollary of the Indian doctrine of constructive Res-judicata.

About Henderson Doctrine

- It is a doctrine originated from the English case Henderson v. Henderson (1843) and mandates that **all issues arising from the same dispute must be addressed in a single lawsuit.**
- It prevents parties from withholding claims and later raising them in separate litigation.
- The doctrine **bars parties from re-litigating matters that could have been raised in an earlier case**, ensuring judicial efficiency. For example, if a contract dispute is litigated over terms, the related issue of payment breach cannot be raised later as a separate case.

E-DAAKHIL PORTAL

Context: The e-Daakhil Portal by the Department of Consumer Affairs is now operational across all States and Union Territories in India, while the upcoming e-Jagriti Portal is under development.

Portals	Description
e-Daakhil Portal	• Launched by the National Consumer Dispute Redressal Commission (NCDRC) in September 2020. It is operational across all States and Union Territories of India.

	- It simplifies the process of filing consumer grievances by providing a cost-effective, fast, and hassle-free digital platform for consumers. - The portal eliminates the need for physical presence and travel, offering a user-friendly interface to approach the relevant consumer forum.
e-Jagriti Portal	- The e-Jagriti portal is under development and will complement the e-Daakhil portal by further streamlining and digitizing consumer dispute management. - It will simplify the process of filing, tracking, and managing cases, while facilitating seamless communication between consumers, forums, and other stakeholders. - With automation reducing delays and paperwork, the portal aims to ensure the timely disposal of cases and improve the efficiency of dispute resolution.

ANNA CHAKRA

Context: Recently, the **Ministry of Consumer Affairs, Food and Public Distribution** launched 'Anna Chakra' and SCAN (Subsidy Claim Application for NFSA) portal.

Portals	Description
Anna Chakra	- It is a PDS supply chain optimization tool developed by the Department of Food Public Distribution in collaboration with World Food Programme (WFP) and Foundation for Innovation and Technology Transfer (FITT), IIT-Delhi. - It uses advanced algorithms to optimize routes for food grain movement across 4.37 lakh Fair Price Shops and 6700 warehouses. - Integrated with PM Gati Shakti and FOIS (Freight Operations Information System) portal of the Railways through Unified Logistics Interface Platform (ULIP) - It enhances logistics efficiency for interstate PDS movement.
SCAN Portal	Subsidy Claim Application for NFSA (SCAN) portal facilitates a single-window submission of subsidy claims by states. The submission is followed by scrutiny and approval by the Department of Food and Public Distribution. - It automates the end-to-end subsidy release and settlement process.

NATIONAL LEGAL METROLOGY PORTAL (EMAAP)

Context: Department of Consumer Affairs (DoCA) is developing the eMaap to integrate State Legal Metrology Departments and their portals into a unified National System.

What is Legal Metrology?

- Legal Metrology is the application of legal requirements to measurements and measuring instruments.
- The objective of Legal Metrology is to ensure public guarantee from the point of view of security and accuracy of the weights and measurements.
- The **Legal Metrology Act, 2009** came into force on April 1, 2011, with the Department of Consumer Affairs as the nodal agency for its implementation.
- Currently, State Governments operate individual portals for the registration of packaged commodities, issuance of licenses, and verification/stamping of weighing and measuring instruments.

About eMaap

- By creating a **centralized database**, eMaap **eliminates the need for stakeholders to register on multiple State Portals**, fostering ease of doing business and transparency in trade practices.
- Presently, State Governments are using their own portals** for registration of packaged commodities, issue of licenses and verification/stamping of weighing & measuring instruments.
- Therefore, the Department of Consumer Affairs is integrating all the state portals in one as **National Legal Metrology Portal 'eMaap'** which will include all functions of Legal Metrology including enforcement and help to get a unified database.

- eMaap simplifies critical procedures such as issuing, renewing, and amending licenses, as well as handling verification & stamping of weighing & measuring instruments, registration certificates, and appeals, etc.

BHARATIYA VAYUYAN ADHINIYAM, 2024

Context: Recently, the President granted assent to the Bharatiya Vayuyan Vidheyak (BVV), 2024, replacing the Aircraft Act, 1934.

India's Civil Aviation Framework

India's civil aviation sector is primarily governed by two laws:

- **The Aircraft Act, 1934:** Regulates aircraft operations, safety, manufacturing, and airport licensing.
- **The Airports Economic Regulatory Authority of India (AERA) Act, 2008:** Governs tariffs for aeronautical services and monitors airport performance.

The Aircraft Act, 1934 was amended in 2020 to formally recognize three key aviation bodies:

- **Directorate General of Civil Aviation (DGCA):** Oversees aviation safety and regulatory functions.
- **Bureau of Civil Aviation Security (BCAS):** Responsible for security regulations.
- **Aircraft Accidents Investigation Bureau (AAIB):** Investigates aircraft accidents.

Key Provisions of Bharatiya Vayuyan Adhiniyam (BVA), 2024

- **Regulatory Authorities:** The Adhiniyam retains DGCA, BCAS, and AAIB as the main aviation regulators. The central government will exercise supervisory authority over these bodies and may issue directives or review their decisions. Appeals against DGCA and BCAS orders will go to the central government, with no further appeals allowed.
- **Aircraft Design Regulation:** The Adhiniyam retains existing regulations on aircraft manufacturing, possession, use, and trade. It introduces new provisions for regulating aircraft design.
- **Rule-Making Powers:** The central government retains the authority to formulate rules related to:
 - Licensing, certification, and inspection of aircraft.
 - Regulation of air transport services.
 - Implementation of the Convention on International Civil Aviation (1944).

The Adhiniyam expands rule-making powers to include **regulations on radio telephone operator certification** under the International Telecommunication Convention.

- **Offences and Penalties:** The Adhiniyam specifies penalties for various offences, such as: Carrying prohibited items (e.g., arms and explosives) on aircraft, Flying aircraft dangerously, endangering people or property. **Punishments include:** Imprisonment up to two years, a fine up to ₹1 crore, or both.
- **Adjudication of Penalties:** The central government will appoint officers to handle penalties. Appeals can be made to two levels of appellate officers, each of a higher rank than the previous.
- **Civil and Criminal Penalties:** The central government may impose civil or criminal penalties for violations related to:
 - Aircraft design, manufacturing, and trade; International aviation regulations; Accident investigations; Public health protections; Detention of aircraft.
 - Civil penalties may go up to ₹1 crore, while criminal penalties may include up to two years' imprisonment, a ₹1 crore fine, or both.

OVERSEAS CITIZEN OF INDIA

Context: The Ministry of External Affairs has clarified concerns about OCI (Overseas Citizen of India) cardholders being reclassified as foreigners. The Ministry confirmed that the existing OCI rules remain unchanged.

About OCI Cardholders

- The OCI card is a form of identification that grants certain rights and privileges to foreign citizens of Indian origin.
- The scheme has been operational since December 2, 2005, by amending the Citizenship Act, 1955.

- **Benefits**
 - **Multiple entry, multi-purpose life-long visa** to visit India
 - **Exemption** from reporting to Police authorities for any length of stay in India
 - **Parity with NRIs** in financial, economic and educational fields except in the acquisition of agricultural or plantation properties.
- **Eligibility:** A foreign national (excluding nationals of Pakistan or Bangladesh) is eligible for OCI registration if they:
 - Were a citizen of India at the time of, or at any time after 26th January 1950
 - Were eligible to become a citizen of India on 26th January 1950;
 - Belonged to a territory that became part of India after 15th August 1947
 - Are the child, grandchild, or great-grandchild of a citizen of India
 - Are the minor child of any of the above persons.
 - Are a minor child with at least one parent who is a citizen of India.
- **Spouse Eligibility:** The spouse of foreign origin of a citizen of India or the spouse of an OCI cardholder, whose marriage has been registered and subsisted for at least two years immediately before applying, is eligible for OCI registration.
- **Exclusions:** Foreign military personnel (both active and retired) are not eligible for OCI.

- **Merging of Categories:** On 9 January 2015, the Person of Indian Origin Card scheme was withdrawn by the Government and was merged with the OCI card scheme.
- **Statistics:** As of 31st January 2022, 40.68 lakh OCI cards have been issued.

Restrictions Related to OCI Cardholders

- **OCI is not equivalent to dual citizenship:** OCI does not grant political rights, like right to vote.
- **Ineligible for Constitutional Posts:** OCI cardholders are not eligible for certain key positions, including: President (Article 58), Vice-President (Art. 66), SC Judge (Art. 124), HC Judge (Art. 217)
- **Ineligible for Legislative Posts:** OCI holders cannot be members of the House of the People, Council of States, Legislative Assembly, or Legislative Council.
- **Public Employment Restrictions (Article 16):** OCI cardholders are not eligible for most public service positions in the Union or State government, except for specific roles designated by the Central Government through special orders.
- **Special Approvals Required:** OCI card holders need special approval for activities such as research, mountaineering, missionary work, journalism, and for visiting Restricted or Protected Areas.
- **Property Rights:** The OCI Cardholder cannot acquire agricultural or plantation properties in India.

Cancellation of OCI Registration

The Central Government can cancel an OCI registration under Section 7A if:

- It was **obtained through fraud**, false representation, or concealment of facts.
- The OCI cardholder has shown **disaffection to the Constitution** of India.
- The individual has engaged in **unlawful trade or communication with an enemy during wartime**.
- Within five years of registration, the person has been **sentenced to at least two years of imprisonment**.
- It is **necessary for India's sovereignty, security, foreign relations, or public interest**.

'SOCIALIST', 'SECULAR' IN THE PREAMBLE

Context: The Supreme Court dismissed petitions challenging the constitutional validity of the 42nd Amendment Act, which added the words 'secular' and 'socialist' to the Preamble of the Constitution.

What is the Preamble to the Constitution of India?

- The Preamble is an **introductory statement of the Constitution** that explains its philosophy and objectives.
- It lays down the **basic principles and goals** of the Constitution.
- The objectives were first laid in the **Objective Resolution (adopted on January 22, 1947)**.

- After much debate and deliberation, the **Preamble was drafted and adopted on November 26, 1949.**
- The Preamble indicated that the source of authority of the Constitution lies with the "people of India".
- It is an "integral part and scheme" of the Constitution.
- It is **non-justiciable** - a violation of any principle mentioned in the Preamble cannot be a reason to go to the courts in India. However, judges can use it as an additional factor in their reasoning and judgements.
- The Court in the Kesavananda Bharati Case ruled that the **Preamble can be amended under Article 368 of the Constitution**, provided that the basic structure of the Constitution, as reflected in the Preamble, is not altered or destroyed.

The Terms 'Socialist' and 'Secular' in the Preamble

- The two terms were inserted into the Preamble by the **42nd Amendment of the Constitution in 1976**, which is also called "mini-Constitution" because of the number and expanse of the changes introduced. The 42nd Amendment also added 'integrity' to the Constitution.

Socialist:

- **Indian Concept:** Emphasises **democratic socialism** by distributing resources fairly and permitting a **mixed economy** that includes both the public and private sectors. **Articles 38, 39, 43** are some of the Socialist principles in the Constitution.
- **Western Concept:** Socialism supports **government/collective ownership of the means of production** in order to achieve economic equality.

Secular:

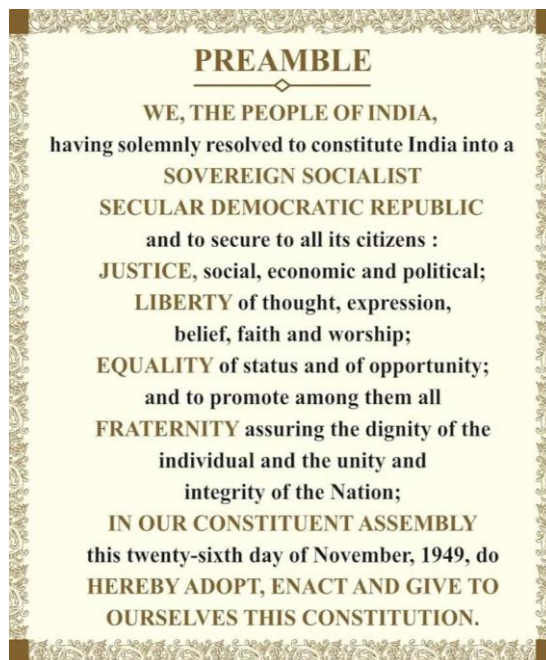
- **Indian Concept:** No strict division between religion and the state. It highlights the importance of the state in fostering religious harmony and the equal respect for all religions. This principle is enshrined in **Articles 14, 15, 16, 25, 26, 29 and 30** of the Constitution.
- **Western Concept:** Secularism primarily refers to the **absolute separation of religion and state.**

PROPERTY RIGHTS IN INDIA

Context: Restricting State Powers in Private Property Acquisition, a recent nine-judge Constitution Bench of the SC delivered a landmark judgment in Property Owners Association v. State of Maharashtra. The ruling overturned precedents set in State of Karnataka v. Ranganatha Reddy (1978) and Sanjeev Coke Manufacturing Company v. Bharat Coking Coal Ltd. (1983), which had permitted private properties to be classified as community resources.

Key Takeaways from the Property Owners Association Judgment

- **Scope of Article 39(b):** The Court clarified that private property cannot be arbitrarily deemed a "material resource of the community." Resources must meet specific criteria such as scarcity, public welfare impact, nature, and private concentration to qualify under Article 39(b).
- **Authority for Property Acquisition:** Article 39(b) does not grant legislative power for private property acquisition; this authority comes from the Doctrine of Eminent Domain and Entry 42 of the Concurrent List in the Constitution's Seventh Schedule. The Public Trust Doctrine mandates responsible resource management.
- **Limits of Eminent Domain Doctrine:** The Court scrutinized the broad application of the Doctrine of Eminent Domain, ruling that not all private property qualifies as a community resource for public welfare acquisition.



About Doctrine of Eminent Domain

- The Doctrine of Eminent Domain empowers governments to acquire private property for public purposes, balancing societal welfare with individual property rights.
- This authority is exercised at all levels of government, but it mandates fair compensation to the property owner.

Key Elements of Eminent Domain

- **Public Use:** Property can only be acquired for legitimate public purposes, such as roads, schools, or hospitals, with no viable alternatives.
- **Just Compensation:** Fair compensation, often at market value, must be provided to property owners to ensure balance between state authority and individual rights.
- **Legal Framework:** Enshrined in Article 300A of the Indian Constitution, the doctrine mandates that property deprivation must follow legal authority and include appropriate compensation.

About Public Trust Doctrine

- Public Trust Doctrine **safeguards natural resources by promoting responsible management for public benefit and environmental protection.** This principle has been recognized under Article 21 in landmark cases.

Key Features of the Public Trust Doctrine:

- **State as Trustee:** The State acts as a trustee, managing natural resources like forests, rivers, and wetlands for public benefit. It ensures sustainable use, preventing depletion or damage to these resources.
- **Case Law:** In *T.N. Godavarman v. Union of India*, the Supreme Court affirmed the State's duty to ensure sustainable resource management for public good.
- **Citizens as Beneficiaries:** Citizens are beneficiaries of this trust, with an obligation to use natural resources responsibly to ensure sustainability for future generations.

DIGITIZATION OF LAND RECORDS

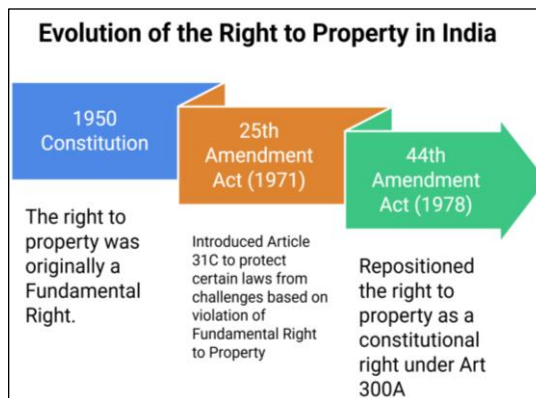
Context: The Union Minister of Rural Development recently announced that approximately 95% of land records in rural India have been digitized since 2016.

About Digital India Land Records Modernization Programme (DILRMP)

- **Launched:** Revamped in 2016 from the National Land Records Modernization Programme.
- **Ministry:** Implemented as a **Central Sector Scheme** under the **Department of Land Resources, Ministry of Rural Development.**
- **Objective:** To replace the traditional manual presumptive land-title system with a digital conclusive land titling system, ensuring greater accuracy and transparency in land ownership records.

Major Components of DILRMP

- **Computerization of Land Records:** Digitization of Record of Rights, cadastral maps, and integration of textual and spatial data with state-level data centers.
- **Computerization of Registration:** Modernizing Sub-Registrar Offices (SROs), linking SROs with Tehsils, and integrating registration with land records.
- **Survey/Resurvey:** Conducting surveys and updating settlement records.
- **Modern Record Rooms:** Establishing record management centers at the tehsil level.



- **Training & Capacity Building:** Setting up DILRMP Cells at training institutes for administrative and technical staff.
- **Project Management Unit:** Providing resources and infrastructure for effective implementation.
- **Revenue Court Management:** Computerizing revenue courts and integrating them with land records.
- **Aadhaar Integration:** Linking Aadhaar numbers with land records on a **voluntary basis**.

Extension: From 2021-22 to 2025-26, with the inclusion of two new components:

- **Computerization of Revenue Courts:** Digitizing all revenue court records and integrating them with land records.
- **Aadhaar Integration:** Consent-based linking of Aadhaar numbers with Records of Rights (RoR).

GRIEVANCE REDRESSAL ASSESSMENT INDEX

Context: Recently, Grievance Redressal Assessment and Index (GRAI) 2023 was launched.

About Grievance Redressal Assessment and Index:

- It was **conceptualized and designed by the Department of Administrative Reforms and Public Grievances (DARPG)** based on the recommendation of the Parliamentary Standing Committee of the Ministry of Personnel, Public Grievances and Pensions.
- **Objective:** To present organization-wise comparative pictures and provide valuable insights about strengths and areas of improvement regarding grievance redressal mechanism.
- The **first edition of GRAI 2022 was released on 21 June 2023**.
- **89 Central Ministries and Departments** were assessed and ranked based on a comprehensive index in the dimensions of **(1) Efficiency, (2) Feedback, (3) Domain and (4) Organisational Commitment** and corresponding **11 indicators**.

CIVIL REGISTRATION SYSTEM

Context: Union Home Minister recently launched the Civil Registration System (CRS) mobile application.

About Civil Registration System (CRS) Mobile App:

- It is designed to facilitate the registration of births and deaths across India. It was **developed by the Registrar General and Census Commissioner of India**.
- The new app will **allow citizens to register births or deaths at any time from any place in their state's official language**.

About Civil Registration System (CRS)

- The CRS is a framework established to ensure the continuous, permanent, and compulsory recording of vital events such as births, deaths, and stillbirths. It is governed by the Registration of Births and Deaths Act, 1969.
- The **Registration of Births and Deaths (Amendment) Act, 2023**, mandates digital registration of all births and deaths in India via a central portal from October 1, 2023.
- This **digital record** will serve as a **single document for verifying dates of birth for purposes like school admissions, government jobs, and marriage registration**.
- The centralized database will also help **update the National Population Register (NPR), ration cards, property records, and electoral rolls**.

NPR, first created in 2010 and updated in 2015, covers 119 crore residents and serves as a precursor to the National Register of Citizens under the Citizenship Act, 2019.

About Registrar General and Census Commissioner of India (RGCCI)

- It is an office **under the Ministry of Home Affairs**, responsible for conducting the decennial Census of India, compiling demographic and population statistics, and overseeing the CRS in the country.
- Established in **1961**, the RGCCI is a crucial body for policy-making, providing data that informs social, economic, and political decisions at all levels of government.
- The **Registrar General of India is the head of the Office of the Registrar General and Census Commissioner**.

JUSTICE SANJIV KHANNA TAKES OATH AS 51ST CHIEF JUSTICE OF INDIA (CJI)

Context: The Chief Justice of India (CJI) was sworn in during a ceremony at Rashtrapati Bhavan, with the oath of office administered by President Droupadi Murmu.

About Chief Justice of India (CJI)

- The **CJI is the head of the Supreme Court**, the highest judicial body in India.
- The CJI is **responsible for presiding over court** proceedings and administrative functions of the Supreme Court.
- Under **Article 124(2)** of the Constitution, every Supreme Court judge, including the **CJI**, is **appointed by the President** and serves until **reaching the age of 65 years**.

Appointment Process of CJI

- The **senior-most judge of the Supreme Court**, deemed fit for the role, is **typically appointed as CJI based on the recommendation of the outgoing CJI**.
- **Exceptions:** This convention was bypassed in **1964, 1973, and 1977**.
- **Procedure:** The Union Minister of Law & Justice seeks the outgoing CJI's recommendation. This recommendation is sent to the Prime Minister, who advises the President on the appointment.

Key Roles of the CJI

- **First Among Equals:** As per the Supreme Court ruling the CJI is the head of the judiciary but does not exercise superior judicial authority over other Supreme Court judges.
- **Master of the Roster:** The CJI holds the exclusive authority to constitute benches, including Constitution Benches, for hearing cases.
- **Collegium Head:** The CJI leads the Collegium responsible for judicial appointments and transfers in the higher judiciary (HC & SC)
- **Administrative Authority:** Under Article 146, the CJI or their designated officer oversees the appointment of officers and staff of the Supreme Court.

About the Collegium System

- The Collegium system recommends appointments and transfers of judges for the Supreme Court (SC) and High Courts (HCs).
- **Constitutional Basis:** Judges are appointed by the President after consultation with the Judges of the SC and of the HCs in the States, under Article 124 (for SC) and Article 217 (for HCs).
- **Collegium Composition**
 - **Supreme Court Appointments:** Composed of the CJI and the 4 senior-most SC judges.
 - **High Court Appointments:**
 - **At the SC level:** The CJI and 2 senior-most SC judges deliberate on HC appointments.
 - **At the HC level:** The Chief Justice of the HC and 2 senior HC judges give recommendations to SC Collegium.

DIGITAL PERSONAL DATA PROTECTION ACT, 2023

Context: The Union government released the draft Digital Personal Data Protection (DPDP) Rules, 2025 to enforce the provisions of the DPDP Act, 2023.

About the Digital Personal Data Protection Act, 2023 (DPDP Act)

- The DPDP Act is a parliamentary law that **regulates the processing of digital personal data**. The Act received presidential assent on August 11, 2023.
- It **recognizes individuals' rights to protect their personal data**, while also addressing the need to process data for lawful purposes.

Key Provisions

- **Applicability:**
 - The Act applies to the processing of digital personal data within India where such data is: (i) collected online, or (ii) collected offline and is digitised.

- It will also apply to the processing of personal data outside India if it is for offering goods or services in India.

- **Definition:**

- **Personal data** is defined as any data about an individual who is identifiable by or in relation to such data.
- **Processing** has been defined as wholly or partially automated operation or set of operations performed on digital personal data. It includes collection, storage, use, and sharing.

The Right to Privacy is a **fundamental right under Article 21**, affirmed by the Supreme Court in **Justice K.S. Puttaswamy (Retd.) vs. Union of India (2017)**.

- **Consent:**

- Data processing requires **lawful consent, with prior notice detailing collection and purpose**. Consent can be withdrawn anytime.
- No consent is needed for 'legitimate uses' including: (i) voluntary data provision, (ii) government benefits or services, (iii) medical emergencies, and (iv) employment.
- For minors (<18 years), consent is given by a parent or guardian.

- **Rights and Duties of Data Principal:**

- **Individuals whose data is being processed** (data principals) have the right to: (i) access processing details, (ii) correct or erase data, (iii) nominate a representative for rights in case of incapacity or death, and (iv) grievance redressal.
- They must not file false complaints or impersonate others. Violation of duties will be punishable with a penalty of up to Rs 10,000.

- **Obligations of Data Fiduciaries:**

- **Entities processing data** (data fiduciaries) must: (i) ensure data accuracy, (ii) implement security measures, (iii) report breaches to the Data Protection Board and affected individuals, and (iv) erase data once its purpose is fulfilled unless legally required.
- **Government entities are exempt from storage limitation and erasure obligations.**

- **Significant Data Fiduciaries:**

- Certain data fiduciaries may be designated as significant data fiduciaries. Certain factors must be taken into consideration such as: (i) volume and sensitivity of personal data processed, (ii) risks to the rights of data principals, (iii) security of the state, and (iv) public order.
- These entities will have certain additional obligations including: (i) appointing a data protection officer, and (ii) undertaking impact assessment and compliance audit.

- **Exemptions:**

- Certain rights and obligations (except data security) do not apply in cases like: (i) crime prevention and investigation, and (ii) legal claims enforcement.
- The central government may exempt activities related to state security, public order, research, archiving, and statistical purposes.

- **Children's Data:** Data fiduciaries must not process children's data in ways **harmful to their well-being** or engage in **tracking, behavioural monitoring, or targeted advertising**.

- **Cross-border transfer:** The Act allows the transfer of personal data outside India, except to countries restricted by the government through notification.

- **Data Protection Board of India:** The Board will **oversee compliance, impose penalties, address data breaches, and resolve grievances**. Members will serve two-year terms and will be eligible for re-appointment.

- **Penalties:** Offences attract fines up to: (i) Rs 200 crore for non-compliance regarding children's data, and (ii) Rs 250 crore for security failures leading to data breaches.

BLOOD MONEY (DIYA)

Context: The death sentence of a nurse by a Yemen court and efforts for her acquittal, involving monetary compensation to the victim's family, have reignited debates on 'blood money'.

What is Blood Money?

- Diya, or blood money, is a **legal concept in Islamic Sharia law, where a perpetrator must pay compensation to the victim or their family in cases of unintentional murder or culpable homicide.**
- It may also apply in murder cases **if the victim's family chooses not to seek retribution (qisas).**
- The purpose of diya is not to assign a monetary value to life but to ease the victim's family's suffering and compensate for financial losses.
- It is widely practiced in countries with Sharia-based legal systems.

Application and Legal Provisions in Islamic Countries

- Diya serves as a **legal alternative to capital punishment or imprisonment in certain cases.**
- However, it is important to note that even if diya is paid, the community and the state retains the right to impose further penalties as a deterrent.

India's Stance on Blood Money (Diya)

- The Indian legal system does not formally recognize diya. However, it offers an alternative mechanism called plea bargaining, introduced under the Criminal Law (Amendment) Act, 2005.
- **Plea Bargaining:** Plea bargaining allows an accused person to negotiate with the prosecution by pleading guilty in exchange for a reduced sentence or penalty. While it is not identical to blood money, it does provide a legal avenue where an offender may agree to compensate the victim.
- **Limitations of Plea Bargaining:** Unlike diya, which can apply to a wide range of cases, plea bargaining in India is subject to strict limitations:
 - Applicable only for offences punishable by **imprisonment of less than seven years.**
 - Cannot be used for **heinous crimes such as murder or rape.**
 - **Not available for crimes affecting socio-economic conditions or crimes against women or children under 14.**
 - May not be invoked if the accused has been previously convicted for a similar offence.
 - The accused must voluntarily agree to plea bargaining without coercion.

AD HOC JUDGES IN HIGH COURTS

Context: A SC Bench relaxed a rule set in 2021 order, which had limited ad hoc appointments to High Courts where judicial vacancies exceeded 20% of the sanctioned strength.

About Ad Hoc Judges of High Court

- Ad hoc Judges are **temporary judges appointed to a High Court to address specific judicial needs**, such as reducing case backlogs or filling vacancies when permanent judges are unavailable.
- **Constitutional Basis:** **Article 224A** of the Indian Constitution allows the Chief Justice of a High Court to appoint retired judges as temporary judges with the President's approval and the consent of the retired judge.
- **Appointment Procedure:** The process follows the Memorandum of Procedure (MoP) of 1998, which outlines the steps for appointing High Court judges:
 - **Chief Justice's Request:** The Chief Justice of the High Court identifies the need for a retired judge and seeks their consent.
 - **State Government Consultation:** After obtaining the judge's consent, the Chief Justice informs the Chief Minister about the proposed appointment and its duration. The Chief Minister consults the Governor and forwards the recommendation to the Union Minister of Law.
 - **Central Government Approval:** The Union Law Minister consults the Chief Justice of India (CJI) as per the prescribed procedure.
 - **Prime Minister's Advice:** Based on the CJI's recommendation, the Prime Minister advises the President on the appointment.
 - **Final Appointment:** Once the President approves, the Department of Justice issues an official notification of appointment.

- **Collegium Involvement:** Following the *Lok Prahari v. Union of India (2021)* case, recommendations must go through the Supreme Court collegium (CJI and two senior-most SC judges).
- **Initiation of Ad Hoc Appointment Process:** According to the 2021 Supreme Court ruling, the appointment process can only begin if:
 - More than 20% of sanctioned High Court judges' seats are vacant.
 - Over 10% of pending cases are older than five years.
 - The regular appointment process has already been initiated.
- **Selection Process:** The Court also recommended that each Chief Justice form a panel of retired judges, along with soon-to-retire judges, for potential ad-hoc appointments. **Intelligence Bureau (IB) verification is not required.**
- **Tenure and Role**
 - Ad hoc judges typically **serve for two to three years**, with two to five judges appointed based on backlog and vacancies.
 - They **cannot take up other legal work**, such as advisory, arbitration, or client representation.
 - Every high court can appoint ad-hoc judges between 2 to 5 in number, but not exceeding 10% of the sanctioned strength.
 - Ad-hoc judges will sit in a Bench presided over by a sitting high court judge and decide pending criminal appeals.
- **Emoluments and Allowances:** Ad hoc judges receive the same salary and allowances as a permanent judge of the High Court, excluding pension.
- **Previous Ad Hoc Appointments in High Courts:** Only three ad hoc judges have been appointed under Article 224A till date.

Ad Hoc Judges in the Supreme Court

- **Constitutional Basis (Article 127):** When the Supreme Court lacks quorum to hold or continue its sessions, the Chief Justice of India (CJI) can appoint a High Court judge as an ad hoc Supreme Court judge.
- **Appointment Process**
 - The CJI consults the Chief Justice of the High Court concerned.
 - Prior consent of the President is required.
 - The appointed judge must be qualified to serve as a Supreme Court judge.
- **Role and Powers**
 - The ad hoc judge must prioritize Supreme Court sittings over all other duties.
 - They enjoy the same jurisdiction, powers, and privileges as a permanent Supreme Court judge while serving.

ELECTORAL TRUSTS

Context: The recently released list of corporate donors under electoral bonds is being examined, though many have previously contributed large sums via electoral trusts.

About Electoral Trust (ET)

- An Electoral Trust (ET) is a **non-profit organization registered under the Companies Act, 1956**, specifically created **to receive donations** from individuals and companies **and distribute them to political parties**.
- At present, **19 electoral trusts are active in India**, with the Prudent Electoral Trust being the largest, having multiple corporate donors.

Legal Framework and Governance

- **Governing Laws**
 - Electoral Trusts are governed under the **Electoral Trusts Scheme, 2013, introduced by the Central Board of Direct Taxes (CBDT)**.

- Under this scheme, electoral trusts must be registered and approved by the CBDT before they can collect and distribute political donations.

May receive contributions from	Shall not accept contributions from
An individual who is a citizen of India	An individual who is not a citizen of India
A company registered in India	A foreign entity whether incorporated or not
A firm (resident in India)	Other Electoral Trusts (approved under the Electoral Trusts Scheme)
HUF (Indian residents)	Contributors without PAN
An association of persons (Indian residents)	NRIs without a passport number

- **Contributions and Eligible Donors**

- **Accepted Modes of Contribution:** To maintain transparency, all contributions to electoral trusts must be made via traceable methods such as: **Cheques, Bank drafts, Electronic transfers** and **Cash donations are strictly prohibited to prevent the use of unaccounted money.**

Fund Distribution and Restrictions

- **Mandatory Distribution of Contributions:**

- Electoral trusts must distribute at least 95% of the total voluntary contributions they receive in a financial year. This includes any unspent surplus from the previous year.
- For administrative expenses, a trust can retain only up to 5% of the total contributions or ₹3 lakhs, whichever is lower.

- **Restrictions on Usage:** Electoral Trusts cannot use funds for:

- Personal gains of their members or donors.
- Any activity other than distributing funds to political parties.
- Influencing electoral outcomes directly or indirectly.

- **Record-Keeping and Audits**

- Electoral Trusts must maintain records of donors, contributions, fund distribution, and expenses.
- They must submit an annual report to the Income Tax Commissioner, listing donors, contributions, and fund distribution to ensure transparency.\

THE NATIONAL ANTHEM CONTROVERSY

Context: The Tamil Nadu Governor walked out of the Assembly's opening session, citing the absence of the national anthem before his address.

National Anthem- Related Facts

- **Origin:** Written by **Rabindranath Tagore** in **Bengali** as *Bharoto Bhagyo Bidhata*, it was first sung at the **1911 Calcutta session** of the Indian National Congress (President- Pandit Bishan Narayan Dar)
- **Adoption: Declared as the National Anthem** in its Hindi version by the Constituent Assembly as the national anthem of India on **24 January 1950**. It was labelled 'National Anthem' by Netaji Subhas Chandra Bose for the first time during the meeting of the German-Indian Society in 1942.
- **Duration:** Official playing time is **52 seconds**. (A shortened version (20 seconds) is allowed on specific occasions.)
- **Translations:** Translated into English by Tagore in 1919 as *The Morning Song of India* and into Hindi-Urdu by Captain Abid Hasan Safrani as *Subh Sukh Chain*.
- The Prevention of Insults to National Honour Act, 1971, prescribes penalties for disrespecting the anthem.

Constitutional and Legal Provisions

- **Article 51(A)(a)** of the Constitution mandates citizens to respect the Constitution, national flag, and **national anthem**.
- The **Ministry of Home Affairs (MHA)** provides guidelines for playing the national anthem on specific occasions:
 - During civil and military investitures.
 - With the national salute for the President, Governor, or Lieutenant Governor.
 - During parades, regardless of dignitaries' presence.

- At the Beating Retreat Ceremony, concluding Republic Day celebrations.
- At formal State and government functions upon the President's arrival and departure.
- Before and after the President's address on All India Radio.
- At formal State functions for Governors or Lieutenant Governors upon arrival and departure.
- When the national flag is paraded.
- During regimental colour presentations.
- For naval colour hoisting ceremonies.
- **The full anthem with mass singing should be played:**
 - During the national flag unfurling at cultural or ceremonial events (excluding parades).
 - When the President arrives at or departs from government or public functions (excluding formal State and mess functions).
- **Court Precedent:** The Madras High Court ruled that playing the national anthem at official functions is customary, not mandatory.
- **Practice and Protocols**
 - Protocols for playing the national anthem vary across states and there is no uniform rule for playing the national anthem in all Legislative Assemblies.
 - In Parliament, the national anthem is played twice i.e., when the President arrives and leaves during the customary address at the Central Hall.

NEW STUDENT VISAS

Context: The Ministry of Home Affairs (MHA) recently introduced two special category visas E-Student Visa and E-Student-X Visa for international students intending to pursue higher education in the country.

Key Features and Process

- **Mandatory Registration:** Students must register on the SII portal and proceed with their visa applications only after receiving an admission offer from an SII partner institution.
- **Eligibility**
 - **Applicable for students admitted to full-time:** Undergraduate programs, Postgraduate programs, PhD programs, Other formal programs at recognized Indian institutions.
 - Eligible students apply for the e-student visa through the SII portal.
 - Dependents of these students qualify for the e-student-x visa.
- **Application Verification**
 - Visa applications are processed via indianvisaonline.gov.in.
 - Verification is done using the unique SII ID.
- **Visa Duration**
 - E-Student Visas are valid for up to five years, depending on the course length. They can be extended if needed.

Types of Visas

- **E-Student Visa:** For eligible international students registered on the SII portal.
- **E-Student-X Visa:** For dependents of e-student visa holders.

About Study in India (SII) Portal

- The SII Portal is a **Ministry of Education initiative** that collaborates with more than 160+ top Indian institutes like IITs, NITs, IISC, etc., that offer 2600+ diverse range of courses across multiple disciplines.
- Fields include engineering, management, sciences, arts, law, paramedical sciences, and specialized areas like Buddhist Studies and Yoga.
- Students can manage admissions, visa applications, and track progress using their unique SII ID.

NATIONAL YOUTH FESTIVAL (NYF)

Context: The NYF, held from January 10-12 at Bharat Mandapam, has been reimagined as the **Viksit Bharat Young Leaders Dialogue** for a transformative experience.

About National Youth Festival (NYF)

- The National Youth Festival (NYF) is organized under the 'Promotion of National Integration' component of the National Programme for Youth and Adolescent Development (NPYAD).
- It is held every year in January to commemorate the birth anniversary of Swami Vivekananda (January 12th), which is celebrated as National Youth Day.
- Since 1985, the Government of India has observed January 12th as National Youth Day, and the week following it as **National Youth Week**.
- NYF is organized **annually** from **January 12 to 16**.

Organizers and Participation

- The Ministry of Youth Affairs & Sports organizes the event in collaboration with a host State/UT.
- The expenditure is shared between the Central Government and the host State.
- Around 7,500 youth delegates from different States/UTs participate in NYF each year.

CENTRAL SUSPECT REGISTRY

Context: Since the launch of the online 'Central suspect registry', the Centre has declined six lakh fraudulent transactions and saved Rs 1,800 crore.

About Central Suspect Registry

- It is an initiative aimed at **strengthening fraud risk management by maintaining a registry of identifiers**.
- It was created on the **basis of the National Cybercrime Reporting Portal (NCRP)**.
- Contains data of 1.4 million cybercriminals linked to financial fraud and various cybercrimes.
- The Indian Cyber Crime Coordination Centre (I4C) has established the suspect registry in collaboration with banks and financial intermediaries.
- **Accessible** by States, UTs, Central Investigation, and Intelligence Agencies.

About Indian Cyber Crime Coordination Centre (I4C)

- **Established** under the **Ministry of Home Affairs (MHA)** to coordinate and comprehensively tackle cybercrime.
- I4C scheme was approved on 05th October 2018 and dedicated to the Nation on 10th January 2020.
- Aims to enhance coordination between law enforcement agencies & other stakeholders.
- **Headquarters:** New Delhi.
- **Functions of I4C:**
 - Acts as a nodal point in combating cybercrime.
 - Identifies research problems & supports R&D activities for developing new cyber forensic tools and technologies in collaboration with academia and research institutes in India and abroad.
 - Prevents misuse of cyberspace for advancing the objectives of extremist and terrorist groups.

Other Initiatives

- **Cyber Fraud Mitigation Centre (CFMC):** Established at **I4C**, CFMC unites banks, financial intermediaries, payment aggregators, telecom providers, IT firms, and law enforcement for swift action against **online financial crimes, promoting Cooperative Federalism** in law enforcement.
- **Samanvay Platform:** A **web-based module** serving as a one-stop portal for cybercrime data, sharing, crime mapping, analytics, and coordination among law enforcement agencies.
- **'Cyber Commandos' Program:** A specialized cyber force in **States/UTs and CPOs** to counter cyber threats and strengthen national digital security.

INTERNET GOVERNANCE INTERNSHIP AND CAPACITY BUILDING SCHEME

Context: Recently, the National Internet Exchange of India (NIXI) announced the launch of its Internet Governance Internship and Capacity Building Scheme.

About Internet Governance Internship and Capacity Building Scheme:

- This program **aims to build awareness and develop expertise in internet governance (IG) among Indian citizens**.

- It will **equip participants with the knowledge to effectively engage in global internet governance processes** with I-Star organisations like Internet Corporation for Assigned Names and Numbers (ICANN), Internet Society or Information Security Operations Center (ISOC), Institute of Electrical and Electronics Engineers (IEEE), Internet Engineering Task Force (IETF) and collaborate closely with leading experts in the field.

About NIXI (National Internet Exchange of India)

- The NIXI is a **non-profit organization established in 2003 under the Ministry of Electronics and Information Technology (MeitY)** to promote internet infrastructure in India.
- **Objective:** Improve internet infrastructure and promote internet governance in India.
- **Services Provided by NIXI:**
 - **Internet Exchange Points (IXPs):** Facilitates Internet Exchange Points for better internet infrastructure.
 - **IN Registry:** Manages .in domain digital identity.
 - **Indian Registry for Internet Names and Numbers (IRINN):** Allocates and manages IP addresses (IPv4/IPv6) and Autonomous System Numbers (ASNs) in India.
 - **Data Centre Services (NIXI-CSC):** Provides data storage services.

ENTITY LOCKER

Context: The National eGovernance Division (NeGD), under the **Ministry of Electronics and Information Technology (MeitY)** has developed Entity Locker.

About Entity Locker

- Entity Locker is a **digital document storage and verification platform designed specifically for corporate entities, organizations, and MSMEs.**
- It is an **extension of DigiLocker**, a key initiative under the Digital India campaign, which enables individuals and organizations to securely store, access, and share official documents electronically.

Key Features of Entity Locker:

- **Digital Storage & Verification:** Organizations can store and access important documents like registration certificates, tax returns, insurance documents, and bank statements in a secure digital format upto 10 GB. The platform ensures document authenticity by linking directly with government databases.
- **Entity Authentication:** Corporate entities are verified using identifiers such as Company Information Number (CIN), PAN, and Director Information Number (DIN) from the Ministry of Corporate Affairs (MCA21). MSMEs are authenticated using the Udyam registry maintained by the Ministry of Micro, Small, and Medium Enterprises.
- **Enterprise Vault:** A dedicated "Enterprise Vault" feature allows organizations to store and digitally sign documents such as audit reports, and board resolutions.
- **User Management:** The primary user (such as a company director or MSME proprietor) can delegate access to authorized personnel within the organization.
- **Paperless Governance:** Entity Locker reduces the reliance on physical paperwork, making business operations faster, more efficient, and more secure.

Applications

- Vendor Verification on procurement portals.
- Expedited Loan Applications for MSMEs.
- FSSAI Compliance Documentation for food businesses.
- Vendor Verification in GSTN, MCA, and tendering processes.
- Streamlined Corporate Annual Filings.

NATIONAL VOTERS DAY

Context: Election Commission of India celebrated 15th National Voters' Day on 25th January 2025. A short clip of the upcoming docu-drama series "India Decides" produced by Warner Bros Discovery was released at the event.

About National Voters Day:

- Celebrated annually on January 25 since 2011 **to mark the foundation day of the Election Commission of India (ECI) (established on January 25, 1950).**
- **Purpose:** Create electoral awareness among citizens. Encourage voter participation in the electoral process. Facilitate enrolment of newly eligible young voters.
- **Theme:** "Nothing Like Voting, I Vote for Sure".
- Across the country, new voters are honored and presented with their Elector Photo Identity Card (EPIC) during NVD ceremonies.

Global Examples of Voter Engagement

- **Australia:** Compulsory voting laws ensure high voter turnout
- **Estonia:** Fully digital voting system makes participation seamless
- **South Korea:** High-tech election management systems ensure accuracy and trust

LOKPAL AND LOKAYUKTA

Context: The Lokpal of India celebrated its first Foundation Day in January 2025.

About Lokpal

- The Lokpal is an independent **statutory body established under the Lokpal and Lokayuktas Act, 2013, to investigate and prosecute corruption cases involving public officials at the central level.** It acts as an **anti-corruption ombudsman for India.**
- **State Lokayuktas:** States must establish them within 365 days of the Act's enforcement.
- **Composition:** **Chairperson + up to 8 members** (50% judicial; 50% from SC/ ST/ OBC/ minorities/ women).
- **Term:** 5 years or till the age of 70 years.
- **Appointment:** By the **President** based on the recommendations of a Selection Committee
- **Selection Committee:** Includes PM, Lok Sabha Speaker, Leader of Opposition (or Leader of Largest Opposition Party), CJI (or nominee), and an eminent jurist.
- **Jurisdiction:** Covers PM, Ministers, MPs, and Group A-D officers in Central Government
 - **Exception:** Cannot probe the Prime Minister in cases related to international relations, security, public order, atomic energy, and space.

Powers & Functions

- Investigates corruption complaints against public servants.
- Supervises CBI investigations in cases referred by it.
- Has powers of a civil court under the Code of Civil Procedure, 1908 for inquiries.
- Can seize documents and order searches for investigations.
- Directs the Central Vigilance Commission (CVC) to take action on complaints.

DISHA SCHEME

Context: The "Hamara Samvidhan – Hamara Swabhiman" campaign was organized under the DISHA Scheme to commemorate the 75th anniversary of the Constitution and establishment of the Republic.

About DISHA Scheme

- The **Department of Justice**, under the Ministry of Law and Justice, launched the **DISHA (Designing Innovative Solutions for Holistic Access to Justice) Scheme** for a period of five- years (2021-2026), **to improve legal access and justice delivery mechanisms in India.**
- **Key Initiatives**
 - **Tele-Law:** Provides free legal aid via CSC centers using video conferencing.
 - **Nyaya Bandhu:** Institutionalizes Pro Bono Legal Services.
 - **Legal Literacy:** Promotes awareness programs nationwide.
 - **Nyaya Mitra:** Aids in disposing of 10-15 years old pending cases in High Courts and Subordinate Courts.

PAY COMMISSION

Context: The 8th Pay Commission has been approved to revise pay for employees and pensioners.

About Pay Commission

- A Pay Commission is a **body appointed by the Government of India periodically** to review and recommend changes in the salary structure of central government employees, including civilian and defense personnel.
- The **First Pay Commission was set up in 1946**. Since then, seven commissions have been formed.
- The 7th Pay Commission (2015) implemented major reforms in government salaries.

Key Functions

- **Salary Revision:** Evaluates existing pay scales, inflation, and cost of living to suggest revisions.
- **Allowances & Benefits:** Reviews and recommends modifications in allowances and other benefits.
- **Pay Structure Reform:** Introduces reforms like the pay matrix and grade pay system for uniformity.

POWER TO GRANT FURLOUGHS

Context: In the Hashimpura massacre case, convicts have challenged Delhi Prison Rules 2018, which restrict furloughs for prisoners with pending appeals.

About Furlough

- Furlough is a **temporary release granted to a convicted prisoner without any specific reason**, primarily aimed at ensuring rehabilitation, **maintaining family ties**, and encouraging good behavior.
- Unlike parole, **furlough is seen as a right, though not absolute**, and may be denied under specific conditions.
- Furlough and Parole are governed by the Section 59 of Prisons Act, 1894, and Section 473 of Bharatiya Nagarik Suraksha Sanhita (BNSS), 2023.

Aspect	Parole	Furlough
Purpose	Granted for specific reasons like medical emergencies, agriculture, or legal appeals.	Granted to prevent isolation , maintain family/social ties, and encourage good behavior.
Effect on Sentence	Sentence is suspended for the parole duration but remains intact.	Sentence continues to run, meaning the prisoner's total sentence duration is not extended .
Nature	Conditional release based on good behavior and absence of specific offenses.	Similar conditional release based on good conduct in prison.
Legal Right	Not a legal right ; authorities may deny parole even if criteria are met.	Considered closer to a right than parole but not absolute ; can be denied under specific conditions.
Applicable to	Typically granted in short-term sentences .	Given for long-term imprisonment after serving a minimum period.
Granting Authority	Divisional Commissioner	Deputy Inspector General of Prisons
Frequency	Can be granted multiple times.	Allowed only a limited number of times.
Denial Grounds	Generally granted if requirements are met.	Can be denied in the interest of society.
Supervision	May involve monitoring or supervision during release.	Minimal supervision, allowing prisoners a semblance of normalcy.

Key Considerations

- **State Variations:** **Prison administration is a State Subject**, leading to variations in implementation. Example: Maharashtra allows furlough as a right for some prisoners, while Uttar Pradesh imposes stricter conditions, especially for heinous crimes.

- **Supreme Court Precedents: *Asfaq vs. State of Rajasthan (2017)*:** Parole is a privilege, while furlough is a right (subject to conditions).
- **International Standards: *UN Nelson Mandela Rules (2015)*:** Emphasizes community ties in reducing recidivism (i.e. tendency of a convicted criminal to reoffend.)

DEVOLUTION INDEX REPORT

Context: The Ministry of Panchayati Raj has released a landmark report titled “Status of Devolution to Panchayats in States – An Indicative Evidence-Based Ranking.”

About the Report

- The report provides a **comprehensive evaluation of how effectively States have devolved powers, responsibilities, and resources to Panchayats**. It highlights achievements and areas requiring improvement, offering a roadmap for strengthening local governance.
- **Prepared by:** Indian Institute of Public Administration (IIPA)
- The **ranking system is based on a Panchayat Devolution Index (DI)**, which includes six key dimensions:

1. Framework: Legislative and institutional structure.	4. Functionaries: Availability of human resources.
2. Functions: Devolution of functional responsibilities.	5. Capacity Enhancement: Training and skill development.
3. Finances: Allocation of financial resources.	6. Accountability: Transparency and audit mechanisms.

- The Index specifically examines how ‘autonomous’ Panchayats are to make and implement independent decisions, reflecting the true spirit of **Article 243G of the Constitution**.
- This article empowers State legislatures to **devolve powers and responsibilities to Panchayats across 29 subjects listed in the Eleventh Schedule**.

Key Findings:

- **Improved Devolution:** Index score increased from 39.9% (2013-14) to 43.9% (2021-22).
- **Top States in Panchayat Devolution:** Karnataka, Kerala, Tamil Nadu

GYAN BHARATAM MISSION

Context: The Union Budget 2025-26 announced the launch of the Gyan Bharatam Mission, a special initiative for the survey, documentation, and conservation of India's manuscript heritage.

About Gyan Bharatam Mission:

- The mission aims to **cover over one crore manuscripts preserved in academic institutions, museums, libraries, and private collections across the country**.
- **Nodal Ministry:** Ministry of Culture
- **Objectives:**
 - Conduct a nationwide survey of manuscripts.
 - Document and digitize India's rich manuscript heritage.
 - Ensure the conservation and restoration of ancient texts.
- To address this, the budget allocation for **National Manuscripts Mission (NMM) has been significantly increased** from ₹3.5 crore to ₹60 crore to support the new initiative.
 - The NMM, also known as NAMAMI, is an initiative by the Government aimed at preserving and documenting India's vast collection of manuscripts.
 - Established in February 2003 by the Ministry of Tourism and Culture, it is currently under the Ministry of Culture and is managed through the **Indira Gandhi National Centre for the Arts (IGNCA) as its nodal agency**.

What is a Manuscript?

- A manuscript is a handwritten document on materials like paper, bark, palm leaf, cloth, or metal, dating back at least 75 years with scientific, historical, or aesthetic significance.

- **Distinct from Historical Records:** Unlike epigraphs, revenue records, or firmans (royal decrees), **manuscripts primarily focus on knowledge, philosophy, and literature, rather than direct historical events.** Indian manuscripts hold vast knowledge in Vedas, Upanishads, Ayurveda, astronomy, mathematics, and music. Texts like Charaka Samhita and Sushruta Samhita have significantly contributed to modern medicine and surgery.
- **Diverse Languages & Scripts:** Manuscripts exist in multiple Indian languages and scripts, including: Sanskrit (Devanagari, Grantha, Sharada), Tamil (Vatteluttu), Odia, Persian, Arabic, Prakrit, and more.
- **Notable examples:** *Tolkappiyam* (Tamil Grammar, 1st BCE) preserved ancient Dravidian linguistic heritage. Pali Canon Manuscripts are the oldest records of Buddha's teachings.
- **Exclusions:** Printed books and lithographs (prints made using lithography) are not considered manuscripts.

PRASHAD SCHEME

Context: A Parliamentary Standing Committee on Transport, Tourism, and Culture has expressed concerns over the slow progress of Spiritual Tourism Circuits under the Pilgrimage Rejuvenation and Spiritual Heritage Augmentation Drive (PRASHAD) scheme.

About PRASHAD scheme

- The **Ministry of Tourism** launched the scheme in **2014** as Pilgrimage Rejuvenation and Spiritual Augmentation Drive (**PRASAD**) to **preserve India's cultural heritage and promote spiritual tourism at designated pilgrimage sites.**
- In October 2017, it was redesignated as the **PRASHAD** scheme (**National Mission on Pilgrimage Rejuvenation and Spiritual Heritage Augmentation Drive**).
- Following the discontinuation of the HRIDAY scheme (run by the Ministry of Housing and Urban Development), the **development of heritage sites was integrated into the PRASHAD scheme.**
- The Ministry of Tourism has sanctioned 46 projects under its PRASHAD Scheme.

Key Features of PRASHAD Scheme

- **Central Sector Scheme:** The Ministry of Tourism provides 100% financial assistance to State Governments and Union Territories (UTs) for approved projects.
- **Public-Private Partnerships (PPP) & CSR Contributions:** The scheme promotes sustainability by encouraging funding through Corporate Social Responsibility (CSR) and PPP models.
- The **National Steering Committee (NSC)** steers the mission which is chaired by the Minister of Tourism.



STATE EMBLEM OF INDIA

Context: The Union Home Ministry has urged State Governments to prevent the misuse of the State Emblem of India, emphasizing that the Lion Capital of Ashoka must always include the motto "Satyameva Jayate" in Devanagari script.

Legal Framework Governing the Use of the State Emblem

1. State Emblem of India (Prohibition of Improper Use) Act, 2005

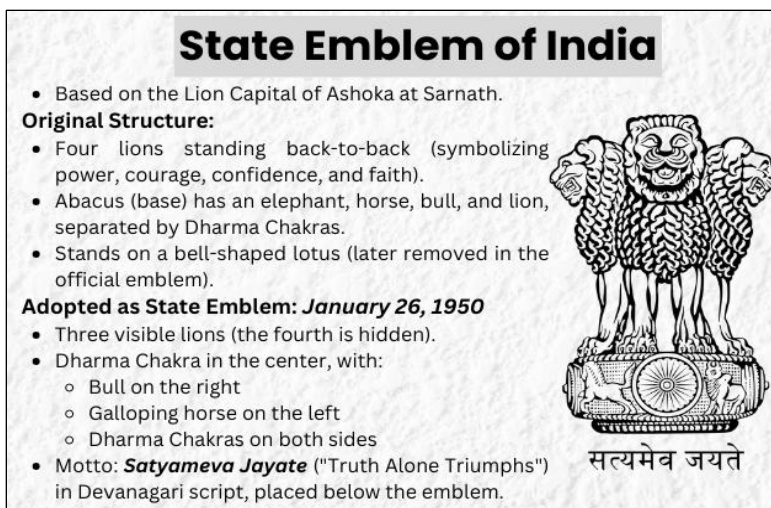
- **Objective:** Prohibits the misuse of the emblem for commercial or professional purposes.
- **Restrictions on Usage:** The emblem cannot be used without prior approval from the Central Government. Unauthorized use for trade, business, trademarks, patents, or advertisements is strictly prohibited.

- **Regulation by the Central Government:**

- Defines who can use the emblem, including constitutional authorities, government officials, and diplomatic missions.
- Controls emblem usage on stationery, official seals, government vehicles, public buildings, and military purposes.

2. State Emblem of India (Regulation of Use) Rules, 2007

- **Objective:** Regulates the proper use of the State Emblem of India in official seals, stationery, vehicles, and public buildings.
- **Design of Official Seal:** The emblem must be enclosed in an oval or round frame with the name of the Ministry/office inscribed between the rims.
- **Usage by States & UTs:** States/UTs can adopt the State Emblem of India as their official emblem without seeking Central Government approval. However, if a State/UT wishes to incorporate the emblem into their own emblem, prior Central Government approval is required.
- **Authorized Usage:** Only specified constitutional authorities (as per **Schedule I**) can use the emblem, including:
 - President, Prime Minister, Ministers, Governors, Judges of the Supreme Court & High Courts, and other government officials.
 - Permitted on government vehicles, public buildings (e.g., Rashtrapati Bhavan, Supreme Court, Parliament), and diplomatic missions abroad.
- **Restrictions on Use:** Unauthorized individuals, organizations, NGOs, universities, and private entities cannot use the emblem.
- **Prohibited uses:** Letterheads, badges, flags, commercial purposes, and private branding.
- **Special Permissions:** The emblem may be used for:
 - Government publications, currency, stamps, medals, identity cards, and educational purposes (as specified in **Schedule III**).
 - Joint use in government-sponsored events/publications requires prior approval.
 - **Penalties for Violation:** First-time offenders get imprisonment up to 2 years or a fine of ₹5,000, or both. Repeat offenders are penalised for minimum 6-month jail term and a fine.
- **Enforcement:** Prosecution requires **prior sanction from the Central Government**.
- **Rule-Making Power:** The Central Government has the authority to frame rules for regulating emblem usage, subject to Parliamentary approval.



NATIONAL YOUTH PARLIAMENT SCHEME (NYPS 2.0)

Context: The Minister of State for Parliamentary Affairs recently informed the Rajya Sabha about the NYPS 2.0, which aims to enhance youth engagement in democratic processes.

About National Youth Parliament Scheme (NYPS) 2.0

- The Ministry of Parliamentary Affairs launched the National Youth Parliament Scheme (NYPS) portal in November 2019 to extend the Youth Parliament Programme to all recognized educational institutions.
- The previous version was limited to students of recognized institutions, NYPS 2.0 (launched in 2024) is open to all citizens across the country regardless of economic status, gender, caste, etc.
- **Age Limit:** 18-25 years

- **Objectives of NYPS 2.0**

- Strengthening the roots of democracy by educating participants about parliamentary procedures, constitutional values, and governance.
- Promoting discipline, tolerance, and democratic values among young citizens.

Modes of Participation

- **Institutional Participation:** Schools, colleges, and universities can organize Youth Parliament sessions under two categories:
 - **Kishore Sabha** – For students in Classes VI to XII.
 - **Tarun Sabha** – For Undergraduate and Postgraduate students.
 - Institutions must register through the portal using the Aadhaar credentials of the Principal, Head, Registrar, or Dean, as prescribed.
- **Group Participation:** Groups of citizens can conduct Youth Parliament sessions by following the official guidelines available on the web portal.
- **Individual Participation:** Any citizen can participate by attempting a quiz on the theme “Bhartiya Democracy in Action” on the portal.

ARTICLE 371A

Context: A Meghalaya regional party proposed bringing the state under Article 371, citing Nagaland example, to lift the 2014 rat-hole mining ban.

About Article 371A

- Article 371A grants **special status to Nagaland**, ensuring autonomy in governance, lawmaking, and administration, particularly in preserving tribal customs, land rights, and regional governance.
- This Article was added by the **13th Constitutional Amendment Act of 1962**.
- Nagaland was carved out of Assam in 1963 following the 16-Point Agreement between the Naga People's Convention and the Government of India.

Key Provisions

1. Exemption from Parliamentary Laws

- The Acts of Parliament do not apply to Nagaland in the following areas **unless approved by the State Legislative Assembly**:
 - Religious and social practices of the Naga people.
 - Naga customary laws and procedures.
 - Administration of civil and criminal justice based on customary laws.
 - Ownership and transfer of land and its resources.

2. Governor's Special Responsibility for Law and Order and Finances

- The Governor has special powers over law and order in Nagaland as long as internal disturbances caused by hostile Naga factions persist.
- In such matters, the Governor acts independently, consulting the Council of Ministers, but his decision remains final. This special authority ceases when the President directs.
- The Governor ensures that Central Government funds allocated for a specific purpose are used accordingly and not diverted elsewhere in the State Legislative Assembly.

NATIONAL COMMISSION FOR SAFAI KARAMCHARIS (NCSK)

Context: The Union Cabinet has approved a three-year extension for the NCSK.

About National Commission for Safai Karamcharis (NCSK)

- The NCSK was established in **1994** under the **National Commission for Safai Karamcharis Act, 1993**, to improve the social and economic conditions of sanitation workers for a **three-year term** until March 31, 1997. The Act was later extended until March 2002 and again until February 2004 through amendments in 1997 and 2001.
- In **2004**, the Act lapsed, and since then, the Commission has operated as a **non-statutory body** under the **Ministry of Social Justice and Empowerment**, with its tenure periodically extended.

- **Structure of NCSK:** The Commission consists of—Chairperson, Vice-Chairperson, Five Members, including one woman and Secretary.

Legal Mandate of NCSK

Resolutions dated 02.03.2009 and 06.03.2013	Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013	Supreme Court Judgment (20.10.2023)
• Recommend programs to eliminate inequalities faced by Safai Karamcharis. • Monitor and evaluate schemes for their social and economic rehabilitation. • Investigate grievances related to non-implementation of laws, schemes, or welfare measures and take them up with authorities. • Assess working conditions, including health, safety, and wages, and suggest improvements. • Report to the government on issues affecting Safai Karamcharis. • Address matters referred by the Central Government.	• Monitor the implementation of the Act. • Investigate complaints of violations and recommend actions. • Advise governments on effective enforcement. • Take <i>suo motu</i> action on non-compliance. • Seek information from authorities on relevant matters.	• Compensation for sewer deaths increased to ₹30 lakhs (previously ₹10 lakhs). • Compensation for sewer-related disabilities: Minimum ₹10 lakhs. • Permanent disability rendering economic helplessness: Minimum ₹20 lakhs.

BHOPAL CRIMINALIZES BEGGING

Context: Bhopal has imposed a blanket ban on begging in public places, including a prohibition on giving alms reigniting debates over anti-begging laws.

Legal Status of Begging Across India

- **Bombay Prevention of Beggary Act, 1959**
 - Begging is criminalized in several states under this Act, which allows authorities to detain beggars and place them in institutions. The law has colonial roots in vagrancy laws.
 - The Act **defines begging** broadly, including soliciting alms, street performances, selling items for livelihood, or even appearing destitute.
 - In 2018, the **Delhi High Court (HC) decriminalized begging**, striking down parts of the Bombay Act as “**manifestly arbitrary**” and **violating Article 21** (Right to Life and Dignity). The court ruled that the state cannot criminalize begging while failing to provide basic necessities.
 - In 2021, the **Supreme Court (SC) rejected a PIL seeking the removal of beggars**, calling it an “elitist approach” to a socioeconomic issue.
- **‘Beggar-Free City’ Policies in States**
 - Despite the 2018 Delhi HC ruling, many states, including Maharashtra, continue to criminalize begging under similar laws. Several states have announced plans to make cities “begging-free”.
 - In 2020, the Union Ministry of Social Justice and Empowerment proposed a rehabilitation-focused campaign in ten cities, including Mumbai. However, the Beggary Act remains in force.

Article 23

Prohibits traffic in human beings, begar (forced labor without payment), and other forms of forced labor.

SMILE Scheme

- The SMILE Scheme (Support for Marginalized Individuals for Livelihood and Enterprise) was launched by the Ministry of Social Justice and Empowerment on February 12, 2022.
- It is an umbrella scheme that includes two sub-schemes: one for the comprehensive rehabilitation of transgender persons and another for persons engaged in begging.

- **Mental Healthcare Act, 2017**

- This Act provides for the care of homeless individuals with mental illnesses found wandering or begging. Instead of criminal punishment, it mandates medical care and rehabilitation.

NATIONAL GEOSPATIAL KNOWLEDGE BASED LAND SURVEY OF URBAN HABITATION

Context: The Ministry of Rural Development has launched the National Geospatial Knowledge-based Land Survey of Urban Habitations (NAKSHA) pilot program in Raisen, Madhya Pradesh.

About National Geospatial Knowledge-based Land Survey of Urban Habitations (NAKSHA)

- NAKSHA is a **city survey initiative launched under the Digital India Land Records Modernization Programme (DILRMP)**.
- It is **spearheaded by the Department of Land Resources (DoLR)**, under the Ministry of Rural Development.
- The initiative aims **to modernize urban land records by integrating aerial surveys (using drones), geospatial mapping, and advanced GIS technology to enhance land governance and urban planning**.
- The initiative was first announced in the Union Budget 2024 and reiterated in Budget 2025 as part of broader urban sector reforms.
- **Scope & Implementation:** NAKSHA is currently being implemented as a pilot project covering 152 Urban Local Bodies (ULBs) across 26 states and 3 Union Territories.
- **The cities selected meet two criteria:** area less than 35 sq km, and population less than 2 lakhs. The pilot will be completed in a year.
- **Central Sector Scheme:** 100% centrally funded, with an estimated cost of ₹194 crore.

DIGITAL BRAND IDENTITY MANUAL (DBIM)

Context: The Ministry of Electronics and Information Technology has recently launched the DBIM.

About Digital Brand Identity Manual (DBIM)

- The DBIM is an initiative launched by the Ministry of Electronics and Information Technology (MeitY) **to bring uniformity across government websites and digital platforms**.
- It aims **to create a consistent, user-friendly, and secure digital identity across all ministries, departments, and agencies in India**.

Key Components of DBIM

- **DBIM Toolkit:** A set of design guidelines, including color palettes, typography, and iconography, to maintain a uniform government web presence.
- **gov.in CMS Platform:** A centralized Content Management System (CMS) to improve website management and ensure compliance with DBIM standards.
- **Central Content Publishing System (CCPS):** A system for unified content governance across government ministries.
- **Social Media Campaign Guidelines:** Framework for consistent messaging on social media, government portals, and mobile apps.

Key Features of DBIM

- **Uniform Digital Presence:** Establishes guidelines for website design, typography, color schemes, and iconography to ensure consistency across government portals.
- **Enhanced Digital Governance:** Promotes AI-driven tools, cybersecurity measures, and automation for better service delivery.
- **Technological Integration:** Ensures that government platforms align with modern IT solutions, such as DigiLocker, Aadhaar, UPI, and ONDC.
- **Security & Innovation:** Strengthens cybersecurity frameworks while leveraging emerging technologies like blockchain and AI for a tamper-proof digital identity system.

NATIONAL DAM SAFETY AUTHORITY (NDSA)

Context: The SC recently directed a supervisory committee, led by the NDSA chief, to examine Tamil Nadu's concerns over Kerala's maintenance of the 125-year-old Mullaperiyar dam. Mullaperiyar dam is located on the confluence of the Mullayar and Periyar rivers in Kerala's Idukki district.

About National Dam Safety Authority (NDSA)

- The NDSA is a **statutory body** that regulates and inspects dams in India.
- It was established by the Central Government in 2021 in exercise of the powers conferred by Section 8(1) of the National Dam Safety Act, 2021. It is headquartered in New Delhi.
- It is headed by a chairman and assisted by five members to lead its five wings - policy and research, technical, regulation, disaster and resilience and administration and finance.

About National Dam Safety Act, 2021

- The Act provides a comprehensive framework for proper surveillance, inspection, operations and maintenance of all the large (specified) dams of the country for ensuring their safe functioning and to avoid dam failure related disasters.
- The Act also provides for an empowered institutional framework for dam safety both at the Centre and State and will also help in standardizing and improving dam safety practices across the country.

4-Tier Institutional Mechanism under Dam Safety Act, 2021

- **National Committee on Dam Safety (NCDS):** Apex advisory body; sets policies & reviews safety standards. (Head: Chairman, Central Water Commission)
- **National Dam Safety Authority (NDSA):** Regulator; implements policies, guidelines, and standards.
- **State Committee on Dam Safety (SCDS):** State-level advisory body; ensures dam safety compliance.
- **State Dam Safety Organization (SDSO):** Technical arm; conducts inspections & enforces safety

NDSA Functions

- Regulates & Oversees dam construction, maintenance, and operations nationwide.
- Sets Policies & Guidelines for dam safety management.
- Resolves Disputes between State Dam Safety Organisations (SDSOs) or between SDSOs and dam owners.
- Spreads Awareness through public education programs on dam safety.
- Ensures Emergency Preparedness for natural disasters and unforeseen events.

ELECTRONIC PERSONNEL LICENSE (EPL)

Context: Recently, the Civil Aviation Ministry launched the EPL for pilots, making India the second country after China to implement this digital system.

About Electronic Personnel License (EPL)

- The EPL is a **digital pilot licensing system introduced by India's Ministry of Civil Aviation**. It replaces traditional paper-based pilot licenses with a secure, real-time digital system, making licensing faster, safer, and more transparent.

Key Highlights of EPL

- **Fraud Prevention:** Reduces risks like the 2011 fake pilot license scandal by enabling real-time authentication.
- **Ease of Access:** Pilots can securely access their licenses via the **eGCA Mobile App**.
- **Global Compliance:** Aligns with **ICAO's Amendment 178**, which promotes electronic licensing for enhanced aviation security.

About International Civil Aviation Organization (ICAO)

- It is a **United Nations agency** that promotes safe and orderly international air travel.
- ICAO was established in **1947** and is headquartered in **Montreal, Canada**.

- It is established under the **Convention on International Civil Aviation**, commonly known as the **Chicago Convention of 1944**.
- **Structure:** Assembly (all Member States), Council (33 Member States), Air Navigation Commission, Secretariat .
- **Membership:** ICAO currently has 193 member states, with **India as its Council Member**.



Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)

- The CORSIA is a global market-based measure established by the ICAO in 2016. Its primary aim is to stabilize net CO2 emissions from international aviation at 2020 levels by offsetting any growth in emissions beyond this baseline.
- CORSIA applies only to international aviation emissions, excluding domestic flights, which are covered under the Paris Agreement and managed by the UNFCCC.

PRESIDENT'S RULE

Context: President's Rule has been imposed in Manipur under Article 356, after Chief Minister N. Biren Singh resigned from his post.

- **Emergency provisions**, inspired by the **German Constitution** and outlined in Part XVIII of the Indian Constitution, protect India's sovereignty, unity and security.
- The Constitution provides for three types of emergencies — National (Article 352), State (Article 356) and Financial (Article 360).

About President's Rule

Definition	President's Rule, also known as State Emergency or Constitutional Emergency, allows the central government to assume direct control over a state's governance under Article 356 of the Indian Constitution .
Purpose	Invoked during a constitutional breakdown or failure of governance at the state level due to political instability, a hung assembly, or a breakdown of law and order.
Constitutional Provisions	• Article 355: Obligation of the Union to safeguard states from external aggression and internal disturbances. • Article 356: Allows the President (union government) to take over state functions when the constitutional machinery fails. • Article 357: Declares that the Legislative powers of the State shall be exercisable by or under the authority of Parliament • Article 365: Specifies consequences if a state fails to comply with Union directives.
Grounds for Imposition	• Breakdown of constitutional machinery: The President is satisfied that the government of the state cannot be carried out according the Constitution (Article 356). • Failure to follow Centre's directions: When a state government fails to comply with or implement the directions issued by the Union government (Article 365).
Common Circumstances for Imposition	• Hung assembly with no majority. • The Ministry resigns, and no alternative government is feasible. • Disregard of constitutional directions. • Internal subversion or physical breakdown.
Parliamentary Approval & Duration	• Proclamation must be approved by both Houses of Parliament within two months. • Initially valid for six months, extendable up to three years with parliamentary approval every six months.

	- The 44th Amendment Act (1978) allows extension beyond one year only if: (a) A National Emergency is in force, or (b) The Election Commission certifies elections cannot be held. - The President can revoke the rule anytime without parliamentary approval.
Impact on Governance	- The President assumes executive powers, and the Governor administers the state on behalf of the President. - The State Legislature is suspended or dissolved, and its powers are exercised by Parliament. Parliament passes state bills and budgets. Such laws remain in force even after President's Rule ends unless altered or repealed. - The President can issue ordinances for the state when Parliament is not in session. - The High Court functions remain unaffected.
Supreme Court Judgments	S.R. Bommai vs Union of India (1994): President's Rule is subject to judicial review and can be challenged in court if misused. Rameshwar Prasad Case (2006): The Supreme Court ruled that the recommendation for President's Rule must be based on objective criteria, not political motives.

SASHAKT PANCHAYAT-NETRI ABHIYAN

Context: Ministry of Panchayati Raj (MoPR) launched "Sashakt Panchayat-Netri Abhiyan" at National Workshop of Women Elected Representatives of Panchayati Raj Institutions in New Delhi.

About Sashakt Panchayat-Netri Abhiyan

- It is a **national initiative** launched by the **MoPR** with the **goal of empowering Women Elected Representatives (WERs) of Panchayati Raj Institutions (PRIs)**.
- This initiative seeks to **enhance the leadership skills, decision-making capabilities, and governance role of women at the grassroots level**, thereby **strengthening local self-government across rural India**.

Elected Women Representatives (EWRs)

- The 73rd and 74th Constitutional Amendments, passed in 1992, made it **mandatory** to reserve **one-third (33%) of seats for women in Panchayati Raj Institutions (rural) and Urban Local Bodies**.
- Article 243D** ensures women's representation in Panchayati Raj Institutions.
- Article 243T** ensures the same in Urban Local Bodies.
- 21 states and 2 Union Territories have gone further by increasing this reservation to 50%.
- To strengthen women's role in politics further, the **Nari Shakti Vandan Adhiniyam ensures 33% reservation for women in the Lok Sabha and State Assemblies, which will come into force soon after the delimitation**.

Model Women-Friendly Gram Panchayats Initiative (MWFGP)

- The Ministry of Panchayati Raj recently organized the National Convention on MWFGP to promote inclusive and gender-sensitive governance at the village level.
- The MWFGP initiative seeks to **create at least one Model Gram Panchayat in every district that is friendly, safe, and empowering for women and girls**.

Waqf (AMENDMENT) ACT, 2025

Context: Parliament recently passed the Waqf (Amendment) Bill, 2025 which was re-introduced as UMEED (Unified Waqf Management, Empowerment, Efficiency, and Development) Act.

What is Waqf?

- Waqf is a **concept from Islamic tradition** that refers to a **permanent donation or endowment made by a Muslim for charitable or religious purposes**. This could include setting up a mosque, school, hospital, or any public welfare institution.
- A key feature of Waqf is that it is **inalienable** — meaning: It cannot be sold, gifted, or inherited. And, once the property is given as Waqf by the **donor** (called the **waqif**), it is considered to be dedicated to God.
- According to Islamic belief, since God is eternal, the Waqf property also becomes permanent and must always be used for the welfare of people as originally intended.
- As per data available in 2025, there are 8.72 lakh properties in India, covering an area of more than 38 lakh acres. Out of the 8.72 lakh properties, 4.02 lakhs are Waqf by user.

Waqf Structure

- **Wāqif**: The person who donates property for religious or charitable use.
- **Mawqūf ‘Alayh**: The beneficiaries who receive the benefits of the waqf.
- **Mutawalli**: The trustee who manages and maintains the waqf property.

Feature	Waqf Act, 1995	Waqf (Amendment) Act, 2025
Name of the Act	Waqf Act, 1995	Unified Waqf Management, Empowerment, Efficiency, and Development Act, 2025
Formation of Waqf	Allowed by declaration, user, or endowment (waqf-alal-aulad)	• Removed 'user'; only declaration or endowment allowed. • Donor must be a practicing Muslim (5+ years) and property owner. • Cannot deny inheritance to female heirs.
Government Property as Waqf	No clear rule	• Govt. property cannot be declared as Waqf. • Collector decides ownership disputes and reports to the state.
Power to Determine Waqf Property	The Waqf Board could inquire and determine Waqf property.	Power removed from the Waqf Board
Survey of Waqf	Conducted by survey commissioners	Conducted by District Collector; follows state revenue laws
Central Waqf Council	To advise the central and state governments and Waqf Boards. All members had to be Muslims, including two women	• Includes two non-Muslims. • MPs, judges, eminent persons can be non-Muslims. • Scholars, organisation reps, and two women must be Muslim
Waqf Board Composition	Elected members from Muslim MPs, MLAs, Bar Councils; at least two members must be women	• Two non-Muslim members • At least one member each from Shias, Sunnis, and Backward classes of Muslims • One member each from Bohra and Agakhani communities (if there is Waqf in the state) • Two Muslim members must be women.
Tribunal Composition	Headed by a judge + ADM-rank officer + Muslim law expert	• Muslim law expert removed. • Now includes a judge and joint secretary-level officer
Appeal on Tribunal Orders	Tribunal decisions were final; limited court appeals	Allows appeals in High Court within 90 days

Audits	States could audit Waqf accounts anytime	Centre can make rules and order audits via CAG or designated officer
Separate Waqf Boards by Sect	Separate boards allowed for Shia (if 15% share in Waqf)	Allows separate boards for Shia, Sunni, Bohra, and Agakhani sects

DRAMATIC PERFORMANCES ACT, 1876

Context: Recently, PM Modi referred to Dramatic Performances Act (DPA), 1876, which allowed the British government to prevent “scandalous, defamatory, seditious, or obscene” public performances.

About Dramatic Performances Act (DPA), 1876

- The DPA was a colonial law passed by the British government in India after the visit of the **Prince of Wales to India in 1875-76**, during a time when nationalist plays and public performances were becoming popular.
- A major reason behind the Act was the **impact of the play “Nil Darpan”** (The Indigo Mirror) written by **Dinabandhu Mitra** in 1860. This powerful drama exposed the abuse of Indian farmers by British indigo planters, which stirred strong emotions among the Indian public.

The DPA was not the only repressive law during British rule. It was introduced alongside:

- **The Vernacular Press Act, 1878:** Introduced by Viceroy Lord Lytton, this law targeted newspapers in Indian languages. It forced publishers to get licenses, deposit money, and allowed the government to seize printed material critical of British rule.
- **The Sedition Law (Section 124A of the Indian Penal Code), 1870:** This law made it a crime to try to create hatred or disaffection against the British government. Even peaceful criticism could be punished under this section.
- The Act was designed to prevent public performances (like plays or dramas) that were considered: Scandalous, defamatory, seditious, or obscene.
- Its **main goal was to control the spread of nationalist ideas and maintain the British colonial hold over India.**
- Performances during religious festivals, like Jatras, were not covered under this Act.

Repeal of the Law

- The law was formally repealed in 2018 as part of an exercise to weed out obsolete laws. However, the Dramatic Performance Act had not been a “valid law” since at least 1956.
- On May 10, 1956, in *State versus Baboo Lal And Ors*, the Allahabad High Court ruled that the law was inconsistent with the Constitution of India.
- While DPA was repealed, film censorship & artistic restrictions continue today under: **Cinematograph Act, 1952** governing film certification in India and **IT Rules, 2021** which regulate digital content & OTT platforms.

Article 372 of the Constitution

Article 372 of the Constitution states that **laws in operation at the time of Independence would continue to be in operation.**

- However, **colonial laws do not enjoy the presumption of constitutionality** – which means that when a colonial law is challenged, the government must defend the law for it to be valid.
- Laws **enacted by the Parliament of India are deemed constitutional** unless declared otherwise. It means that when challenged in court, the onus is on the petitioner to prove that the legislation violates the Constitution.

INDIA'S HABITUAL OFFENDER LAWS

Context: The Government has revealed in Parliament that laws which declare a section of criminals as “habitual offenders” continue to operate in as many as 14 States and UTs.

About Habitual Offender Laws

- The **idea of labeling communities as criminals began under British rule with Regulation XXII of 1793**, which allowed punishment based on suspicion.
- This led to the **Criminal Tribes Act (CTA) of 1871**, which declared entire communities as “**criminal by birth**.” By 1924, the Act covered all of colonial India.
- After Independence, the **CTA was repealed in 1952**, and **affected groups were renamed Denotified, Nomadic, and Semi-Nomadic Tribes (DNT, NT, SNT)**.
- However, states soon introduced Habitual Offender laws, **shifting focus from communities to individuals with repeated convictions**.
- Despite this change, stigma remained. Reports like the Lokur Committee (1965) continued to describe denotified tribes as having an “anti-social heritage.”
- Several official reports—including the **B.S. Renke Commission (2008)** and **Xaxa Committee (2014)**—affirmed that despite legal denotification, stigma persisted through habitual offender laws.
- In 2007, the UN Committee on the Elimination of Racial Discrimination called for their repeal.
- In October 2024, the Supreme Court urged states to reassess the need for Habitual Offender Laws, stating that entire communities should not be labelled as habitual offenders.

Crimes Under the Habitual Offender Tag

- State laws define habitual offenders based on prior convictions for specific offences, including: Being a thug, Belonging to a gang of dacoits, Living on the earnings of prostitution, Various forms of “lurking”
- These laws typically involve maintaining registers of such offenders, which continue to echo the registration practices under the CTA.
- According to NCRB 2022, 1.9% of India's convicts were labelled as habitual offenders—Delhi recorded the highest share at 21.5%.

D-VOTER

Context: Assam's opposition parties raised concerns over the condition of 'D' (Doubtful) voters, and demanded the closure of the state's only detention centre (now called a transit camp).

Who are D-Voters (Doubtful Voters)?

- D-Voters (Doubtful Voters) are individuals in Assam unable to prove their Indian nationality whose citizenship status is under scrutiny, leading to their **temporary disenfranchisement until their nationality is verified**.
- Their cases are either pending with the Foreigners Tribunals or they have been declared foreigners.
- Assam has witnessed large-scale migration, especially from East Pakistan (now Bangladesh), leading to concerns over demographic changes and identity politics.
- This category was introduced by the Election Commission of India (ECI) in 1997.
- The term 'D-Voter' is not defined in the Citizenship Act, 1955, or the Citizenship Rules, 2003.

Can a "D" voter apply for NRC Inclusion?

- Yes, “D” voters can apply for NRC inclusion, but their names will be added only after clearance from the **Foreigners Tribunal** (quasi-judicial bodies established under the Foreigners (Tribunals) Order, 1964) and removal from the Electoral Roll as D-voters.

(For More Information on Foreigner Tribunal, refer to Prelims Quick Revision Part 1- Page 40)

PRATIBIMB MODULE

Context: Recently the Lok Sabha was informed that the 'Pratibimb' module has led to 6,046 arrests, 17,185 linkages, and 36,296 cyber investigation requests.

About 'Pratibimb' Module

- The module is a technological initiative launched by the **Indian Cyber Crime Coordination Centre (I4C)** under the **Union Ministry of Home Affairs**.

- Its primary purpose is **to strengthen cybercrime investigation by mapping the locations of criminals and their infrastructure across the country.**
- This tool provides real-time visibility to jurisdictional law enforcement officers, enabling swift and informed action.
- The module also acts as a coordination platform, allowing Law Enforcement Agencies (**LEAs**) to **seek and receive techno-legal assistance from I4C** and subject matter experts.

Samanvaya Module

- It is a Management Information System(MIS) platform, data repository and a coordination platform for LEAs for cybercrime data sharing and analytics.
- It provides analytics based interstate linkages of crimes and criminals, involved in cybercrime complaints in various States/UTs.

AADHAAR GOOD GOVERNANCE PORTAL

Context: The Ministry of Electronics and Information Technology (**MeitY**) has launched the Aadhaar Good Governance Portal to streamline the approval process for Aadhaar authentication.

Aadhaar Good Governance Portal

- The online platform *swik.meity.gov.in*, also known as the Aadhaar Good Governance Portal, has been launched **to strengthen transparency, innovation, and service delivery in public governance.**
- This portal has been **developed in line with the Aadhaar Authentication for Good Governance (Social Welfare, Innovation, Knowledge) Amendment Rules, 2025**, which were notified in January 2025 under the Aadhaar (Targeted Delivery of Financial and Other Subsidies, Benefits and Services) Act, 2016.
- This Portal is a digital platform to facilitate the Ministries / Departments of Central Government and State Governments for online submission of proposals under Aadhaar Authentication for Good Governance (Social Welfare, Innovation, Knowledge) Rules, 2020.
- **Both government and private entities can now use Aadhaar authentication for public services** like innovation, knowledge sharing, and improving access to essential services.
- This will help citizens access services across sectors such as healthcare, education, e-commerce, and hospitality more easily. Service providers will also benefit from Aadhaar authentication for tasks such as staff attendance, customer onboarding, and e-KYC verification.

NATIONAL E-VIDHAN APPLICATION (NEVA)

Context: Delhi has recently become the 28th legislature to adopt the National e-Vidhan Application (NeVA) platform.

What is the National e-Vidhan Application (NeVA)?

- The NeVA is a **member-centric and device-neutral digital platform** developed under the guidance of the **Ministry of Parliamentary Affairs (MoPA)**.
- It enables paperless, smooth, and efficient functioning of legislative proceedings for both the Chair and Members of the House.
- It aims **to digitalise the legislative processes of all State and Union Territory Assemblies**, in line with the vision of 'One Nation, One Application'.
- **Nagaland became the first state to implement NeVA completely.**
- **Objective:** To digitize legislative procedures, making them more efficient, accessible, and sustainable across states and UT assemblies.

Key Features of NeVA

- Legislators and ministers can access House business, submit questions, and manage replies via smartphones and tablets.
- Enables digital coordination among departments, promoting wider adoption of tech-driven governance. Hosted on **Meghraj 2.0** to ensure secure, reliable, and disaster-resilient operations.

- Accessible to legislators, staff, officials, media, and citizens, improving communication and transparency.
- Reduces paper use by providing real-time digital access to legislative documents.
- Supports multiple languages to reflect India's linguistic diversity.
- Integrates with **DigiLocker**, **National Judicial Data Grid**, and **MyGov** for better governance and public feedback.

Sansad Bhashini

- The Lok Sabha Secretariat and the Ministry of Electronics and Information Technology (MeitY) have signed a MoU to develop the Sansad Bhashini Initiative.
- Sansad Bhashini is an innovative platform that uses Artificial Intelligence (AI) and Natural Language Processing (NLP) to enhance multilingual support, improve access to parliamentary records, and streamline legislative procedures.

COMPTROLLER AND AUDITOR GENERAL (CAG)

Context: CAG published a report on Prevention and Mitigation of Vehicular Air Pollution in Delhi.

About Comptroller and Auditor General (CAG) of India

- CAG heads Indian Audit and Accounts Department (IAAD) and ensures financial accountability by auditing government expenditures.
- Established under **Article 148**, the CAG safeguards public funds and monitors financial transactions at the central and state levels. It is the Supreme Audit Institution of India.
- Powers are defined by the **Comptroller and Auditor-General's (Duties, Powers and Conditions of Service) Act, 1971**, with amendments in 1976, 1984, 1987 and 1994.

Appointment and Tenure of CAG

- **Appointment:** by the President of India through a warrant under his hand and seal.
- **Term:** Six years or until 65 years of age, whichever is earlier.
- **Removal:** Requires a special majority resolution in both Houses of Parliament, similar to the removal of a Supreme Court judge.
- **Resignation:** Can resign by submitting a letter to the President.
- **Post-Tenure Restrictions:** Cannot hold any government office after completing tenure.
- **Salary and Expenses:** The Parliament determines the CAG's salary and service conditions, which cannot be altered to his disadvantage after appointment. They are equal to a Supreme Court judge. The Second Schedule outlines his emoluments, allowances, and privileges.
- **No Ministerial Oversight:** No minister can represent the CAG in Parliament or be responsible for its actions.

Constitutional Provisions Related to CAG

- **Article 148:** Appointment, term, and conditions of service.
- **Article 149:** Duties and powers related to auditing government accounts.
- **Article 150:** Government accounts to be maintained as per the President's directions, based on the CAG's advice.
- **Article 151:** Audit reports must be presented in Parliament and State Legislatures.
- **Article 279:** Authority to certify "net proceeds" of taxes and duties.
- **Sixth Schedule:** Audits the accounts of District and Regional Councils.

Duties and Powers of the CAG

- **Expenditure Audit:** Reviews spending from the Consolidated Fund, Contingency Fund, and Public Account of India, states, and union territories.
- **Government Accounts Audit:** Examines profit and loss statements, balance sheets, and subsidiary accounts of Central and state government departments.
- **Revenue & Expenditure Procedures:** Ensures proper assessment, collection, and allocation of funds as per established rules.

- **Government-Funded Bodies Audit:** Checks finances of government-backed authorities, companies, and corporations as required by law. Audits organizations receiving significant government grants (₹25 lakh or more and at least 75% of their total funding). If funding exceeds ₹1 crore, CAG may audit with presidential or governor's approval.
- **Financial Transactions Audit:** Scrutinizes transactions related to debt, sinking funds, deposits, advances, and remittances.
- **Other Authorities Audit:** Audits local bodies and other entities when requested by the President or Governor.
- **Reporting:** Submits reports to the President, which are then reviewed by Parliament and the Public Accounts Committee (PAC).
- **Accounting:** The CAG is also responsible for compiling and maintaining the accounts of state governments. However, since 1976, it has been relieved of its duty to compile and maintain accounts for the Central Government due to the departmentalization of accounts, which separated the accounting function from auditing. Except the State of Goa, where accounts compilation is not with the C&AG, in all other States, accounts compilation remains the responsibility of the C&AG.

CAG in India vs. CAG in the UK

- **India:** Functions only as an Auditor-General and does not control fund disbursement.
- **UK:** Acts as both Comptroller and Auditor-General, exercising control over fund releases.

CAG's International Audit Roles

- **IAEA (2022-2027):** Audits the International Atomic Energy Agency for nuclear safety.
- **FAO (2020-2025):** Audits the Food and Agriculture Organization, ensuring global food security.

Clarification: CAN PARTIES BE DE-RECOGNISED OR DE-REGISTERED? (PQR 2025 Part 1 Page 16)

Benefits for Registered Political Parties

- Tax exemption for donations received under Section 13A of the Income Tax Act, 1961
- Registered political parties can become State or National Parties if they meet conditions under the Election Symbols (Reservation and Allotment) Order, 1968.
- Registered unrecognized parties can nominate up to 20 Star campaigners. Star campaigner travel expenses aren't added to a candidate's election expenses.

SOCIAL ISSUES

ONE-STOP CENTRES FOR INDIAN WOMEN ABROAD

Context: The Ministry of External Affairs (MEA) recently received approval from the Ministry of Women and Child Development to establish nine One-Stop Centres (OSCs) abroad.

- **Objective:** To provide comprehensive support to women in vulnerable situations to act as a first point of contact.
- **Locations:**
 - **With Shelter Homes:** Seven OSCs to be set up in Bahrain, Kuwait, Oman, Qatar, UAE, and Saudi Arabia (Jeddah and Riyadh).
 - **Without Shelter Homes:** Two OSCs in Toronto and Singapore.

Role of Indian Community Welfare Fund (ICWF)

- The "Indian Community Welfare Fund" (ICWF) is a fund established by the Ministry of External Affairs, Government of India in 2009.
- The fund is maintained by contributions from the Indian government and is used to provide necessary support to eligible overseas Indians.
- Assistance is provided on a "means-tested basis," meaning the applicant's financial situation is evaluated to determine if they qualify for support.
- Ordinarily, only such Indian National(s) who have entered the host country legally shall be eligible to receive benefits under this Fund.
- In 2017, the mandate of the fund was extended to provide emergency assistance for- Boarding and lodging for stranded individuals, repatriation of mortal remains, financial aid for air travel etc.

About One Stop Centre (OSC) Scheme

- A Centrally Sponsored Scheme under the Ministry of Women and Child Development (MWCD) to support women facing violence. It was implemented from 1st April 2015.
- It is part of Mission Shakti program, which aims to empower and keep women safe.
- **Objectives:** Provides integrated support—medical, legal, psychological, and counseling services—under one roof for women affected by violence.
- **Target Group:** Supports all women, including girls under 18 years. For minors, OSCs are linked to institutions under Juvenile Justice Act, 2000, and POCSO Act, 2012.
- **Funding:** 100% funded by the Nirbhaya Fund from the Central Government.
- **Administration:** Managed by the District Collector/District Magistrate.
- **Services Provided:** Emergency response, medical aid, legal support, counseling, assistance in lodging FIR/NCR/DIR, shelter, and video conferencing facilities.

BAL VIVAH MUKT BHARAT CAMPAIGN LAUNCHED

Context: The Union Minister for Women and Child Development has launched the 'Bal Vivah Mukta Bharat' campaign, urging citizens to actively oppose child marriage.

About the Campaign

- This initiative is a collaborative effort between the Ministry of Women and Child Development and various other ministries.
- **Focus Areas:** Targets seven states with a high prevalence of child marriage and nearly 300 high-burden districts.
- **Collaborative Approach:** Calls upon all States and Union Territories to create an action plan to reduce child marriage rates below 5% by 2029.
- **Child Marriage Free Bharat Portal:** A digital platform allowing citizens to report child marriages, file complaints, and access information on Child Marriage Prohibition Officers (CMPOs).

Status of Child Marriage in India

- **Reduction Over Time:** As per NFHS-5, child marriage declined from 47.4% in 2005–06 to 23.3% in 2019–21.
- **Economic Disparity:** 40% of females in the lowest wealth quintile were married before 18, compared to 8% in the highest quintile.
- **States with High Prevalence:** West Bengal, Bihar, Tripura, Jharkhand, Assam, Andhra Pradesh, Rajasthan, and Telangana.

NO DETENTION POLICY

Context: The Ministry of Education has removed the 'No Detention Policy' for Classes 5 and 8 under the Right of Children to Free and Compulsory Education (RTE) (Amendment) Rules, 2024.

Background of the No Detention Policy

- The Right to Education (RTE) Act, 2009, under **Section 16**, prohibited schools from holding back or expelling students until the completion of elementary education (Class 8).
- The policy aimed to reduce dropout rates, ensuring continuous promotion. However, concerns over declining learning outcomes and student motivation led to its abolition in 2019.

Key Features of the New Policy

- **Repeal of No Detention:** Schools can now fail students who do not meet the promotion criteria in Classes 5 and 8.
- **Remedial Measures:** Students who fail will receive additional instruction. A re-examination will be conducted within two months of the result declaration.
- **No Expulsion Rule:** Despite the removal of no detention, **no child can be expelled from school until they complete elementary education (Class 8).**
- **State-Level Implementation:** Since **Education is a Concurrent subject**, 16 states and 2 Union Territories (including Delhi) have already adopted this revised policy in their respective school systems. (as of December 2024)

About the Right to Education (RTE) Act, 2009

- Introduced under the **86th Constitutional Amendment Act 2002**, it made free and compulsory education a **fundamental right under Article 21A** for children aged 6-14 years.
- **Government Schools:** Must provide free education to all children. Managed by School Management Committees (SMCs) to ensure accountability.
- **Private Schools:** Required to reserve 25% of their seats for children from economically weaker sections (EWS).
- The RTE Act lays down essential norms regarding infrastructure, pupil-teacher ratios, and the qualifications required for teachers.

CHILDREN LACKING MINIMUM DIETARY DIVERSITY

Context: A study found that 77% of children aged 6-23 months in India lack minimum dietary diversity.

About Minimum Dietary Diversity (MDD):

- The MDD is the **percentage of children aged 6–23 months who consume at least five out of eight food groups in a day**. The eight food groups are: Breast Milk, Grains, Legumes, Dairy products, Flesh foods, Eggs, Fruits and Vegetables.
- Failure to include foods from at least five groups is termed Minimum Dietary Diversity Failure (MDDF).
- The MDD is part of the World Health Organization (WHO) and UNICEF's infant and young child feeding (IYCF) practices. It is also a component of the Minimum Acceptable Diet (MAD) indicator.

ASER (RURAL) 2024

Context: After a prolonged decline due to learning losses during the COVID-19 pandemic, there has now been a modest recovery in foundational literacy and numeracy (FLN) among school students, according to the ASER 2024, released recently.

What is the Annual Status of Education Report (ASER)?

- ASER is an **annual citizen-led survey** that provides reliable estimates of children's schooling and learning levels in rural India.
- It is published by **Pratham**, an NGO, and has been conducted every year since 2005.

Survey Methodology

- ASER follows a **household-based survey approach** instead of a school-based one.
- This ensures inclusion of all children, including:
 - Those who never attended school or dropped out.
 - Those in government, private, religious, or other types of schools.
 - Those absent from school on the day of assessment.
- Since 2016, ASER follows an alternate-year model:
 - The 'basic' ASER survey (conducted in all rural districts) happens every two years.
 - In the gap years, a smaller survey (1-2 districts per state) focuses on other age groups and domains.
- **Key Parameters Tracked:** Schooling status is recorded for children in the age group of 3-16, and children in the age group of 5-16 are tested on their ability to read simple text and do basic arithmetic.

Major Highlights of ASER 2024

- **Government School Enrollment:** Increased from **65.6% (2018)** → **72.9% (2022)** due to the pandemic but declined to **66.8% in 2024**.
- **Private School Enrollment:** Increased from **18.7% (2006)** → **30.8% (2014)** and remains steady at ~30% post-pandemic.

NATIONAL HEALTH MISSION (NHM)

Context: The NHM has played a crucial role in enhancing India's public health by significantly reducing maternal mortality, tuberculosis (TB), and sickle cell anemia

- **Launch:** NHM was introduced by the Government of India in 2013, integrating two previous initiatives—the **National Rural Health Mission (NRHM) (launched in 2005)** and the **National Urban Health Mission (NUHM) (launched in 2012)**.
- **Key Components:**
 - Health System Strengthening
 - Reproductive, Maternal, Neonatal, Child, and Adolescent Health (RMNCH+A)
 - Prevention and Control of Communicable & Non-Communicable Diseases
 - Infrastructure Maintenance
- **Objective:** To **ensure universal access to high-quality, affordable, and equitable healthcare services** that are accountable and responsive to the needs of the population.
- **Governance:** The mission is led by a **Mission Director** and monitored by National Level Monitors appointed by the Government of India.

NATIONAL ORGAN AND TISSUE TRANSPLANT ORGANIZATION (NOTTO)

Context: Central government employees who donate organs will receive 42 days of special casual leave to cover hospitalization and recovery, as announced by the NOTTO.

About NOTTO

- NOTTO is a national-level organization under the Directorate General of Health Services, Ministry of Health and Family Welfare, Government of India.
- It is the apex body responsible **for implementing the National Organ Transplant Program (NOTP)**.
- It functions under the **Transplantation of Human Organs and Tissues Act (THOTA), 1994**.
- NOTTO manages the national registry of organ and tissue donors and recipients and ensures an efficient and organized system for organ procurement and distribution across India.

Presently, **India ranks third in the world in terms of Organ Transplantation** and second in terms of Corneal Transplantation.

Divisions of NOTTO

- **National Human Organ and Tissue Removal and Storage Network**

- Acts as the apex coordinating body for organ and tissue procurement and distribution in India.
- Maintains a national registry for organ and tissue donations and transplants.
- Mandated under the Transplantation of Human Organs (Amendment) Act, 2011.

- **National Biomaterial Centre (National Tissue Bank)**

- Established under the Transplantation of Human Organs (Amendment) Act, 2011.
- Aims to bridge the gap between demand and supply of tissues, ensuring quality assurance.

SAMAGRA SHIKSHA SCHEME

Context: The Union Government has withheld Samagra Shiksha funds from Tamil Nadu due to the its refusal to join PM SHRI scheme, citing its opposition to the implementation of the NEP 2020.

About Samagra Shiksha

- The Samagra Shiksha Scheme was **launched in 2018-19** by the **Ministry of Education** as an **integrated program for the school education sector, covering pre-primary to Class 12**.
- It **aims to provide holistic, inclusive, and equitable quality education** while improving learning outcomes. The scheme **aligns with Sustainable Development Goal (SDG) 4**, which emphasizes universal access to quality education.
- The scheme not only provides support for the implementation of the **Right of Children to Free and Compulsory Education Act, 2009** but has also been aligned with the recommendations of **National Education Policy (NEP) 2020**.
- It subsumes three earlier schemes—
 - **Sarva Shiksha Abhiyan (SSA)** (elementary education)
 - **Rashtriya Madhyamik Shiksha Abhiyan (RMSA)** (secondary education)
 - **Teacher Education (TE)** (teacher training and capacity building)
- **Implementation Structure:**
 - A **Centrally Sponsored Scheme** under the Department of School Education and Literacy.
 - **Governance at the National Level:**
 - **Governing Council (headed by the Minister of Education).**
 - **Project Approval Board (PAB)**
(headed by the Secretary, Department of School Education).
 - **State-Level Implementation:** A **Single State Implementation Society (SIS)** manages the execution.
- **Focus Areas:**
 - Prioritizes Educationally Backward Blocks (EBBs), Left-Wing Extremism (LWE)-affected districts, border areas, and Aspirational Districts.
 - Emphasizes Teacher and Technology ("2T" approach) for quality improvement.
- **Key Initiatives of Samagra Shiksha**
 - **NIPUN Bharat (National Initiative for Proficiency in Reading with Understanding and Numeracy)** was launched under the Samagra Shiksha Scheme, a centrally sponsored program. It aims to **ensure universal access to**

Three-Language Formula in NEP 2020

- The National Education Policy (NEP) 2020 retains the three-language formula, originally introduced in the 1968 NEP, but with greater flexibility. Unlike earlier policies that mandated Hindi, NEP 2020 does not impose any specific language on states.

Key Features:

- **Language Flexibility:** States, regions, and students can choose their three languages, ensuring at least two are native to India. Non-Hindi-speaking states are not obligated to adopt Hindi.
- **Bilingual Education:** Encourages teaching in the home language/mother tongue alongside English to improve comprehension and learning outcomes.
- **Role of Sanskrit:** Recognized as an optional language within the three-language framework, with special emphasis on its promotion.

education, improve student retention in foundational years, enhance teacher training, develop high-quality learning resources, and monitor students' progress in foundational literacy and numeracy. The mission focuses on children aged 3 to 9 years, with the goal of achieving foundational literacy and numeracy by Grade 3 by 2026-27.

- **NISHTHA (National Initiative for School Heads and Teachers Holistic Advancement)** is a **capacity-building** initiative under Samagra Shiksha, designed to **enhance the quality of school education through comprehensive teacher training**. A dedicated foundational literacy and numeracy (FLN) module under NISHTHA provides specialized training, with NCERT equipping around 25 lakh teachers from pre-primary to primary levels with essential skills to improve learning outcomes.

About PM SHRI (PM Schools for Rising India)

- PM SHRI Schools is a **centrally sponsored scheme by MoE**, aimed at developing over 14,500 schools managed by the Central, State, and UT governments, including KVS and NVS.
- **The scheme is being implemented over five years (2022-23 to 2026-27) and will serve as a model for NEP 2020 implementation**, setting benchmarks for excellence in education.
- These schools will provide a safe, inclusive, and stimulating learning environment with modern infrastructure and diverse learning experiences, ensuring quality education for all students.

TIME USE SURVEY 2024

Context: The Ministry of Statistics and Programme Implementation (MoSPI) has released the **Time Use Survey (TUS) 2024, highlighting significant trends in how Indians allocate their time across various activities, including employment, caregiving, and leisure.**

- The National Statistics Office (NSO), under MoSPI, conducted India's first all-India Time Use Survey from January to December 2019.
- The current TUS, conducted from January to December 2024, marks the **second such nationwide survey**.
- India is among the few countries, including **Australia, Japan, the Republic of Korea, New Zealand, USA and China** that conduct the National Time Use Survey.
- The primary **objective** of the Survey is **to measure the participation of men and women in paid and unpaid activities**.

Key Findings of Time Use Survey 2024

- **Increase in Workforce Participation:** Women's participation in employment-related activities rose from 21.8% in 2019 to 25% in 2024. Men's participation increased from 70.9% to 75%. Despite this rise, a significant gender gap in labor force participation persists.
- **Decline in Time Spent on Unpaid Domestic Work:** Women spent 305 mins/day on unpaid domestic services in 2024, down from 315 mins in 2019. Men spent significantly less: 88 mins/day.
- **Women's Role in Caregiving:** 41% of women (15-59) participated in caregiving vs. 21.4% of men. Women spent 137 mins/day, nearly double the 75 mins/day spent by men.
- **Leisure and Cultural Activities:** People aged 6+ spent 171 mins/day on cultural, leisure, and media activities. Men: 177 mins/day and Women: 164 mins/day
- **Education:** 89.3% of children (6-14) engaged in learning, spending 413 mins/day on studies.

UGC-CARE LIST SCRAPPED

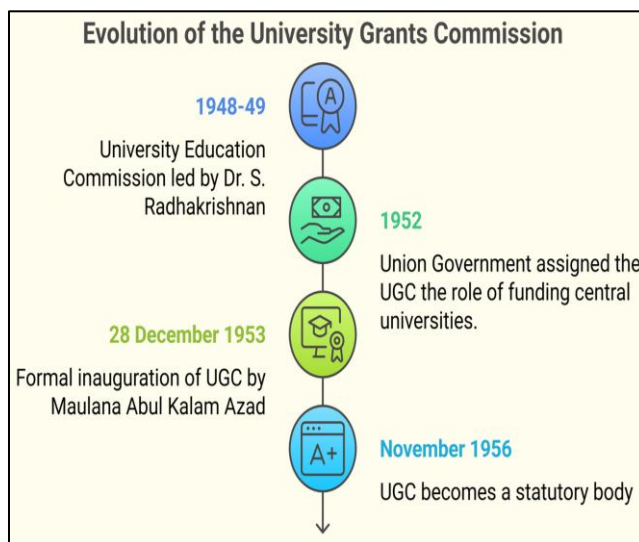
Context: The University Grants Commission (UGC) has decided to discontinue the UGC-CARE (Consortium for Academic and Research Ethics) list of quality academic journals. Instead, it will introduce a set of suggestive parameters for selecting journals based on eight specific criteria.

- UGC-CARE was established in 2018 to address the issue of predatory journals—publications that accept research papers in exchange for fees without following rigorous processes like peer review.

About University Grants Commission (UGC)

- The **UGC** is a **statutory body under the Ministry of Education**, Government of India.

- It was **established in 1953** to oversee the coordination, determination, and maintenance of standards in higher education institutions across the country.
- **Mandate of UGC:** UGC is the only grant-giving agency in India with dual responsibilities: funding institutions and ensuring quality standards in higher education.
- **Key Functions:**
 - Promoting and coordinating university education.
 - Determining and maintaining standards of teaching, examination, and research.
 - Framing regulations on minimum education standards.
 - Monitoring developments in university education and disbursing grants.
 - Acting as a link between Union & State governments and higher education institutions.
 - Advising the government on university education reforms.



SWAVALAMBINI PROGRAMME

Context: The Swavalambini programme was inaugurated at Chaudhary Charan Singh University, Meerut, with simultaneous launches across Higher Education Institutions (HEIs) in India.

About Swavalambini Programme

- It is a **women entrepreneurship initiative** launched by the **Ministry of Skill Development and Entrepreneurship (MSDE)** in collaboration with **NITI Aayog**.
- It aims to **empower female students in Higher Education Institutions (HEIs)** by providing them with the **necessary entrepreneurial mindset, resources, and mentorship** to successfully build and scale their ventures.
- Implemented under the aegis of **MSDE** and implemented by the **National Institute for Entrepreneurship and Small Business Development (NIESBUD)**.

Key Features of the Programme

- **Entrepreneurship Awareness Programme (EAP):** A two-day workshop introducing 600 female students to entrepreneurial concepts, business skills, and market opportunities.
- **Women Entrepreneurship Development Programme (EDP):** A 40-hour training course for 300 selected students, covering topics like business development, finance, market linkages, compliance, and legal support.
- **Six-Month Mentorship & Handholding Support:** To help participants transform ideas into sustainable businesses.
- **Faculty Development Programme (FDP):** A five-day training for faculty members to equip them with skills to mentor women entrepreneurs within HEIs.
- **Award to Rewards Initiative:** To recognize and reward successful women entrepreneurs emerging from the programme.
- **Seed funding and structured mentoring** to support the growth of women-led enterprises.



FENTANYL

Indian security agencies are closely monitoring fentanyl trafficking, tracking its movement into the U.S. from Canada amid rising concerns over synthetic opioids in illicit trade.

What is Fentanyl?

- Fentanyl is a **highly potent synthetic opioid** primarily used for **pain management and anesthesia**.
- It is approximately **100 times more powerful than morphine and 50 times stronger than heroin**.
- While it has legitimate medical uses, its potency also makes it highly dangerous and addictive, leading to severe public health concerns.

Understanding Opioids

- Opioids are a class of drugs that **either originate from or mimic substances found in the opium poppy plant**.
- They are widely used for pain relief but can also induce euphoria, making them prone to abuse and addiction.
- **Prescription opioids:** Morphine, oxycodone, and codeine.
- **Illegal opioids:** Heroin and illicitly manufactured fentanyl.

Dangers of Fentanyl Overdose

- Fentanyl overdoses can lead to severe and life-threatening health issues, including: **Stupor** (a state of near-unconsciousness), Constricted or dilated pupils, Clammy skin and **cyanosis** (blue discoloration due to lack of oxygen), **Coma** and respiratory failure, which can be fatal if not treated immediately.

India's Legal Framework

- Regulated under the **Narcotic Drugs and Psychotropic Substances (NDPS) Act**.
- Strict licensing is required for its production, distribution, and possession.

Global Regulations

- **UN Single Convention on Narcotic Drugs, 1961:** Establishes controls on narcotic substances.
- **UN Convention on Psychotropic Substances, 1971:** Regulates synthetic drugs, including fentanyl.

ASHA WORKERS

Context: Opposition MPs from Kerala protested in Parliament, demanding better pay and retirement benefits for ASHA workers, who earn just ₹233 a day, often paid late.

About Accredited Social Health Activists (ASHA) Workers

- ASHAs are an **all-female cadre of community health workers**, initiated by the **Ministry of Health and Family Welfare** under the **National Rural Health Mission in 2006**.
- They serve as the primary point of contact for health-related needs, especially for women and children in underserved areas.

There are three different cadres of community health workers in India:

Parameter	ASHA (Accredited Social Health Activist)	AWW (Anganwadi Worker)	ANM (Auxiliary Nurse Midwife)
Scheme	National Rural Health Mission (NRHM), Ministry of Health and Family Welfare	Integrated Child Development Services (ICDS), Ministry of Women and Child Development	National Rural Health Mission (NRHM), Ministry of Health and Family Welfare
Eligibility	Woman resident of the village, preferably 25–45 years old Minimum Education: 8th	Woman from the local village, 18–35 years, acceptable to the community, Minimum 10th pass	Female, 10+2 with Science; ANM training of 2 years; Age: 17–35 years

Based at	Her own village	Anganwadi Centre	Health Sub-centre or Primary Health Centre (PHC)
Population Coverage	1 ASHA per 1000 population (approx.)	1 AWW per 400-800 people (depending on area)	1 Sub-centre per 5000 people in plain areas and 3000 in tribal/hilly areas
Main Functions	- Health awareness and mobilization - Immunization, antenatal/ postnatal care - Promote institutional deliveries and family planning	- Provide supplementary nutrition - Preschool education - Health and nutrition education - Assist health surveys	- Provide basic clinical care - Immunizations - Conduct deliveries - Supervise ASHAs - Maintain health records
Relationship with Others	Works under guidance of ANM and AWW	Supports and guides ASHA in nutrition and child care	Supervises ASHA and coordinates with AWW
Remuneration	Performance-based incentives for specific tasks (e.g., institutional delivery, immunization)	Monthly honorarium (approx. ₹6,000– ₹12,000 depending on state)	Fixed monthly salary paid from government health budget
Numbers	As of 2022-23, India had 9.2 lakh rural ASHAs and ~79,900 urban ASHAs.	13,48,135 Anganwadi workers as on 31st December 2023.	About 8,92,829 as per 2020 data.

NON-ALCOHOLIC FATTY LIVER DISEASE (NAFLD)

Context: Ranchi will be Jharkhand's first district to launch a large-scale NAFLD screening and management campaign.

About Non-Alcoholic Fatty Liver Disease (NAFLD)

- NAFLD, now known as **Metabolic dysfunction-associated steatotic liver disease (MASLD)**, is the term for a **range of conditions caused by a build-up of fat in the liver**. This buildup of fat is **not caused by heavy alcohol use**.

Types of NAFLD

- Non-Alcoholic Fatty Liver- NAFL (MASL):** Fat buildup **without** inflammation or liver damage. Usually harmless but may cause liver enlargement and discomfort.
- Nonalcoholic Steatohepatitis- NASH (MASH):** Fat buildup **with inflammation** and liver damage, leading to fibrosis, cirrhosis, or liver cancer.
- Who is at Risk?:** Common in obesity, type 2 diabetes, and related conditions. Can affect all ages, including children.
- Health Risks:** Increases risk of diabetes, high blood pressure, kidney, and heart disease.
- Treatment:** No specific medication; weight loss helps reduce fat, inflammation, and fibrosis. Managing diabetes, cholesterol, and blood pressure is crucial.

FLUORIDE CONTAMINATION

Context: The Uttar Pradesh Jal Nigam found excessive **fluoride** in 120 hamlets. Some villages reported levels of 2 mg/L or higher, above the **safe limit of 1–1.5 mg/L**.

What is Fluoride?

- Fluoride is a **naturally occurring mineral** commonly found in **rocks and soil**. It dissolves into groundwater, especially in areas with fluoride-rich geological formations.
- The Bureau of Indian Standards (BIS) prescribes the acceptable limit of fluoride in drinking water as 1.0 mg/L, and the maximum permissible limit in the absence of an alternative source is 1.5 mg/L.
- **Low levels of fluoride can help prevent dental caries (tooth decay)**. Excessive fluoride intake can lead to serious health problems like Dental fluorosis, Skeletal fluorosis, etc.
- **Rajasthan** reports the highest fluoride level, along with **Telangana, Western Andhra Pradesh, Eastern Karnataka**.

Other Groundwater Contaminants in India

- **Arsenic Contamination:** Found in **West Bengal, Bihar, Jharkhand, Uttar Pradesh**, covering 90% of arsenic contamination cases in India.
- **Uranium Contamination:** Found in 12 states, including Punjab.
- **Iron Contamination:** Severe in states like Rajasthan, Jharkhand, and Assam.
- **Other contaminants**, such as antimony, cadmium, copper, and barium, also pose risks, leading to toxicity, hypertension, and liver and kidney damage.

NORTH SENTINEL ISLAND

Context: A U.S. national was recently arrested in the Andaman and Nicobar Islands for allegedly entering the prohibited tribal reserve area of North Sentinel Island.

About North Sentinel Island

- It is one of the **Andaman Islands** and part of the Union Territory of Andaman and Nicobar Islands. It is located **west of the central cluster of the Andaman Islands**.
- The island measures ~8 km in length and 7 km in width, with an area of about 60 sq km. The island is densely covered in tropical rainforest. It's also **circled by a shallow reef**.

About Sentinelese Tribe

- North Sentinel Island harbours one of the world's last secluded tribes — the **Sentinelese**. They are believed to be **direct descendants of the first humans who migrated out of Africa around 60,000 years ago**.
- The tribe follows a nomadic, hunter-gatherer lifestyle. Their shelters include large communal huts shared by families, each with multiple hearths, as well as temporary structures without walls.
- The tribe has lived in **voluntary isolation for thousands of years**, fiercely resisting contact with the outside world.
- The island falls under the **Andaman and Nicobar Protection of Aboriginal Tribes Act, 1956**, making it illegal to approach closer than 5 nautical miles.
- There are probably somewhere between 80 and 150 people on North Sentinel Island, although it could be as many as 500 or as few as 15.

INTERNATIONAL RELATIONS

UN COMMISSION ON NARCOTIC DRUGS (CND)

Context: India has been elected to Chair the 68th Session of the Commission on Narcotic Drugs (CND), a first for India.

About UN Commission on Narcotic Drugs (CND)

- The CND was established by the **Economic and Social Council (ECOSOC)** in **1946**, to assist the ECOSOC in **supervising the application of the international drug control treaties**.
- In 1991, the General Assembly (GA) expanded the mandate of the CND to function as the **governing body of the United Nations Office on Drugs and Crime (UNODC)**.
- Headquartered in **Vienna**, it serves as the **central drug policy-making body** within the United Nations system.
- **Agenda:** The CND's agenda has two distinct segments:
 - A normative segment for discharging treaty-based and normative functions.
 - And an operational segment for exercising the role as the governing body of UNODC.
- **Mandate:**
 - Monitors global drug trends and assists Member States in developing balanced policies.
 - Oversees the implementation of major international drug conventions (1961, 1971, and 1988).
 - Determines the control status of substances under international drug control treaties.
- **Structure:**
 - Comprises 53-member states, elected by ECOSOC, with India as a founding member.
 - Led by a **Bureau** with representatives from regional groups.
 - It has five subsidiary bodies:
 - Heads of National Drug Law Enforcement Agencies in **Europe; Latin America and the Caribbean; Asia and the Pacific; and Africa**
 - Sub-commission in the Near and Middle East.
- **Meetings & Headquarters:**
 - Holds annual sessions to adopt policies, resolutions, and decisions.
 - Conducts intersessional meetings throughout the year.
 - Meets at a reconvened session for budgetary and administrative matters.
- **Policy on Drugs:** The CND adopted the 2019 Ministerial Declaration to accelerate the implementation of joint commitments to address and counter the world drug problem.

ASIAN DEVELOPMENT BANK (ADB) AND OTHER BANKS

Context: The Union Government and the Asian Development Bank (ADB) have signed a \$98 million loan to improve horticulture crop farmers' access to certified disease-free planting materials.

Aspect	Asian Development Bank (ADB)	Asian Infrastructure Investment Bank (AIIB)	New Development Bank (NDB)
Establishment	19th December 1966	15th January 2016	2015
Purpose	To promote economic and social progress in the Asia-Pacific region, with a focus on eradicating extreme poverty.	Financing Infrastructure for Tomorrow in Asia and beyond.	To support sustainable development and infrastructure projects in emerging markets and developing countries.
Functions	Provides financial assistance through grants, loans, equity investments, and technical assistance.	Provides financial support for infrastructure projects through loans,	Provides loans, equity investments, and technical assistance for

		equity investments, and technical assistance.	infrastructure and development projects.
HQ	Manila, Philippines	Beijing, China	Shanghai, China
Membership	68 members (49 from Asia-Pacific, 19 from outside the region).	110 members (includes both Asian and non-Asian countries).	8 members (Founding Members of BRICS + Bangladesh, UAE, Egypt and Uruguay*). <i>*prospective member</i>
Control and Governance	ADB's highest policy-making body is the Board of Governors, which comprises one representative from each member.	The Board of Governors consists of one Governor and one Alternate Governor appointed by each member country; voting based on capital subscriptions.	Managed by a Board of Governors; equal voting power for all members.
Top Shareholders (2022)	Japan (15.6%), United States (15.6%), China (6.4%), India (6.3%), Australia (5.8%)	China (30.4%), India (8.4%), Russia (6.4%), Germany (4.5%)	China (41.5%), India (19.5%), Russia (18.4%), Brazil (10.5%), South Africa (5.5%)
Source of Funding	Capital raised from international bond markets, member contributions, retained earnings, and loan repayments.	Capital raised through member contributions, international bond markets, and retained earnings.	Funded by member contributions, bond issuance, and retained earnings.

UN INTERNAL JUSTICE COUNCIL

Context: Former Supreme Court judge, Justice Madan B. Lokur, has been appointed Chairperson of the United Nations Internal Justice Council (IJC) for a term ending on November 12, 2028.

About the U.N. Internal Justice Council:

- **Establishment:** Created by the UN General Assembly to ensure independence, professionalism, and accountability in the administration of the UN's justice system.
- **Composition: Five members appointed by the UN Secretary-General –**
 - A **Chairperson** (a distinguished jurist chosen by consensus of the other four members)
 - A staff representative
 - A management representative
 - Two distinguished external jurists (one nominated by staff and one by management)
- **Functions:**
 - **Judicial Appointments:** Identifies suitable candidates for vacancies on the UN Dispute Tribunal (UNDT) and UN Appeals Tribunal (UNAT). Recommends 2-3 candidates for each vacancy to the General Assembly, ensuring geographical diversity.
 - **Advisory Role:** Provides views on the implementation of the UN justice administration system to the General Assembly.

UNGA DECLARES DECEMBER 21 AS WORLD MEDITATION DAY

Context: The United Nations General Assembly (UNGA) unanimously adopted a resolution to declare December 21 as World Meditation Day.

About World Meditation Day

- On December 6, 2024, the UN General Assembly passed a resolution formally declaring **December 21 as World Meditation Day**.

- The Resolution was **introduced by Liechtenstein** and was co-sponsored by nations including India, Bangladesh, and Portugal.
- The purpose behind this declaration is to raise awareness about meditation and its benefits. The General Assembly also recalled the right of everyone to the enjoyment of the highest attainable standard of physical and mental health.
- Additionally, the General Assembly acknowledged the link between yoga and meditation as complementary approaches to health and well-being.

- **Symbolism:** The **Winter Solstice (December 21)** signifies new beginnings, reflection, and spiritual growth, aligning with Indian traditions. Falls exactly six months after the **International Day of Yoga (June 21)**, which marks the **Summer Solstice**.

INDIA HAS CONTRIBUTED \$2 BILLION TO BRICS NDB BANK

Context: India has contributed \$2 billion to the BRICS New Development Bank (NDB) and is implementing 20 projects in areas like transportation, water conservation, rural connectivity etc.

About New Development Bank (NDB)

- Formerly known as the BRICS Development Bank, the NDB is a multilateral development bank established by the BRICS countries (**Brazil, Russia, India, China, and South Africa**).
- **Objective:** To finance infrastructure and sustainable development projects in BRICS nations, emerging economies, and other developing countries.
- **Foundation:** The idea of the NDB was first proposed during the **2012 BRICS Summit in New Delhi**. In **2014**, the agreement to establish the bank was signed at the **6th BRICS Summit in Fortaleza, Brazil**. The inaugural meeting of the BRICS **Board of Governors took place in 2015**, marking the official beginning.
- **Headquarters:** **Shanghai, China** with Regional Offices in Johannesburg (South Africa), São Paulo (Brazil), Moscow (Russia), GIFT City (India).
- **Capital Structure:** The Bank has authorized capital of USD 100 billion, of which USD 50 billion has been subscribed equally by the five founding members.
- **Membership:** Open to any United Nations member.
 - There are 8 members with **India** as a founding member. New members are Bangladesh, United Arab Emirates, and Egypt. (*Ninth Country - Uruguay is a Prospective Member*)
 - The combined voting power of NDB's founding members will be maintained at a minimum of 55%.
- **Governance Structure**
 - **Board of Governors:** Highest decision-making body, consisting of one Governor (the Minister of Finance) and an alternate from each member. All powers of the Bank are vested in this board.
 - **Board of Directors:** Oversees the general operations of the Bank and exercises powers delegated by the Board of Governors.
 - **Management Team:**
 - **President:** Rotates among BRICS members.
 - **Four Vice Presidents:** Selected from the remaining BRICS countries.

INDIA-BHUTAN RELATIONS

Context: The King and Queen of Bhutan paid an official visit to India.

Key Highlights of the Visit

- India reassured Bhutan of continued support for the **Gelephu Mindfulness City** project, an ambitious 2,500 sq. km zero-carbon, cooperative economic zone.
- **Infrastructure and Hydropower Cooperation**
 - Inauguration of the first **Integrated Check Post (ICP) at Darrang (Assam)**, enhancing cross-border trade and movement.
 - Near completion of the 1020 MW **Punatsangchhu-II hydro project**, reinforcing Bhutan's hydropower capacity and India's commitment to clean energy trade.

Significance of India-Bhutan Bilateral Relations

- **Political and Diplomatic Ties:** The foundation of India-Bhutan relations is built on the Treaty of Friendship (1949, revised in 2007), which upholds:
 - Mutual respect for sovereignty and non-interference in each other's affairs.
 - Strong diplomatic engagement, with formal relations established in 1968
- **Hydropower Cooperation**
 - India has built four major hydroelectric projects (HEPs) in Bhutan, totaling 2,136 MW: **Chukha HEP** (336 MW), **Kurichhu HEP** (60 MW), **Tala HEP** (1,020 MW), **Mangdechhu HEP** (720 MW).
 - **Ongoing Projects:** Punatsangchhu-I (1,020 MW), Punatsangchhu-II (1,020 MW)
 - **Mangdechhu HEP (720 MW)** was handed over to Bhutan in Dec 2022; won Brunel Medal for Excellence in Engineering (2020).
 - **New Energy Trade: Basochhu HEP (64 MW) & Nikachhu HEP** approved for trading in **Indian Energy Exchange (IEX)**.
- **Emerging Areas of Cooperation**
 - **Space Cooperation:** India-Bhutan SAT launched on 26 Nov 2022 from ISRO's Sriharikota. Joint Plan of Action (JPoA) on Space Cooperation (2024) – 16 MHz allocated to Bhutan on South Asia Satellite.
 - **Fin-Tech Collaboration: RuPay Card (Launched in two phases: 2019, 2020), BHIM UPI (2021)**
 - **Education & e-Learning: Druk Research and Education Network** integrated with India's National Knowledge Network (5 Gbps connectivity). **Third International Internet Gateway** for Bhutan has been supported by India.
- **Cultural and Religious Ties**
 - Loaning of the 16th-century statue of Zhabdrung Ngawang Namgyal from Kolkata's Asiatic Society to Bhutan, symbolizing historical ties.
- **Environmental and Wildlife Conservation:** Transboundary Manas Conservation Area (TraMCA) protecting wildlife across Manas National Park (India) and Royal Manas National Park (Bhutan).
- **Economic and Developmental Assistance**
 - A Free Trade Regime through the India-Bhutan Agreement on Trade, Commerce, and Transit (1972, revised in 2016), allowing duty-free transit for Bhutanese exports.
 - Development support under Bhutan's 13th Five-Year Plan (2024-29) and the Economic Stimulus Programme.

UNITED NATIONS DISENGAGEMENT OBSERVER FORCE (UNDOF)

Context: Recently, the UN Secretary General paid tribute to Brigadier Amitabh Jha, who was serving with the United Nations Disengagement Observer Force (UNDOF) in the Golan Heights.

About United Nations Disengagement Observer Force (UNDOF)

- The UNDOF was established on 31 May 1974 by **Security Council Resolution 350 (1974)** following the conclusion of the Agreement on Disengagement between Israel and Syria. The primary objectives of UNDOF are to:
 - **Maintain the ceasefire between Israel and Syria.**
 - Supervise the disengagement of Israeli and Syrian forces.
 - **Oversee the areas of separation** and limitation as outlined in the 1974 Agreement.
- The **Security Council extended UNDOF's mandate for an additional six months till 30 June 2025** and emphasized the need for adequate resources and security measures to ensure the mission's effectiveness.
- **Background:** The origins of UNDOF trace back to the **1973 Yom Kippur War**, which saw intense fighting between Egypt and Israel in the Suez Canal region and the Sinai Peninsula, as well as between Israel and Syria in the Golan Heights.

- By March 1974, a diplomatic intervention by the United States led to the **Agreement on Disengagement**. The Security Council promptly established UNDOF to monitor compliance with the agreement.
- **Mandate:** UNDOF operates in the **Area of Separation (AOS)**, a demilitarized zone between Israel and Syria, as defined by the 1974 Agreement on Disengagement.
- **Headquarters:** Located at **Camp Faouar, on the Syrian side of the Golan Heights**. Logistics support to UNDOF is provided by the Indian Contingent (INDCON) based primarily in Camp Faouar.
- **India's Contribution:** India is the third largest military contributor to UNDOF.

CROSSROADS OF PEACE INITIATIVE

Context: During a recent trilateral consultation between **India, Iran, and Armenia**, the Armenian side provided an overview of its connectivity initiative, the "Crossroads of Peace."

About the Crossroad of Peace Initiative

- The Crossroads of Peace Initiative is **Armenia's vision for promoting regional stability and economic development through improved infrastructure and trade**.
- Given Armenia's strategic location in the **South Caucasus**, the initiative aims to **transform the country into a hub for east-west and north-south trade routes**.
- Despite closed borders with some neighbors, Armenia envisions open trade and economic cooperation through key infrastructure investments.
- **Key Aspects:**
 - **Sustainable Infrastructure:** Green construction, renewable energy, and low-carbon materials.
 - **Efficient Customs:** Digital systems like eTIR to streamline trade and reduce delays.
 - **Green Trade:** Eco-friendly logistics, low-emission transport, and sustainable packaging.
 - **FDI Attraction:** Special economic zones (SEZs) to boost investment and industrial growth.
 - **Road Safety:** Stricter laws, awareness campaigns, and enforcement to prevent accidents.



UNITED NATIONS PEACEBUILDING COMMISSION

Context: India Re-elected to U.N. Peacebuilding Commission for 2025–2026

About U.N. Peacebuilding Commission (PBC)

- PBC is an intergovernmental **advisory body** of the UN that plays a crucial role in **supporting peace efforts in conflict-affected countries**.
- The PBC was jointly **established by the General Assembly and the Security Council in 2005**.
- **Composition:** Comprises 31 Member States, elected from the General Assembly, Security Council, and Economic and Social Council. It includes top financial contributors and leading troop-contributing nations to the UN system. **India is a Member**.
- **Mandate:** Brings together key stakeholders to mobilize resources for post-conflict recovery. Advises on peacebuilding strategies and long-term stability measures.
- **India's Role:**
 - One of the largest contributors of uniformed personnel to UN Peacekeeping Missions.
 - Currently, over 6,000 Indian personnel are deployed across various UN operations.

PHEWA DIALOGUE

Context: Recently, **Nepal and China** launched the "Phewa Dialogue" series.

About Phewa Dialogue

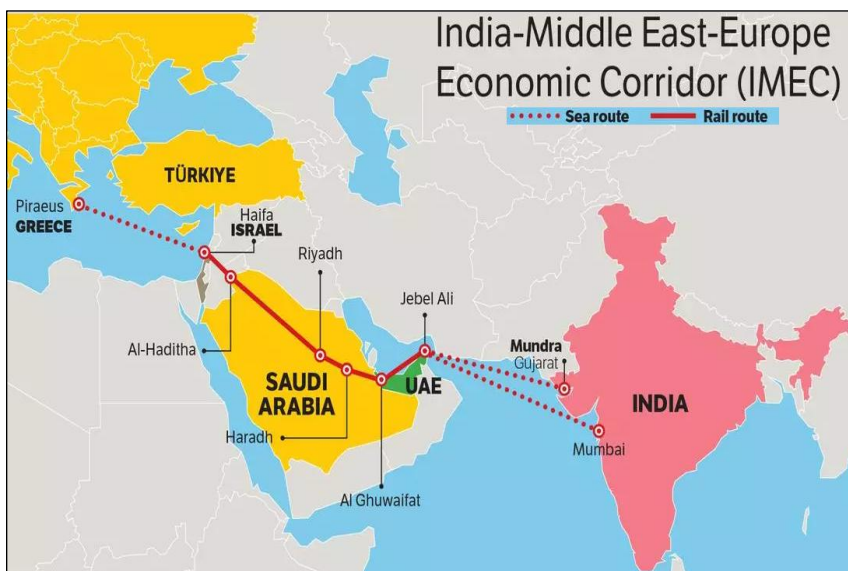
- The Phewa Dialogue takes its name from the renowned Phewa Lake located in the Pokhara Valley of **Nepal**.
- This initiative marks **Nepal's first official think tank forum focused on promoting South Asia Regional Economic Integration**.
- The dialogue is being hosted by the Sichuan University's China Center for South Asian Studies and Tribhuvan University's Department of International Relations and Diplomacy.

INDIA-MIDDLE EAST-EUROPE ECONOMIC CORRIDOR

Context: After one year of announcement of the ambitious transnational corridor– India-Middle East-Europe Economic Corridor (IMEC), the project has seen progress as well as some roadblocks.

About India-Middle East-Europe Economic Corridor (IMEC)

- **Establishment:** Formed through a **Memorandum of Understanding (MoU) signed** by leaders from **India**, the European Union, France, Germany, Italy, Saudi Arabia, the United Arab Emirates (UAE), and the United States **during the 18th G20 Summit 2023 in New Delhi**.
- **Objective:** A multi-modal connectivity initiative designed to develop infrastructure such as ports, railways, roads, sea routes, and pipelines to boost trade across India, the Arabian Peninsula, the Mediterranean region, and Europe.
- **Structure of the Corridor:** (a) **Eastern Corridor** which connects India with the Gulf region and (b) **Northern Corridor** which links the Gulf region to Europe.
- **Key Features**
 - IMEC is a component of the Partnership for Global Infrastructure and Investment (PGII).
 - PGII is a collaboration between the G7 countries to fund infrastructure projects in developing nations. PGII was announced during the 2021 G7 Summit in the UK.
 - Seen as an alternative to China's Belt and Road Initiative (BRI).



Other Significant Regional Corridors

International North–South Transport Corridor (INSTC)	• A 7,200 km-long trade route proposed in 2000 by India, Russia, and Iran to enhance connectivity and trade among nations along its path. • Membership: 13 members - India, Iran, Russia, Azerbaijan, Armenia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkey, Ukraine, Belarus, Oman, and Syria. Observer: Bulgaria.
China's Belt and Road Initiative (BRI)	• Introduced in 2013 to connect Asia, Africa, and Europe via land and maritime routes. Key Components include: • Silk Road Economic Belt: Land route connecting China to Southeast Asia, South Asia, Central Asia, Russia, and Europe. • Maritime Silk Road: Sea route linking China to Southeast Asia, South Asia, the South Pacific, the Middle East, Eastern Africa, and Europe. • India is not a Member.

Trans-Caspian International Transport Route (TITR)

- Also known as the Middle Corridor.
- A multi-modal route connecting China to the EU via Central Asia, the Caucasus, Türkiye, and Eastern Europe.
- Established in 2017, integrating land and sea networks for trade and transport. (India is not a Member)

FIRST TRILATERAL POWER TRANSACTION

Context: India, Bangladesh, and Nepal have inaugurated the first trilateral power transaction via the Indian grid, a landmark step toward creating an integrated South Asian power market.

About the Agreement

- A power sales agreement was formalized in October 2024 between: NTPC Vidyut Vyapar Nigam (NVVN), Nepal Electricity Authority, Bangladesh Power Development Board
- **Power Export Details:** Up to 40 MW of power will be exported from Nepal to Bangladesh using the Indian grid.

U.S., JAPAN AND SOUTH KOREA SIGNED DIGI FRAMEWORK

Context: The **United States, Japan, and South Korea** launched a new framework– DiGi, to enhance collaboration with **India's private sector** in supporting digital infrastructure development.

About the Digital Infrastructure Growth Initiative for India (DiGi Framework)

- **Objective:** Enhance collaboration with India's private sector **to strengthen and expand the nation's digital infrastructure.**
- **Partner Agencies:** U.S. International Development Finance Corporation (DFC); Japan Bank for International Cooperation (JBIC); Export-Import Bank of Korea (Korea Eximbank)
- **Implementation Focus:** Support projects across: **5G networks, Open RAN** (Radio Access Network), **Submarine cables, Optical fiber networks, Data centers, Smart cities, E-commerce** platforms and Emerging technologies such as **Artificial Intelligence (AI)** and **Quantum Technology.**

India's Efforts in Globalizing Digital Public Infrastructures (DPIs)

- **US-India Global Digital Development Partnership:** Focuses on promoting the responsible adoption of emerging digital technologies across Asia and Africa.
- **G20 Framework for Systems of DPI:** Adopted under India's G20 presidency, this framework provides guiding principles for the design and deployment of digital public infrastructures globally.
- **Virtual Global DPI Repository:** India is establishing this platform to serve as a hub for DPI-focused tools, resources, and global best practices.

WORLD URBAN FORUM (WUF)

Context: The World Urban Forum (WUF) concluded its twelfth edition in Cairo, Egypt. It was concluded with Adoption of the 10-point **Cairo Call to Action.**

About the World Urban Forum (WUF)

- The WUF was established in **2001** by the **United Nations** to tackle the critical challenges of rapid urbanization and its effects on communities, cities, economies, climate change, and policymaking.
- **Convened by UN-Habitat,** the Forum serves as a high-level, open, and inclusive platform to address the complexities of sustainable urbanization.

Objectives of the World Urban Forum:

- **Promote understanding of sustainable urbanization** among stakeholders, constituencies, and the general public.
- **Facilitate open and inclusive debates,** share best practices and policies, and exchange lessons learned to improve collective knowledge on sustainable urban development.
- **Encourage cooperation among diverse stakeholders** and constituencies to advance and implement sustainable urbanization initiatives.

TRITON ISLAND

Context: Recent satellite imagery reveals a significant military build-up on Triton Island, the closest landmass in the disputed Paracel archipelago to Vietnam.

About Triton Island:

- It is a tiny island part of the Paracel Islands chain located in the South China Sea. It covers a tiny area of about 1.2 square kilometers and is situated southwest of the main islands in the group.
- The island was completely uninhabited until recently.
- The Paracel Islands are claimed by multiple countries, primarily China, Vietnam, and Taiwan, as part of their territorial waters, making the region politically sensitive.
- Although Triton Island is uninhabited, it plays a strategic role due to its location in the South China Sea, an area known for its rich fishing grounds and potential oil and gas reserves.



About South China Sea:

- It is an arm of the western Pacific Ocean that borders the Southeast Asian mainland.
- **Boundaries:** It is bordered by **China, Taiwan, the Philippines, Malaysia, Indonesia, Brunei, and Vietnam.**
- It is **connected by the Taiwan Strait with the East China Sea and by the Luzon Strait with the Philippine Sea** (both marginal seas of the Pacific Ocean).
- The South China Sea and the East China Sea together form the China Sea.
- The two major archipelagos are known as the Paracel Islands, controlled by China, and the Spratly Islands.

PRAVASI BHARTIYA DIWAS (PBD)

Context: The 18th Pravasi Bharatiya Divas was concluded recently in Bhubaneswar, Odisha.

Key Highlights of the 18th Pravasi Bharatiya Divas

- **Chief Guest:** Christine Carla Kangaloo, President of the Republic of Trinidad & Tobago, virtually addressed the convention.
- **Theme:** "Diaspora's Contribution to a Viksit Bharat".
- **President of India** addressed the session and presented **Pravasi Bharatiya Samman Awards**
 - The awardees were selected by a **Jury-cum-Awards Committee** chaired by the **Vice President of India**, with the **External Affairs Minister as the Vice-Chair.**
 - The committee, comprising distinguished members from various fields, unanimously chose the recipients, recognizing the outstanding contributions of the Indian diaspora in diverse domains.

What is Pravasi Bharatiya Divas (PBD)?

- PBD is an event celebrated in India on **January 9** to recognize and honor the contributions of the Indian diaspora worldwide.
- The **date marks the return of Mahatma Gandhi to India** from South Africa in 1915.

Who is a Person of Indian Origin (PIO)?

- A PIO is a foreign citizen (except those from Pakistan, Afghanistan, Bangladesh, China, Iran, Bhutan, Sri Lanka, and Nepal) who:
 - Held an Indian passport at any time, OR
 - Has parents, grandparents, or great-grandparents who were born in India.

- It was **established in 2003** by the Government of India to strengthen the engagement between **Non-Resident Indians (NRIs), Persons of Indian Origin (PIOs), and the country.**
- **Biennial Celebration:** Since 2015, PBD is held every two years instead of annually.
- **PBD Conventions:** Organized by the Ministry of External Affairs, featuring discussions on issues relevant to the diaspora.
- **Pravasi Bharatiya Samman Award:** The highest honor conferred on overseas Indians for outstanding contributions.

Pravasi Bharatiya Divas Related Schemes

- **Pravasi Kaushal Vikas Yojana (PKVY):** Skill development initiative for Indian emigrant workers to enhance employability.
- **Scholarship Program for Diaspora Children (SPDC):** 100 annual scholarships for PIO/NRI children pursuing higher education in India.
- **Know India Program (KIP):** Aimed at youth of Indian origin (18-30 years) to explore India's culture, heritage, and development.
- **VAJRA (Visiting Advanced Joint Research Faculty):** Brings NRI professionals (scientists, engineers, doctors) to contribute expertise to Indian institutions.

2ND INDIA-AUSTRALIA ANNUAL SUMMIT

Context: The 2nd India-Australia Annual Summit recently took place on the sidelines of the 19th G20 Summit in Rio de Janeiro, Brazil.

Key Highlights of the Summit

- **India-Australia Renewable Energy Partnership (REP):** A new framework was launched to promote practical cooperation in key areas such as solar PV, green hydrogen, energy storage, and other renewable energy technologies.
- **Extension of the Australia-India Business Exchange (AIBX) Programme:** The AIBX programme, originally launched in 2021, has been extended for four more years starting from 2024. AIBX aims to provide market insights and foster commercial partnerships between businesses in both countries.
- **Renewal of the Joint Declaration on Defence and Security Cooperation:** Both nations agreed to renew and strengthen the Joint Declaration in 2025, reinforcing their commitment to deeper collaboration in defense and security.

PANAMA CANAL TREATY

Context: U.S. President Donald Trump criticized the Panama Canal, calling the 1999 transfer treaty "foolish" and threatening to take back control of the canal.

About Panama Canal

- It is a man-made waterway that **links the Atlantic Ocean to the Pacific Ocean**, serving as a crucial passage for global maritime trade.
- It **traverses the Isthmus of Panama**, cutting through one of its narrowest points and connecting North and South America.
- **Length:** Approximately 80 kilometers.
- **Structure:** Comprises a series of locks that adjust water levels, allowing ships to cross the continental divide smoothly.
- Ships traveling between the east and west coasts of the United States save approximately 8,000 nautical miles (15,000 km) by using the canal, avoiding the need to round Cape Horn in South America.

Historical Background

- **1881:** France initiated construction but failed due to financial difficulties and disease outbreaks.
- **1904:** The United States took over the project, completing it on August 15, 1914.
- **Until 1999:** The U.S. managed the canal before transferring full control to Panama on December 31, 1999, as per the Torrijos-Carter Treaties signed in 1977.

About US-Panama Treaty (Torrijos-Carter Treaties)

- The Torrijos-Carter Treaties are two landmark agreements signed on September 7, 1977, **between the United States and Panama**.
- These treaties marked the **transfer of control over the Panama Canal** from the U.S. to Panama, ending decades of American jurisdiction in the Canal Zone.

Key Provisions of the Treaties

- **The Panama Canal Treaty:** Nullified the 1903 treaty, ensuring the transfer of the canal to Panama. The U.S. would operate and defend the canal until December 31, 1999, after which Panama would assume full control. A gradual transition period allowed Panama to take on increasing management responsibilities.
- **The Neutrality Treaty:** Ensured that the canal would remain open to all nations, even during wartime. The U.S. retained the right to intervene militarily to protect the canal's neutrality if necessary.

INDIA JOINS UN-CEBD

Context: India has joined the prestigious UN Committee of Experts on Big Data & Data Science for Official Statistics (UN-CEBD).

About UN-CEBD

- **The UN Committee of Experts on Big Data and Data Science for Official Statistics (UN-CEBD)** provides strategic direction for integrating Big Data into official statistics, particularly for monitoring the 2030 Agenda for Sustainable Development.
- It was **established in 2014**, with Australia serving as its first chair.
- The UN-CEBD is currently led by South Africa as the Chair, with Denmark and the UK serving as vice-Chairs.
- The committee comprises 31-member states and 16 international organizations, including **India**.

Big Data involves **gathering and analyzing large volumes of structured, unstructured, and hybrid data** to identify patterns, trends, and meaningful insights.

Mandate of UN-CEBD

- **Advancing Big Data in official statistics**, including cross-border data use.
- **Addressing challenges** related to methodology, privacy, security, legal access, and IT infrastructure.
- **Enhancing capacity-building** through training and experience-sharing.
- **Promoting Big Data** for policy-making and public trust.

US EASES CURBS TO PUSH NUCLEAR DEAL

Context: US National Security Advisor announced plans to remove Indian government entities, including Bhabha Atomic Research Centre (BARC), Indira Gandhi Centre for Atomic Research (IGCAR), and Indian Rare Earths Limited (IREL), from the US entity list.

- The removal of the three Indian entities will enable closer cooperation between the United States and India to secure more resilient critical minerals and clean energy supply chains.

What is the US Entity List?

- The US Entity List includes **foreign individuals, businesses, and organizations subject to export restrictions and licensing requirements** for specific goods and technologies.
- Compiled by the **Bureau of Industry and Security (BIS) under the U.S. Department of Commerce**, it aims to prevent unauthorized trade that could support: Terrorism, Weapons of Mass Destruction (WMD) programs and Activities against US foreign policy or national security interests.
- **Restrictions:** Entities on the list require specific licenses for transactions involving Export Administration Regulations (EAR)-controlled items.
- **Examples:** Notable entities include Huawei, which was added in 2019 due to national security concerns.

INDONESIA BECOMES FULL MEMBER OF BRICS

Context: Indonesia has officially joined BRICS as a full member, while Nigeria has been admitted as "partner country" of BRICS grouping.

About BRICS

- It is an intergovernmental organization consisting of **ten member countries: Brazil, Russia, India, China, South Africa, Iran, Egypt, Ethiopia, United Arab Emirates, and Indonesia.**
- The bloc represents some of the world's fastest-growing economies and aims to promote economic cooperation, political dialogue, and development among emerging nations.
- **Nigeria has become the ninth BRICS partner country**, joining **Belarus, Bolivia, Cuba, Kazakhstan, Malaysia, Thailand, Uganda, and Uzbekistan.**
 - Partner states are a newly introduced category for integrating prospective BRICS members, established at the 16th BRICS Summit in Kazan, Russia, in 2024.
 - These countries hold observer status, meaning they are not yet official BRICS members but receive support and cooperation from existing BRICS nations.

(For More Information on BRICS, refer to Prelims Quick Revision Part 1- Page 123)

20TH MANAMA DIALOGUE

Context: The 20th Manama Dialogue was held in **Bahrain**. Its theme was- 'Middle East leadership in shaping regional prosperity and security.

About Manama Dialogue

- It is considered one of the most important strategic events held annually in the Kingdom of Bahrain.
- It takes place in the fourth quarter of each year in the capital of Bahrain since its launch in 2004.
- The event is organized by the International Institute for Strategic Studies (IISS) in collaboration with the Ministry of Foreign Affairs
- The conference discussions primarily revolve around the Middle East region.

AUKUS

Context: Recently, the Chinese ambassador to New Zealand warned that New Zealand's involvement in AUKUS could negatively impact NZ-China relations.

About AUKUS

- AUKUS is a **trilateral security partnership** formed in **2021** between the **United States, the United Kingdom, and Australia**, focusing on technology sharing in the Indo-Pacific region.
- It is widely seen as a **strategic response to China's growing influence in the area.**
- **Key Objectives of AUKUS:** Enhance security and defense cooperation among the three nations and Strengthen military capabilities to deter potential threats.

Two Key Pillars

- **Pillar 1:** Supports Australia's acquisition of nuclear-powered submarines (SSNs), without nuclear weapons.
 - **Australia will acquire eight nuclear-powered attack submarines (SSN-AUKUS).**
 - **Australia will be the seventh country with nuclear-powered submarines** (after the US, UK, France, China, Russia and India) and the second after the UK to receive U.S. nuclear technology.
 - **No nuclear weapons will be involved**, as Australia is a signatory to the Nuclear Non-Proliferation Treaty (NPT).
- **Pillar 2:** Focuses on advanced military cooperation in eight areas: Artificial intelligence (AI), Quantum technologies, Cybersecurity, Information sharing, Undersea warfare, Hypersonic and counter-hypersonic systems, Electronic warfare, Defense innovation.

PM MODI'S VISIT TO USA

Context: PM Modi and President Trump held a bilateral meeting at the White House, focusing on defense cooperation, trade expansion, energy security, and technology collaboration.

Key Outcomes of the Visit

- **Defense Cooperation**
 - The US will sell **F-35 stealth fighter jets** to India, enhancing India's air combat capabilities.
 - India will procure six additional **P-8I maritime surveillance aircraft** to strengthen maritime security.
 - The US and India will collaborate on autonomous defense technologies under the **Autonomous Systems Industry Alliance (ASIA)**.
- **Trade and Economic Partnership: 'Mission 500'**
 - Both nations set a target of \$500 billion in annual bilateral trade by 2030.
 - In FY24, the bilateral trade between India and the US stood at a record US\$ 118.2 billion with a trade surplus of US\$ 36.8 billion in favour of India.
- **Indo-Pacific Strategy**
 - Launch of the **Indian Ocean Strategic Venture**, a new bilateral whole- of- government forum to advance coordinated investments in economic connectivity and commerce.

Technology and Innovation Partnerships	
TRUST Initiative	Aims to foster collaboration between governments, academia, and the private sector in defense, AI, semiconductors, quantum computing, biotechnology, energy, and space , ensuring the protection of sensitive technologies.
U.S.- India Roadmap on Accelerating AI Infrastructure	A plan to build AI infrastructure in India by identifying financing, computing power, and regulatory barriers, encouraging industry partnerships and investment in next-generation data centers and AI-driven solutions.
INDUS Innovation	A new innovation bridge modeled after INDUS-X, promoting U.S.-India industry and academic partnerships in space, energy, and emerging technologies to maintain leadership in innovation.
Strengthening Supply Chains	Focus on trusted and resilient supply chains for semiconductors, critical minerals, advanced materials, and pharmaceuticals, with incentives for Indian manufacturing capacity in API production for life-saving medicines.
Strategic Mineral Recovery Initiative	A program to recover and process critical minerals like lithium, cobalt, and rare earth elements (REEs) from heavy industries (aluminum, coal mining, oil & gas), strengthening India's mineral security.
NASA-ISRO Collaboration	Plans for an Indian astronaut to visit the International Space Station (ISS) through AXIOM in 2025 and the early launch of the NISAR mission, a joint Earth observation satellite project using dual radar technology.

TRUMP'S RECIPROCAL TARIFFS

Context: U.S. President Trump recently announced plans to impose reciprocal tariffs on all countries, with implementation set for April 2nd.

Understanding Tariffs

- Tariffs are taxes imposed on imported goods by a country's government. They are used to regulate trade, protect domestic industries, and generate revenue.
- By making foreign products more expensive, tariffs encourage consumers to buy locally produced goods instead.

What Are Reciprocal Tariffs?

- A reciprocal tariff is a **tax or trade restriction a country imposes in response to similar measures by another nation**. Its goal is to balance trade, protect local businesses, and address trade imbalances. If one country raises tariffs on another's goods, the affected nation may retaliate with equal tariffs.

- For example, if Country A imposes a 10% tariff on imports from Country B, Country B may respond by applying the same 10% tariff on imports from Country A. This strategy is often used as leverage in trade negotiations.

BEGGAR-THY-NEIGHBOUR (BTN) POLICIES

Context: The rise of Beggar-thy-neighbour policies under populist leaders has raised fears of new trade conflicts.

What is Beggar-thy-neighbour (BTN)?

- BTN policies refer to **protectionist economic measures adopted by governments to improve their own economic conditions at the expense of other nations.**
- These policies often include **trade restrictions, currency devaluations, and tariffs**, which can lead to retaliatory measures from other countries, ultimately harming global trade and economic stability.
- The term was **first introduced by** Scottish economist **Adam Smith** in his 1776 book, *The Wealth of Nations*.

Forms of BTN Policies:

- Trade Barriers (Tariffs & Quotas):** Governments impose heavy tariffs or strict import quotas to limit foreign goods, thereby encouraging domestic production. Example: U.S.–China Trade War, where the U.S. imposed tariffs on Chinese imports, and China retaliated with similar measures.
- Currency Wars (Competitive Devaluation):** Central banks devalue their national currency to make exports cheaper and imports costlier, boosting domestic industries. Example: China's alleged currency manipulation to maintain export competitiveness.
- Subsidies & Preferential Treatment:** Governments offer subsidies to domestic industries while restricting foreign competitors from entering the market. Example: Agricultural subsidies in the European Union (EU) and the U.S.

Arguments in Favor of BTN Policies

- Boosts Domestic Economy:** Protects key industries, especially those in their nascent stage, and preserves jobs.
- National Security Concerns:** Ensures self-reliance in critical sectors like defense, agriculture, and technology.
- Trade Surplus Goal:** Higher exports and lower imports contribute to a favorable balance of trade.

Criticism & Economic Impact

- Global Trade Disruptions:** BTN policies often lead to trade wars, reducing international trade volumes.
- Higher Consumer Costs:** Import restrictions increase prices for domestic consumers due to limited competition.
- Economic Retaliation:** Countries impose counter-tariffs, further worsening economic relations.
- Historical Consequences:** BTN policies in the interwar period (1919–1939) were a major factor behind the Great Depression.

MURUGAN TEMPLE IN INDONESIA

Context: PM Modi virtually addressed the Maha Kumbabhishegam of Shri Sanathana Dharma Aalayam in Jakarta, emphasizing the deep cultural and historical ties between India and Indonesia.

Significance of the Murugan Temple

- The newly inaugurated Murugan Temple in Jakarta symbolizes the shared heritage of both nations and will serve as a center for faith and cultural values.
- Built on a 4,000 sq m plot donated by the Indonesian government, the temple is located in **western Jakarta**.
- It houses **shrines dedicated to Lord Murugan and other deities**, along with a museum showcasing the historical connections between India and Indonesia.

Famous Temples of Indonesia

Temple	Location	Architecture Style	Features
Borobudur Temple	Central Java	Mahayana Buddhist, inspired by indigenous step pyramids (punden berundak) and tantric Buddhist mandalas.	- Built as a massive stupa, featuring 72 Buddha statues and 2,672 relief panels. - Represents Buddhist cosmology with three symbolic levels: desire, form, and formlessness.

Prambanan Temple	Central Java	Javanese Hindu, with a mandala layout.	- Dedicated to the Trimurti (Brahma, Vishnu, Shiva). - Features intricate carvings of Hindu epics like the Ramayana. - The main temples are tall, slender, and symmetrically designed.
Pura Besakih	Bali	Balinese Hindu, with a mandala layout.	- Known as the "Mother Temple", it is Bali's largest temple complex, consisting of over 80 temples. - Built with courtyards leading to the inner sanctum.

UK-INDIA DEFENCE PARTNERSHIP STRENGTHENS

Context: U.K. and India deepen defence cooperation with agreements on missile production, assembly facilities, and naval propulsion systems.

- **Launch of "Defence Partnership–India" (DP-I)**
 - The United Kingdom has formally launched "Defence Partnership–India" (DP-I), a dedicated cell within the UK Ministry of Defence.
 - The initiative aims to deepen defence cooperation with India and strengthen bilateral security ties.
- **Key Defence Agreements:** Several major defence agreements have been announced, including:
 - Co-production of **MANPADS (Man-Portable Air Defence Systems)**.
 - Development of **Lightweight Multirole Missiles (LMM)**.
 - Establishment of an **ASRAAM (Advanced Short-Range Air-to-Air Missile) assembly** and testing facility in India.

MUNICH SECURITY CONFERENCE

Context: External Affairs Minister represented India at the Munich Security Conference (MSC) 2025, engaging in discussions on global security, diplomacy, and India's strategic role.

About Munich Security Conference (MSC)

- The Munich Security Conference is a **premier global forum on security policy, held annually in Munich, Germany**.
- Established in **1963**, it brings together world leaders, defense officials, policymakers, and experts to address key security issues, including geopolitical tensions, military conflicts, cybersecurity, and climate security.
- MSC is one of the world's most influential diplomatic platforms, fostering discussions among major global powers, **including the U.S., EU, China, Russia, and India**.

EIGHTH INDIAN OCEAN CONFERENCE (IOC)

Context: The 8th Indian Ocean Conference was organised by India Foundation in association with the Ministry of Foreign Affairs of Oman on February 16-17, 2025 in Muscat, Oman.

- **Theme:** "Voyage to New Horizons of Maritime Partnership."

About the Indian Ocean Conference:

- The IOC is an annual summit that gathers leaders, policymakers, and experts from Indian Ocean littoral states to discuss key regional issues.
- The discussions focus on security, economic growth, and geopolitical collaboration.
- The Indian Ocean Conference was **launched in 2016 by the India Foundation** (a New Delhi-based think tank) at Singapore, with participation from 30 countries.
- It aligns with India's strategic vision of "Security and Growth for All in the Region" (SAGAR), emphasizing regional stability and cooperation.

PARIS AI ACTION SUMMIT

Context: PM Modi and French President Emmanuel Macron co-chaired the AI Action Summit 2025 in Paris, bringing together global leaders, policymakers, and industry experts.

Key Takeaways from the AI Action Summit

1. AI Declaration

- 60 nations, including **India** and China, **endorsed the declaration**, which promotes AI accessibility, sustainability, human rights, and transparency.
- The U.S. and U.K. refused to sign the summit's AI Declaration on "inclusive and sustainable" AI, citing concerns over overregulation.
- Key Objectives of the Declaration:**
 - AI Accessibility:** Ensuring AI reaches all and prevents technological inequality.
 - Trust and Safety:** Deploying AI in an ethical, secure, and transparent manner.
 - Economic and Labor Market Impact:** Encouraging AI innovation while preventing market concentration and ensuring a positive effect on jobs.
 - Support for Developing Countries:** Reducing global disparities and building AI capacity in underdeveloped regions.

Key Themes of the Summit

The summit focused on five major areas:

- Public Interest AI:** Ensuring AI benefits society at large.
- Future of Work:** Addressing AI's impact on employment and workforce adaptation.
- Innovation and Culture:** Encouraging AI-driven creativity and advancements.
- Trust in AI:** Enhancing transparency, ethics, and security in AI deployment.
- Global AI Governance:** Establishing a cooperative framework for responsible AI development.

2. Coalition for Environmentally Sustainable Artificial Intelligence (AI)

- The Coalition for Sustainable AI was **introduced by France**, in partnership with the United Nations Environment Programme (UNEP) and the **International Telecommunication Union (ITU)**. It aims **to ramp up global momentum to place AI on a more environmentally sustainable path**.
- The coalition brings together diverse stakeholders to advance sustainable AI practices. **India has joined the coalition**.

3. Launch of 'Current AI' – A Public Interest AI Initiative

- A new global foundation, Current AI, was launched at the summit with an initial investment of \$400 million to reshape the existing AI landscape by **developing and supporting large-scale initiatives that serve the public interest**.
- It will work to **expand access to high-quality public and private datasets**, invest in open source tools and infrastructure to **make AI more transparent and secure**, and develop systems to measure AI's social and environmental impact.
- Key focus areas** include healthcare, linguistic diversity, science, and issues such as trust and safety, and AI auditing.

HAGUE SERVICE CONVENTION

Context: The U.S. Securities and Exchange Commission (SEC) has invoked Hague Service Convention to seek India's assistance in serving legal summons on Gautam Adani.

About Hague Service Convention (HCCH 1965 Service Convention)

- Established in 1965, it is an **international treaty designed to facilitate the cross-border exchange of legal documents, including summons in commercial and civil cases**.
- Its primary objective is **to ensure that defendants located in foreign jurisdictions receive timely and actual notice of legal proceedings against them**.
- The Convention **applies only when both the requesting and receiving countries are signatories**.
- Currently, 84 countries, including **India** and the USA, are contracting parties of this treaty.

- The Convention establishes a main channel of transmission via a designated Central Authority, as well as alternative channels of transmission.
- Each signatory country is required to designate a central authority responsible for handling service requests. **In India, the Ministry of Law and Justice serves as the designated central authority.**

India's Accession and Reservations

- India signed the Service Convention on November 23, 2006 and the Service Convention was entered into force in India on August 01, 2007, but it placed several reservations on its implementation.
- India rejects all alternative service methods under Article 10 (e.g., direct service via private judicial officers).
- Legal documents must be served indirectly through India's designated central authority rather than directly to individuals.
- Diplomatic and consular channels cannot be used to serve documents, except when the recipient is a national of the requesting country.
- All service requests must be submitted in English or include an English translation.
- **Role of India's Ministry of Law and Justice**
 - Acts as India's central authority for processing service requests.
 - Under **Article 13** of the Convention, the Ministry has the authority to reject a request if it believes that executing the request would threaten India's sovereignty or security.
 - However, under **Article 29**, the Ministry cannot refuse a request solely on the basis of differences in domestic laws or claims of exclusive jurisdiction by an Indian court.

OCEAN COORDINATION MECHANISM (OCM)

Context: Recently, the **Intergovernmental Oceanographic Commission of UNESCO (UNESCO-IOC)** announced the signature of a MoU enabling the creation of the OCM.

About Ocean Coordination Mechanism (OCM)

- The Ocean Coordination Mechanism (OCM) is an initiative launched by the UNESCO-IOC **to address critical marine challenges in the Caribbean and North Brazil Shelf region.**
- It was conceived under the **10-year CLME+ Strategic Action Programme (CLME+ SAP)**, which was endorsed by countries in the Wider Caribbean in 2014.
- It focuses on **sustainable ocean governance, conservation, and regional cooperation.**
- **Funded by:** The Global Environment Facility (GEF) through the UNDP/GEF PROCARIBE+ Project.

About North Brazil Shelf:

- The coast between the mouth of the Amazon and the Orinoco rivers, also known as the North Brazil Shelf (NBS), is one of the world's most extensive muddy shorelines.
- It is dominated by the North Brazil Current, which is an extension of the South Equatorial Current. This current influences the shelf's temperature, salinity, and nutrient levels.

Intergovernmental Oceanographic Commission of UNESCO (IOC-UNESCO)	
Establishment	Established in 1960 by a resolution of the UNESCO General Conference. First meeting held in Paris (October 19-27, 1961).
Aim	• Promotes international cooperation in marine sciences to enhance ocean management, coastal sustainability, and marine resource conservation. • Focuses on ocean literacy, sustainable development, and environmental protection.
Structure	• Assembly (All Member States, Meets every two years for planning and review). • Executive Council (40 member states, meets twice annually for work plan assessments). • Secretariat (Based in Paris, led by Executive Secretary).
Headquarters	Paris, France

Members	Around 150 Member States including India.
Key Functions	• Ocean Observations & Services: Monitors oceanic changes and operates tsunami warning systems. • Capacity Development: Enhances ocean science through training and education. • Sustainable Ocean Management: Develops Marine Spatial Planning (MSP) and other scientific tools. • UN Ocean Decade Coordination: Leads the Decade of Ocean Science for Sustainable Development (2021-2030). • Global Research Initiatives: Studies microplastics, ocean acidification, and marine biodiversity.

GEO-ECONOMIC FRAGMENTATION

Context: The Economic Survey 2024-25 highlights a global shift from economic integration to geo-economic fragmentation (GEF), replacing globalization.

What is Geo-economic fragmentation (GEF)?

- The Survey describes GEF as a **policy-driven reversal of global economic integration**, often **influenced by strategic considerations**. This fragmentation affects multiple channels, including trade, capital, and migration flows, leading to economic realignments and adjustments worldwide.

Related Terms	
Friend-shoring	Also known as " allyshoring ", it denotes a trade and investment strategy where countries shift supply chains and manufacturing operations to allied or geopolitically friendly nations to reduce reliance on geopolitical rivals.
Re-shoring	The process of bringing back manufacturing or business operations from foreign countries to the home country to reduce dependence on external economies and strengthen domestic production.
Near-shoring	The practice of relocating business operations or supply chains to a nearby country, rather than a distant one, to reduce transportation costs, improve logistics, and ensure faster market access. For example, U.S. companies shifting production to Mexico instead of China.

TRIANGULAR COOPERATION

Context: A recent OECD and Islamic Development Bank report highlights the growing significance of triangular partnerships in strengthening global influence in a divided and conflict-prone world.

What is Triangular Cooperation?

- Triangular cooperation refers to **development initiatives that leverage the strengths of both traditional donors (developed countries or multilateral institutions) and developing countries to share knowledge** and address developmental challenges. According to the OECD definition, this model involves three key actors:
 - **Beneficiary Partner (Recipient Country):** A **developing** nation that **seeks assistance** to solve a specific development problem.
 - **Pivotal Partner:** A **developing** country or institution with **relevant expertise** and experience that shares knowledge, resources, and technical support.
 - **Facilitating Partner:** A **developed** country or international organization that provides **financial and technical assistance** to enable cooperation between the beneficiary and pivotal partners.
- **India ranks eighth among the top ten countries involved in triangular partnerships.** Its first engagement in this model dates back to 1957, when it participated in a road construction project with the US and Nepal.

INTERNATIONAL ORGANIZATION OF AIDS TO MARINE NAVIGATION

Context: India elected to Vice Presidency of International Organization of Aids to Marine Navigation (IALA) in Singapore.

About IALA

- International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) was originally established in **1957** as a non-governmental organization (NGO), IALA has now transitioned into an **inter-governmental organization (IGO)**.
- The new organization is named ***The International Organization for Marine Aids to Navigation***.
- **Mandate:** to harmonize global navigation systems, enhance maritime safety initiatives, and collaborate with various international stakeholders to address challenges such as environmental protection and emerging navigation technologies.
- IALA has three categories of membership:
 - **National Members:** National maritime authorities responsible for navigation aids.
 - **Associate Members:** Organizations and research bodies involved in navigation-related matters.
 - **Industrial Members:** Manufacturers and service providers in marine navigation technology.

INDIA-RUSSIA ARCTIC CONFERENCE

- At an India-Russia Arctic Conference, the Russian Ambassador to India highlighted India's emerging role as a stabilizing presence in the Arctic region.
- The event was **jointly organized by the Vivekananda International Foundation and The Northern Forum of Russia**.

India in Arctic

- India's engagement with the Arctic began in **1920** with the signing of the **Svalbard Treaty**.
- In **2007**, India began its Arctic Research Program, focusing on climate change.
- In **2008**, India set up its **first Arctic research station, Himadri**, in Ny-Ålesund, becoming the only developing country apart from China with a base there.
- In **2014**, India **deployed IndArc**, an underwater observatory, followed by the establishment of its **northernmost atmospheric lab at Gurvebadet in 2016**.
- India was granted **observer status in the Arctic Council in 2013**, along with China, Japan, South Korea, and Singapore.

INDIAN TECHNICAL AND ECONOMIC COOPERATION (ITEC)

Context: The National Human Rights Commission (NHRC), in collaboration with the Ministry of External Affairs (MEA), successfully conducted the ITEC Executive Capacity Building Programme on Human Rights for senior officials from National Human Rights Institutions (NHRIs) across the Global South.

About the Indian Technical and Economic Cooperation (ITEC) programme

- The ITEC programme, launched in **1964**, is the MEA's flagship capacity-building initiative aimed at promoting development cooperation with partner countries.
- **Administered by:** Development Partnership Administration-II (DPA-II), MEA

Key Features of ITEC:

- **Extensive Training Opportunities:** Offers 10,000+ fully funded in-person training slots annually, across 400 courses at over 100 premier institutes in India.
- **Global Impact:** Since 2014, over 100,000 professionals from partner nations have benefited from ITEC training programs.
- **Promotion of Best Practices:** India's model of Digital Public Infrastructure (DPI) is highlighted as an example for data governance and privacy in developing countries.
- **Adaptability During Crisis:** Continued operations even during the COVID-19 pandemic, providing 10,000 online training sessions in areas such as public health and governance.

- **Customized Approach:** ITEC offers training tailored to the specific needs of countries using various modes:
 - **e-ITEC:** Online learning via digital platforms
 - **ITEC-Executive:** In-person, policy-focused training for senior officials
 - **ITEC-Onsite / ITEC-Expert:** Deployment of Indian experts for on-ground capacity building

TRUMP ESTABLISHES US BITCOIN RESERVE

Context: President Donald Trump issued an executive order to create a Strategic Bitcoin Reserve and a U.S. Digital Asset Stockpile.

About US Bitcoin Reserve

- The **Strategic Bitcoin Reserve will be filled with Bitcoin (BTC)** that has been taken by the government through **legal seizures—usually from criminal or civil cases.**
- The government will not sell the Bitcoin kept in the Strategic Reserve. Instead, it will be held as a long-term asset, similar to how gold is used by central banks.
- Since Bitcoin has a limited supply (only 21 million can ever exist), early and strategic holding is seen as valuable for the U.S. in the future global financial system.
- Bitcoin is often referred to as "digital gold" due to its perceived value, scarcity, and potential as a store of value, similar to traditional gold
- The U.S. government is believed to possess nearly 200,000 Bitcoins. However, no official audit has been done to confirm the exact amount.

U.S. Digital Asset Stockpile:

- This stockpile will include various **digital assets—other than Bitcoin**—that are already in the possession of the U.S. Department of the Treasury. These assets were obtained through criminal or civil asset forfeiture cases.

WORLD HAPPINESS REPORT 2025

Context: The World Happiness Report 2025 ranks Finland as the happiest country for the eighth year in a row.

About World Happiness Report

- World Happiness Report is released by **Wellbeing Research Centre and University of Oxford**, based on Gallup surveys and supported by UN Sustainable Development Solutions Network.
- Rankings are calculated based on life evaluations from the Gallup World Poll using the Cantril Ladder (0–10 scale).
- The 2025 Rankings are based on a three-year average (2022–2024).
- Key influences include GDP per capita, social support, perceived freedom, trust, generosity, healthy life expectancy and perception of corruption

Global Highlights:

- **Top countries:** Finland, Denmark, Iceland, Sweden, with Costa Rica and Mexico entering top 10.
- **Afghanistan** remains the least happy, followed by **Sierra Leone** and **Lebanon**.
- India's rank improved from 126th to 118th out of 147 countries. Happiness score rose from 4.054 to 4.389 (out of 10).

ARCTIC COUNCIL

Context: International observers have raised concerns about escalating tensions in the Arctic.

What is the Arctic Council?

- Established by the **Ottawa Declaration** in **1996**, Arctic Council is the leading **intergovernmental forum for cooperation, coordination, and interaction among Arctic States**, Indigenous Peoples, and other inhabitants.

- While it is **not a rule-making body**, it facilitates collaboration on sustainable development, scientific research, environmental protection, and Indigenous rights. However, its mandate **excludes military security matters**.
- **Members** (8 Arctic States): Canada, Denmark, Finland, Iceland, Norway, Russia, Sweden, U.S.
- **Permanent participants**: 6 Indigenous groups representing Arctic inhabitants.
- **Observers (Non-Arctic states & organizations)**: 13 countries (e.g., **India**, China, Japan, UK, France etc.), 13 intergovernmental organisations & 12 non-governmental organisations.
- All decisions require consensus of Arctic States and consultation with permanent participants. The **Chairmanship** rotates every two years among the Arctic States.

KATCHATHEEVU ISLANDS

Context: Tamil Nadu Legislative Assembly has once again unanimously adopted a resolution urging the Union government to retrieve Katchatheevu from Sri Lanka.

- Katchatheevu (meaning 'barren island' in Tamil) is a small island (1.9 sq. km) in the **Palk Strait, which separates India and Sri Lanka**. It lies **northeast of Rameswaram** (Tamil Nadu, India) and **southwest of Jaffna** (Sri Lanka).
- The island was formed by a **volcanic eruption** in the 14th century. It was initially under the Jaffna Kingdom (Sri Lanka), later came under the **Ramnad Zamindari**, ruled by the Nayak dynasty of Madurai. After independence, both British India and Sri Lanka claimed the island.
- The island is linked to Tamil heritage and the sage **Thiruvalluvar**. A famous **annual festival is held at St. Anthony's Shrine**, drawing pilgrims from both countries.



Agreements Related to Katchatheevu

- **Indo-Sri Lankan Maritime Agreement of 1974:** India, under PM Indira Gandhi, gave the island to Sri Lanka to settle the maritime boundary. Indian fishermen were allowed to visit the island, but their fishing rights were not clearly defined. Sri Lanka allowed only limited activities like resting, drying nets, and visiting the church on the island.
- **1976 Agreement:** Both countries agreed not to fish in each other's Exclusive Economic Zones (EEZs). Since Katchatheevu is near EEZ boundary, fishing rights remain a grey area.

HEARD AND MCDONALD ISLANDS

Context: The US President imposed a 10% tariff on imports from the Heard and McDonald Islands, despite the islands having no known exports to the US.

- Heard and McDonald Islands are **remote volcanic islands in the southern Indian Ocean**, located about 4,100 km southwest of Perth and 1,600 km north of Antarctica. As one of **Australia's external territories**, they are directly governed by the Australian government.
- Heard Island features Big Ben, an active volcano with Mawson Peak (2,745 m), the highest point in Australian territory outside the mainland and Tasmania.
- **These are the only volcanically active sub-Antarctic islands**, offering unique insights into geological processes, climate change, and glacial dynamics.
- **Recognised as a UNESCO World Heritage Site since 1997**, they are protected as a **strict nature reserve (IUCN Category Ia)**. The islands host thriving populations of marine wildlife like penguins, elephant seals, and seabirds, and remain free from invasive species.

ECONOMY AND INFRASTRUCTURE

RECOVERY IN CORE SECTORS

Context: Output in India's **eight core sectors** recovered to rise 3.1% in October 2024, the best performance in three months.

About Core Sector

- The core sectors of an economy refer to the **primary industries that are fundamental to its functioning and development.**
- These industries are typically capital-intensive, require significant investment, and have a **substantial impact on other sectors through forward and backward linkages.**

About Index of Eight Core Industries (ICI)

- ICI gives an indication of the **production performance of the industries which are of a 'core' nature.**
- These industries **contribute 40.27% to the weight of items included in the Index of Industrial Production (IIP).**
- The base year of ICI is **2011-12** and it is **prepared every month**
- It is released by the **Office of the Economic Adviser** under the Department for Promotion of Industry and Internal Trade (DPIIT).

Core Industry	Weight (%)
Petroleum Refinery	28.04
Electricity	19.85
Steel	17.92
Coal	10.33
Crude Oil	8.98
Natural Gas	6.88
Cement	5.37
Fertilizers	2.63

About Index of Industrial Production (IIP)

- It indicates the **relative change of physical production in the field of industries during a specified year as compared to the previous year.**
- It is a composite indicator that tracks the growth rate of industry groups classified into **Broad sectors:** Manufacturing (77.6%), Mining (14.4%) and Electricity (8%).
- It is computed and published by the **National Statistical Organisation (NSO)** on a **monthly basis.**
- **Base Year:** For the IIP series in India, the **base year is 2011-12.** The base year is assigned a value of 100. If the current IIP is 110, it indicates a 10% growth compared to the base year.

NEW RBI GOVERNOR APPOINTED

Context: The Appointments Committee of the Cabinet has appointed Sanjay Malhotra as the 26th Governor of the RBI.

About RBI Governor

- The Governor acts as the **CEO of the RBI and heads its Central Board of Directors.** The Governor's signature appears on Indian Rupee currency notes issued by the RBI.
- **Sir Osborn Smith was the first RBI Governor,** appointed after the establishment of the RBI in 1935.

Appointment of RBI Governor

- **Authority:** The RBI Governor is appointed under the **RBI Act, 1934** by the Central Government.
- **Selection Process:** The **Financial Sector Regulatory Appointment Search Committee**, which includes the **Cabinet Secretary**, current **RBI Governor**, **Financial Services Secretary**, and **two independent members**, prepares a list of eligible candidates.
- **Final Approval:** Shortlisted candidates are interviewed, and the list is sent to the **Cabinet Committee on Appointments, headed by the Prime Minister**, for final approval.

Tenure of RBI Governor

- The RBI Governor's term is up to **five years**, initially set at three years, but can be extended for two more years.
- **Termination of Term:** The President of India may remove the Governor. The Governor may resign by submitting a resignation to the President.
- **Reappointment:** The Governor is eligible for reappointment or extension of tenure.

- **Qualifications:** The RBI Act does not specify any particular qualifications for the Governor. People with different educational backgrounds were selected to head the institution; however, the governor is traditionally either civil services personnel or an economist.
- The Central Government can issue directions to the RBI after consulting the Governor, in the public interest.

RAJMARG SATHI

Context: NHAI has introduced Advanced Route Patrolling Vehicles named 'Rajmarg Saathi' to enhance highway safety.

About Rajmarg Saathi

- Rajmarg Saathi refers to a **new generation of Route Patrolling Vehicles (RPVs) introduced by the National Highways Authority of India (NHAI)** to enhance the safety, maintenance, and operational efficiency of National Highways across India.
- These vehicles are **designed to conduct inspections of highway stretches, monitor road conditions, respond to emergencies**, and ensure smooth traffic flow.
- Equipped with a **dashboard camera featuring AI video analytics**, the RPV can capture and identify road distresses such as cracks, potholes, and other infrastructure issues.
- The collected data and video footage will be integrated into the **NHAI One application** for efficient road maintenance.

About National Highways Authority of India (NHAI)

- The NHAI was established through an Act of Parliament - National Highways Authority of India Act, 1988, and became operational in 1995.
- It operates as an autonomous agency under the Ministry of Road Transport and Highways (MoRTH).
- NHAI was constituted with the primary objective of developing, maintaining, and managing the National Highways network across the country.
- It also implements large-scale projects like the Golden Quadrilateral, North-South and East-West Corridors, and the Bharatmala Pariyojana.

WORLD'S LARGEST GRAIN STORAGE PLAN

Context: The **World's Largest Grain Storage Plan in the Cooperative Sector** has successfully entered its pilot phase, leading to significant advancements in grain storage infrastructure in India.

Key highlights of the Initiative:

- **Ministry:** Ministry of Cooperation
- **Purpose:** Establish **decentralized storage facilities at PACS level**, alongside other agricultural infrastructure such as warehouses, processing units, and Fair Price Shops (FPS) through convergence of existing schemes
- **Convergence:** Under the Plan, subsidies and interest subvention are given to PACS through convergence of various existing schemes, like Agriculture Infrastructure Fund (AIF), Agricultural Marketing Infrastructure Scheme (AMI), etc.
- **Implementing Agencies:** National Cooperative Development Corporation (**NCDC**), **NABARD**, Food Corporation of India (**FCI**), Central Warehousing Corporation (**CWC**), National Buildings Construction Corporation (**NBCC**), NABARD Consultancy Services (**NABCONS**), etc.
- **Storage Capacity:** **9,750 metric tonnes** (in 13 PACS across 13 states/UTs during the pilot phase)
- **Additional Construction Plans:** By November 2024, over 500 additional PACS across India have been identified for the construction of godowns, further expanding storage infrastructure.

BIMA SAKHI YOJANA

Context: PM has recently introduced the 'Bima Sakhi Yojana' of the Life Insurance Corporation (LIC). This initiative aims to create 200,000 jobs for women, thereby emphasizing the commitment to women's empowerment and financial inclusion.

About Bima Sakhi Initiative:

- Bima Sakhi is a **stipend-based program**, designed exclusively for **women**. It offers them **specialised training and financial support for a period of three years to promote financial literacy and insurance awareness**.
- **Eligibility:** Women aged between 18 and 70 years who have completed their 10th-grade education. Relatives of existing Agent or Employee shall not be eligible.
- After training, they can serve as LIC agents and the graduate Bima Sakhis would have the opportunity to qualify for being considered for Development Officer roles in LIC.
- Each Bima Sakhi will receive a monthly stipend of Rs 7,000 in the first year, Rs 6,000 in the second year, and Rs 5,000 in the third year (monthly). Additionally, women agents can earn commissions based on the insurance policies they secure.

INCREASE IN REER

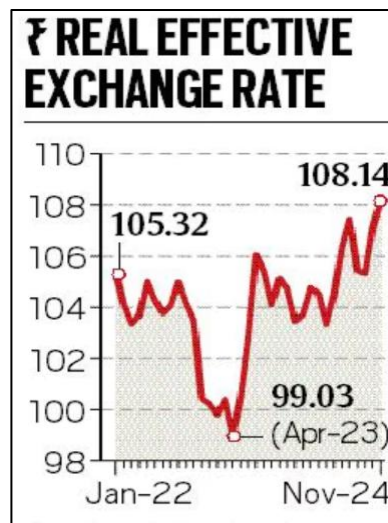
Context: The RBI reported that the rupee's **Real Effective Exchange Rate (REER)** reached **108.14** in **November 2024**, up from **107.20** in **October 2024**, marking its highest level this year.

About NEER (Nominal Effective Exchange Rate):

- It is the **weighted average of a currency's bilateral exchange rates with multiple trading partner currencies**.
- The nominal exchange rate is the amount of domestic currency that's needed to purchase foreign currency.
- Reflects the nominal strength of a currency but does not account for inflation or price level differences.
- A rise in NEER indicates nominal appreciation, while a decline signals depreciation.

About REER (Real Effective Exchange Rate):

- An improvement over NEER, it **adjusts for relative price levels (inflation) between domestic and foreign economies**.



$$\text{REER} = \text{NEER} \times (\text{Domestic Price Index} / \text{Foreign Price Index})$$

- It is a **purchasing power parity (PPP)-adjusted measure of competitiveness**, showing the real value of a currency in terms of its trade-weighted counterparts.

Currency Basket for India's Indices: Initially based on six currencies: US Dollar (USD), Euro (EUR), Japanese Yen (JPY), British Pound (GBP), Chinese Yuan (CNY), and Singapore Dollar (SGD). **Now expanded to 40 currencies of countries** that account for ~88% of India's annual exports and imports.

When NEER/REER Increases:

- The **domestic currency becomes stronger** relative to other currencies in the basket.
- **Imports become cheaper** because foreign goods are now less expensive in domestic currency.
- **Exports may become more expensive** for foreign buyers, potentially leading to a **decline in export competitiveness**.

ADB LOAN FOR SMILE PROGRAM

Context: The Indian government and the Asian Development Bank (ADB) signed a landmark \$350 million policy-based loan under the second sub-programme of the SMILE programme.

Key Pillars of SMILE

- **Institutional Frameworks:** Capacity building at national, state, and city levels for multimodal logistics integration.
- **Standardised Warehousing:** Uniform standards to streamline supply chains and attract private investments.
- **Trade Logistics:** Enhancing the efficiency of external trade operations.
- **Smart, Low-Emission Systems:** Advanced technologies to improve efficiency and reduce environmental impact.

About the SMILE Programme:

- The **Strengthening Multimodal and Integrated Logistics Ecosystem (SMILE)** is a **policy-based loan initiative** supporting logistics reforms in India.
- Comprises **two subprograms aimed at expanding manufacturing and strengthening supply chain resilience**.
- Jointly implemented by the Department of Economic Affairs (**DEA**), the Department for Promotion of Industry and Internal Trade (**DPIIT**), and **ADB**.

CREDIT GUARANTEE SCHEME FOR E-NWR BASED PLEDGE FINANCING

Context: The Ministry of Consumer Affairs, Food and Public Distribution has launched the Credit Guarantee Scheme for e-NWR based pledge financing (CGS-NPF).

About NWR and e-NWR:

- A Negotiable Warehouse Receipt (NWR) is a document that allows the transfer of ownership of goods stored in a warehouse, without delivering it physically.
- The NWR system was **launched in 2011** by the Ministry of Consumer Affairs, Food & Public Distribution. The **eNWR is a digital version** of the traditional warehouse receipt, launched in **2017**.

About Warehousing Development and Regulatory Authority (WDRA)

- The WDRA regulates the NWR system. It is a **statutory body** under the Warehousing (Development and Regulation) Act, 2007.
- **Objective:** To regulate the NWR system, enabling farmers to store produce in scientifically managed warehouses.
- Since 2019, the WDRA has made it **mandatory** for NWRs to be issued in **electronic form**.

About Credit Guarantee Scheme for e-NWR based pledge Financing

- It aims to provide credit facilities to small farmers to prevent them from post-harvest distress selling.
- It provides a corpus of Rs 1,000-crore for post-harvest finance availed by farmers against electronic negotiable warehouse receipts (e-NWRs) after depositing commodities in WDRA accredited warehouses.
- **Coverage:** Loans up to Rs. 75 lakhs for agricultural purpose and Loans up to Rs. 200 Lakhs for non-agricultural purpose.
- **Eligible Institutions:** All scheduled banks and all cooperative banks.
- **Eligible Borrowers:** Small and Marginal Farmer (SMF)/ Women/SC/ST/PwD Farmers, other farmers, MSMEs, Traders, FPOs and Farmer cooperatives.
- **Risks covered:** Credit and warehouseman risk
- **Guarantee coverage:** 85% for loans up to Rs. 3 lakhs and 80% for loan between 3 to 75 lakhs for small and marginal farmers/women/SC/ST/PwD and 75% for other borrowers.

What is Pledge Financing?

- Pledging is a process in which the **holder of the eNWR will get a loan from the financial institution using the underlying commodity of eNWR as collateral**.
- When a pledge is marked, the eNWR balances will remain in the client's account (borrower) only but the control on the balance will be with the financial institution.
- Thus, the client will not be able to use the eNWR balances until the pledge in favour of the financial institution is active.

FREE-AI COMMITTEE

Context: The Reserve Bank of India has set up eight-member committee to develop the **Framework for Responsible And Ethical Enablement of Artificial Intelligence (FREE AI) in the financial sector**.

About 'FREE-AI' Committee:

- The committee will assess the current level of adoption of AI in financial services, globally and in India, and review regulatory and supervisory approaches on AI with focus on the financial sector globally.

- It will be **chaired by Pushpak Bhattacharyya**, Professor at IIT Bombay, and includes members from NITI Aayog, HDFC Bank, IIT Madras, the Ministry of Electronics and Information Technology, law firm Trilegal, and Microsoft India.
- Supported by the RBI's FinTech department, the committee will submit its report within six months.

WINDFALL GAINS TAX ABOLISHED

Context: The Union Government has withdrawn the windfall gains tax (WGT) on domestic production of crude oil and export of diesel, petrol, and aviation turbine fuel (ATF).

About Windfall Gains Tax (WGT)

- A windfall tax is a higher tax levied by the government on specific industries when the industry experiences unexpected and above-average profits due to various global and geopolitical events which are outside the control of the industry. By nature, it is an indirect tax.
- As the name suggests, "windfall" refers to a dramatic and unanticipated increase in profits. On the other hand, "tax" implies an imposition levied on this dramatic income growth.
- **India first imposed windfall profit taxes on July 1, 2022** joining a growing number of nations that tax super normal profits of energy companies.
- Windfall tax is justified as the sudden rise in profits cannot be attributed to something the company was actively involved in, like its business expansion or strategy.

JALVAHAK SCHEME

Context: Jalvahak Scheme was launched by the Ministry of Ports, Shipping & Waterways.

About Jalvahak Scheme

- It is a **cargo promotion scheme designed to incentivize movement of long haul cargo via National Waterways 1** (river Ganga), **National Waterways 2** (river Brahmaputra) and **National Waterways 16** (river Barak).
- **Ministry:** Union Ministry of Ports, Shipping & Waterways.
- **Implementing Agencies:** Inland Waterways Authority of India (IWAI) and Inland & Coastal Shipping Ltd (ICSL), a subsidiary of the Shipping Corporation of India.
- **Objective:** Encourage a modal shift of 800 million tonne-kilometers in cargo transport by incentivizing businesses to use inland waterways.
- **Investment:** ₹95.4 crore.
- **Duration:** Initially valid for three years.
- **Incentives:** Reimbursement of up to 35% of total operating costs for cargo transportation. Applicable for distances over 300 km via inland waterways.
- **Scheduled Service:** Fixed-day sailings between major locations, including Kolkata, Patna, Varanasi, and Pandu (Assam).
- **Modal Shift Target:** The scheme aims to incentivize a modal shift of 800 million tonne-kilometers with an investment of ₹95.4 crores by 2027.

INDIA BECOMES TOP RECIPIENT OF REMITTANCE

Context: The World Bank recently released the remittance details across the world.

What is Remittance?

- The term remittance is derived from the word **remit, meaning to send back**. In a broader sense, remittances **primarily refer to funds sent by migrants to their relatives in their home countries while working abroad**.
- **Top Remittance-Receiving Countries (2024):** India: **\$129.1 billion**, Mexico: \$68 billion, China: \$48 billion, Philippines: \$40 billion, Pakistan: \$33 billion.
- **India's Dominance**
 - India leads the remittance inflows globally, achieving its highest-ever inflow of **\$129.1 billion in 2024**, representing **14.3% of global remittances**.
 - India's share in global remittances has consistently remained above **10%** since 2000.

- In 2023, **remittances to India were 3.4% of India's GDP.**
- **Impact on Smaller Economies:** In certain smaller economies, remittance inflows account for significant portions of their GDP: **Tajikistan: 45% of GDP**, Tonga: 38% of GDP, Nicaragua: 27% of GDP, Lebanon: 27% of GDP, Samoa: 26% of GDP

INDIA'S EASTERN MARITIME CORRIDOR

Context: India became the largest buyer of Russian oil in 2024, surpassing China. The new **Eastern Maritime Corridor (EMC)** has boosted trade by cutting shipment time and costs.

About Chennai-Vladivostok Eastern Maritime Corridor (EMC):

- The Chennai-Vladivostok EMC is a **sea route that connects Chennai Port on India's east coast with Vladivostok Port in Russia's Far East.**
- The route passes through the **Sea of Japan, the South China Sea, and the Malacca Strait.**
- This corridor was proposed in September 2019 when PM Modi visited Vladivostok for the Eastern Economic Forum and the two countries signed an MoU to develop a sea route between the Indian port of Chennai and Vladivostok

Significance:

- **Reduced Logistics Costs:** EMC shortens the shipping distance from the traditional **St. Petersburg-Mumbai route** (8,675 nautical miles) to 5,600 nautical miles, reducing transit time from over 40 days to just 24 days. Crucial for India, as it became the largest buyer of Russian oil in July 2024, and imports over 85% of its crude oil demand.
- **Diversification of Trade:** The corridor enables the shipment of crude oil, coal, LNG, fertilizers, and other commodities, expanding trade relations with Russia.
- **Boost to India's Maritime Sector:** Supports India's maritime sector, which handles around 95% of trade by volume and 70% by value, enhancing its growth and efficiency. Aligns with **India's Maritime Vision 2030**, which includes over 150 initiatives to transform the sector.



Other Trade Corridors In News

Northern Sea Route (NSR)	● A 5,600 km Arctic route from the Barents and the Kara seas (Kara Strait) and ends in the Bering Strait (Provideniya Bay), cutting transit times by up to 50% compared to the Suez Canal. ● It is the shortest shipping route for freight transportation between Europe and countries of the Asia-Pacific region. ● Gained significance after the 2021 Suez Canal blockage. ● Vital for India due to growing imports of Russian crude oil and coal. ● Enhances Arctic shipping and polar navigation, counterbalancing Russia-China influence in the region.
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SUSPENSION OF MFN CLAUSE IN INDIA-SWITZERLAND TAX TREATY

Context: Switzerland has announced the suspension of the Most-Favoured-Nation (MFN) clause under the Double Taxation Avoidance Agreement (DTAA) with India, effective January 1, 2025.

What is Most Favoured Nation (MFN)?

- An MFN clause **mandates a country that provides a trade concession to one trading partner to extend the same treatment to all trading partners.**

- It is a **founding principle of the WTO**. For example, if a WTO member country reduces a tariff on a product for one trading partner, it must also extend that same tariff reduction to all other WTO members.
- **Purpose:** To replace power-based (bilateral) policies with a rules-based framework. It ensures that the best trade conditions given to one country must be extended to all other participants in the system. This way, everyone benefits without needing to negotiate further.
- **Exemptions:** The WTO provides the following exemptions from MFN provisions -
 - When members strike **bilateral trade agreements** or when **members offer developing countries special access to their markets**.
 - **Trade blocs** like the European Union (EU), are allowed to discriminate against imports from outside the bloc.
 - **Trade barriers** in response to **unfair competition**, etc.
 - WTO members can impose any trade measures they want on **countries that are not members of the WTO** (Iran, North Korea, Syria, Belarus, etc).
- **Removal of MFN status:**
 - There is no formal procedure for suspending MFN treatment and it is unclear whether members must notify the WTO if they do so.
 - **For example**, India revoked Pakistan's MFN status following the Pulwama attack in 2019. Pakistan has never granted India MFN status.

About Double Taxation Avoidance Agreement (DTAA)

- A DTAA is a **tax treaty between two or more countries designed to prevent taxpayers from being taxed twice on the same income**.
- It applies when an individual or entity resides in one country but earns income in another.
- DTAA's can be: **Comprehensive** – covering all types of income, or **Limited** – applying only to specific categories such as income from shipping, air transport, inheritance, etc.
- Key **provisions** of a DTAA include the **allocation of taxing rights** among member countries, **prescribing tax rates** for different types of income, and **facilitating the exchange of tax-related information** between tax authorities to prevent tax evasion.
- The primary objective of such agreements is **to promote cross-border trade and investment** by ensuring fair taxation and eliminating the burden of double taxation.

GDP BASE YEAR REVISION

Context: The government has established a 26-member Advisory Committee on National Accounts Statistics (NAS) to revise the GDP base year from 2011-12 to 2022-23.

Key Highlights

- A 26-member Advisory Committee on NAS, chaired by **Biswanath Goldar**, has been established to update the GDP base year from 2011-12 to **2022-23**.
- The committee will identify new data sources and refine methodologies for compiling NAS.
- The **Central Statistics Office (CSO) in the Ministry of Statistics and Programme Implementation (MoSPI)** publishes NAS annually, incorporating GDP estimates from multiple approaches.

Objectives of the Advisory Committee

- Review data sources to ensure GDP alignment with inflation and industrial indices.
- Improve the accuracy and relevance of national income statistics.
- The last base year revision in 2015 changed the base from 2004-05 to 2011-12, adopting Gross Value Added (GVA) at basic prices instead of GDP at factor cost.

Understanding Base Year in GDP Calculation

- The base year in GDP calculation is a **specific year used as a reference point for measuring economic growth**. It serves as the **benchmark against which changes in economic activity** (such as production, income, and expenditure) **are compared over time**.

- For example, if the base year is 2011-12, then all GDP calculations for subsequent years will be measured relative to the prices and economic conditions of that year.
- Base year revisions also impact economic indicators such as: Index of Industrial Production (IIP), Wholesale Price Index (WPI), Consumer Price Index (CPI)

How Often is the Base Year Updated?

- Base year revisions are undertaken to take into account the changing structure of the economy. The current base year (as of now) is 2011-12.
- The government (via the Central Statistics Office (CSO)) updates it every 5–10 years based on economic shifts.
- Since the publication of the first national income estimates in 1956, with 1948-49 as the base year, **India has revised its base year seven times.**

Methods for Calculating GDP

- **Production Approach**
 - **Formula:** $GDP = \sum GVA_i$ (Sum of Gross Value Added by all firms in the economy)
 - **GVA Calculation:** $GVA = \text{Gross Output} - \text{Intermediate Consumption}$
- **Expenditure Approach:** Measures total spending in an economy
 - **Formula:** $GDP = C + I + G + NX$ (Where, C: Consumer Spending, I: Business Investment in Equipment, etc., G: Government Spending, NX: Net Exports (Exports – Imports))
- **Income Approach:** Measures total income generated from production
 - **Formula:** $GDP = \text{Wages} + \text{Profits Earned by Businesses} + \text{Investment in Fixed Assets} + \text{Net Indirect Taxes (Taxes – Subsidies)} + \text{Net Primary Income from Abroad}$

PUBLIC-PRIVATE PARTNERSHIP (PPP) FRAMEWORK IN INDIA

Context: The World Bank released the Benchmarking Infrastructure Development report, analyzing Public-Private Partnership (PPP) regulatory frameworks across 140 economies.

About Public-Private Partnership (PPP)

- PPP is a **fixed-term contractual arrangement between a public entity and a private entity for the development and operation of public assets or services.**
- The private entity undertakes investment and management responsibilities, with or without user fees, for a specified period.
- The agreement includes a well-defined allocation of risks between both parties, ensuring adherence to predetermined performance standards.
- In India, the **Private Investment Unit under the Department of Economic Affairs oversees policy matters related to PPPs**, including policies, schemes, model agreements, and capacity building.

PPP Models in India

Build-Operate-Transfer (BOT)	A private entity finances, designs, builds, and operates a facility for a defined period, recovering costs through user fees before transferring ownership back to the public sector. This model involves substantial private sector participation, including financial, volume, and price risks.
Annuity Model	A BOT model where the government contracts private sector efficiencies through availability or performance-based payments. The granting authority pays annuities to the private player throughout the concession period.
Build-Own-Lease-Transfer (BOLT)	A private entity builds, owns, and leases a facility to a public sector client before transferring ownership at the lease's end.
Build-Own-Operate (BOO)	A private organization builds, owns, and operates a project independently. While the government does not provide direct funding, it may offer financial incentives such as tax exemptions.

Build-Own-Operate-Share-Transfer (BOOST)	A private entity finances, constructs, owns, operates, and maintains an infrastructure facility, sharing a portion of revenue and eventually transferring ownership to the public sector.
Build-Own-Operate-Transfer (BOOT)	A private developer designs, builds, owns, and operates a facility for a specified period (typically 10-30 years) before transferring ownership to the government.
Design-Build-Finance-Operate (DBFO)	A private entity is awarded a contract to design, construct, finance, and operate a project, receiving compensation from the government or user fees.
Design-Build-Operate-Transfer (DBOT)	A model where a private investor partially finances the project, recovering the investment through government annuity payments. The government provides the remaining funds during construction.
Hybrid Annuity Model (HAM)	A combination of EPC (40%) and BOT-Annuity (60%). The government funds 40% of the total project cost through milestone-based tranches, while the developer arranges the remaining 60%, investing only 20-25% and financing the rest through debt.
Lease Model	The private operator oversees service management for a specified period, typically ranging from five to fifteen years, and is responsible for maintaining and upgrading facilities as per the contract terms. It manages personnel and existing assets but does not finance new infrastructure. The private operator invoices the end-users directly.
Lease-Develop-Operate-Transfer (LDOT)	Assets are leased to a private entity for operation and maintenance under specific terms before returning to public ownership.
Design-Build-Finance-Operate-Transfer (DBFOT)	A concession framework where a private entity designs, builds, finances, and operates a project, generating revenue through government payments or user fees before transferring it to the government.
Management Contract	A private partner manages specified service aspects while ownership and major investments remain with the public sector.
Service Contract	The government outsources specific service delivery or asset maintenance to a private entity for operational efficiency.
Rehabilitate-Operate-Maintain-Transfer (ROMT)	A contractual arrangement where an existing facility is transferred to a private entity for refurbishment, operation, and maintenance for a franchise period, after which it reverts to government ownership.
Build-Lease-Transfer (BLT)	A model where a private entity builds a facility, leases it to the government, and transfers ownership after recovering the investment.

INVESTMENT FACILITATION FOR DEVELOPMENT AGREEMENT (IFDA)

Context: India and South Africa have opposed the China-led IFDA proposal at the World Trade Organization (WTO).

About Investment Facilitation for Development Agreement (IFDA)

- **Genesis:** Proposed in **2017** by **developing and least-developed country (LDC) members of the WTO**, recognizing trade and investment as key drivers of economic growth and sustainable development.
- **Objective:** Aims to establish legally binding provisions to **enhance global Foreign Direct Investment (FDI)** flows, particularly benefiting developing economies and LDCs, to promote sustainable development.
- **Plurilateral Nature:** Unlike multilateral agreements, plurilateral agreements under the WTO are binding only on those members that have accepted them"

- **Membership:** The IFD initiative boasts the participation of 126 WTO members spanning all regions, representing three-quarters of the WTO membership. This includes 90 developing economies, 27 of which are least developed countries.
- **MFN-Based Framework:** The agreement follows the Most-Favoured-Nation (MFN) principle, which mandates that any favorable tariff or regulatory treatment granted to the products of one WTO member must be extended to all other members for similar products. This principle is a cornerstone of WTO regulations.

MBRIDGE PROJECT

Context: According to the Bank for International Settlements (BIS), Project mBridge reached the Minimum Viable Product (MVP) stage in mid-2024.

About Project mBridge

- Project mBridge is an innovative initiative aimed at **establishing a multi-central bank digital currency (CBDC) platform** to facilitate real-time, peer-to-peer cross-border payments and foreign exchange transactions, launched in **2021**.
- **Objective:** The primary goal of Project mBridge is to address **inefficiencies in cross-border payments**, such as high costs, slow transaction speeds, and operational complexities. The project also aims **to enhance financial inclusion in regions where traditional correspondent banking services are diminishing**.
- It is built on the **mBridge Ledger**, a **blockchain-based platform** and uses Distributed Ledger Technology (DLT) for enhanced security and transparency.
- **Participants:** Project mBridge was the result of extensive collaboration starting in 2021 between the BIS Innovation Hub, the Bank of Thailand, the Central Bank of the UAE, the Digital Currency Institute of the People's Bank of China and the Hong Kong Monetary Authority. The Saudi Central Bank joined in 2024. It consists of over 31 observing members, including the **Reserve Bank of India (RBI)**.

About Bank for International Settlements (BIS)

- **Founded:** Established in 1930 during The Hague Conference. It is the oldest international financial institution.
- **Purpose:** Assists central banks in promoting monetary and financial stability through global cooperation. It is referred to as “a bank for central banks.” It does not engage in transactions with governments or private entities.
- **Ownership:** 63 central banks, including the **Reserve Bank of India (RBI)**, are stakeholders.
- **Headquarters:** Located in Basel, Switzerland.

ALL-INDIA HOUSE PRICE INDEX (HPI)

Context: Quarterly House Price Index (HPI) was released by RBI

- The House Price Index (HPI) recorded a 4.3% year-on-year increase in Q2 2024-25, up from 3.3% in the previous quarter.
- Bengaluru witnessed the highest growth at 8.8%, while Kanpur saw a decline of -2.0%.

About the All-India House Price Index (HPI)

- The All-India HPI, published by the **Reserve Bank of India (RBI)**, provides a comprehensive measure of **residential property price movements** across major cities in India.
- The HPI uses **transaction-level data** gathered from registration authorities in ten major Indian cities: Ahmedabad, Bengaluru, Chennai, Delhi, Jaipur, Kanpur, Kochi, Kolkata, Lucknow, and Mumbai.
- **Base Year:** 2010-11 = 100
- **Frequency:** Published quarterly.

CONSUMER CONFIDENCE SURVEY (CCS)

Context: A recent RBI survey highlights weakened consumer confidence in India's economy, employment, and spending trends.

About the Consumer Confidence Survey (CCS)

- The CCS is a **bi-monthly survey** conducted by the **Reserve Bank of India (RBI)** to **assess how households feel about the current and future economic situation**.
- It helps policymakers understand consumer sentiment, which plays a crucial role in shaping economic trends, as consumer spending drives economic growth.

Key Features of the CCS:

- **Conducted in Major Cities:** The survey covers 19 major cities across India. Thousands of households participate in the survey.
- **Parameters Assessed:**
 - General economic situation
 - Employment scenario (job availability and security).
 - Price levels and inflation (how expensive goods and services have become).
 - Household income (whether their income has increased or decreased).
 - Spending habits (how much they are spending on essential & non-essentials)

Indexes Used in CCS:

- **Current Situation Index (CSI):** Reflects how people perceive the economy compared to a year ago.
- **Future Expectations Index (FEI):** Shows how optimistic or pessimistic people are about the economy for the next year.

Why is it Important?

- Helps policymakers, including RBI and the government, understand consumer sentiment.
- Influences monetary policy decisions (like interest rates).
- Guides businesses in predicting consumer demand and adjusting their strategies.

UNIFIED PAYMENTS INTERFACE (UPI)

Context: The RBI has announced new rules and regulations to improve the scope of UPI payments.

About Unified Payments Interface (UPI)

- UPI is a digital payment **system developed by the National Payments Corporation of India (NPCI) and regulated by the Reserve Bank of India (RBI)**.
- Launched on April 11, 2016, **UPI enables peer-to-peer inter-bank transfers** through a two-click factor authentication process.
- It simplifies transfers using the recipient's UPI ID, eliminating the need to enter bank details or other sensitive information. A consistent UPI transaction PIN across apps enhances cross-operability, enabling 24/7 transactions.
- **UPI operates as a digital public infrastructure**, allowing seamless interactions for merchants and customers without transaction costs.
- It uses technologies like the **Immediate Payment Service (IMPS)** and the **Aadhaar-Enabled Payment System (AEPS)** to ensure smooth transactions between accounts.
- **UPI facilitates push and pull transactions, as well as multiple recurring payments** like utility bills and school fees.

New UPI Rules

- **Enhanced UPI Transaction Limit:** For UPI payments made to hospitals and educational institutions has been increased from Rs 1 lakh to Rs 5 lakh.
- **UPI Transaction Limit for Other Categories:** Rs 1 lakh. (for specific categories such as Capital Markets, collections and insurance, the limit is set at Rs 2 lakh.)
- **Increased e-Mandate Limit for Recurring Online Transactions:** The limit for recurring online transactions without Additional Factor of Authentication (AFA) has been raised to Rs 1 lakh from Rs 15,000 for credit card bills, mutual funds, etc.

Feature	Description
UPI Lite	A payment solution that utilizes the NPCI Common Library application to process low-value transactions without relying on real-time core banking systems. With the customer's consent, an issuing bank can create an escrow on their account up to a predefined limit.
Credit Line on UPI	Enables users to access pre-sanctioned credit lines from banks via UPI. Previously, transactions were limited to the deposited amount.
UPI Lite X	Allows users to send and receive money offline using any device that supports Near Field Communication (NFC).
UPI Tap & Pay	Facilitates contactless payments using NFC-enabled QR codes at merchants, allowing transactions with a single tap without entering a PIN.
Hello! UPI	Introduces voice-command-based transactions, enabling users to transfer funds and input UPI PIN through voice assistance.
BillPay Connect	Allows customers to fetch and pay bills by simply sending a 'Hi' message or giving a missed call.
UPI 123PAY	A secure and instant payment system designed for feature phone users, enabling UPI transactions without the need for a smartphone.
UPI in Foreign Markets	Expands UPI's reach, allowing payments in Sri Lanka, Mauritius, France, UAE, Singapore, Maldives, Bhutan, and Nepal.

KISAN PEHCHAN PATRA

Context: The Centre has urged states to implement a 'camp-mode approach' to ensure inclusive, efficient, and rapid farmer registration.

About Kisan Pehchan Patra (Farmer ID)

- The Kisan Pehchan Patra is an **Aadhaar-linked unique digital identity for farmers**, which is dynamically **connected to the state's land records**. It includes details such as demographic information, crops sown, and ownership data.
- This ID will serve as the **foundation of the Farmers Registry**, one of the three key registries under the Agri Stack.

- The Union Ministry of Agriculture and Farmers' Welfare has made the **Farmer ID mandatory for registering new beneficiaries under PM-KISAN in 10 states from January 1, 2025**.
- Given that the scheme receives around 2 lakh new applications monthly, the introduction of Farmer ID simplifies the verification process by ensuring that applicants are genuine land-owning farmers.
- The mandatory Farmer ID system has been enforced in states: Andhra Pradesh, Assam, Bihar, Chhattisgarh, Gujarat, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, and Uttar Pradesh.

What is Agri Stack?

- AgriStack is an **open-source digital public infrastructure (DPI) for agriculture**.
- AgriStack will be a repository of all **farmer information**, including their identity, **land records**, coverage, income, insurance, loans, **crop details**, and revenue history.
- This data will be collected through several sophisticated means, including satellite data provided by ISRO, real-time crop information through advanced technologies like artificial intelligence, machine learning, GPS, and visual analytics, among others.
- The AgriStack system will act as a digital ecosystem to bring together various stakeholders in the agricultural sector, including farmers, government agencies, agritech companies, and financial institutions.



- It will be implemented by the Union Ministry of Agriculture and Farmer Welfare in collaboration with the revenue and agriculture departments of state governments.

KISAN KAVACH

Context: Scientists from the **Department of Biotechnology (DBT)** have developed an indigenous 'anti-pesticide' suit named Kisan Kavach.

About Kisan Kavach

- Developed by **BRIC-inStem** in Bangalore, the Kisan Kavach is **designed to shield farmers from the harmful effects of pesticide exposure**.
- The suit comprises **a trouser, pullover, and face-cover, all made of 'oxime fabric'**.
- The oxime fabric is **designed to chemically break down common pesticides** that may come in contact with the cloth or the body during spraying operations.
- Priced at ₹4,000, the suit is washable, reusable, and can last up to two years with up to 150 washes.

DIRECT BENEFIT TRANSFER (DBT)

Context: According to a recent report by the State Bank of India, the total DBT amount to women through various schemes has surpassed the ₹2 trillion across multiple states.

About Direct Benefit Transfer (DBT)

- Direct Benefit Transfer (DBT) is a program by the Indian government that transfers subsidies and benefits directly to the bank accounts of eligible individuals.
- **Launched:** 2013 by **DBT Mission, Cabinet Secretariat**.
- **Objective:** To **reform the process of transferring cash subsidies and benefits**, reducing leakages, ensuring faster delivery, and eliminating delays in fund flow.
- DBT provides support through **cash transfers** like PM-KISAN (farmer income support), pensions, and scholarships, as well as **in-kind transfers** such as fertilizer subsidies, food distribution through PDS, and school meal programs like PM Poshan.

Mechanism of DBT

DBT operates through layers of **India Stack**, a collection of open APIs and digital tools that enable large-scale access to identity, data, and payment systems:

- **Public Financial Management System (PFMS):** Formerly the Central Plan Scheme Monitoring System (CPSMS), it handles functions like beneficiary list preparation, digital signing, and payment processing through the Aadhaar Payment Bridge (APB) of NPCI.
- **JAM Trinity (Jan Dhan-Aadhaar-Mobile):** Integrates Aadhaar-seeded Jan Dhan accounts with mobile numbers for seamless, direct credit transfers to beneficiaries. *Aadhaar is not mandatory in DBT schemes but preferred.*
- **Banking Infrastructure:** Leverages Business Correspondents, Payment Banks, and Aadhaar-enabled Payment Systems (AePS) to enhance financial inclusion and fund delivery.
- **UPI Integration:** Expands interoperability, enabling both public and private sector participation in the delivery of subsidies and benefits.

CREDIT LINE ON UPI FOR SFBS

Context: The RBI has permitted Small Finance Banks (SFBs) to provide pre-sanctioned credit lines through the Unified Payments Interface (UPI), enhancing access to formal credit.

Credit Line on UPI for SFBs

- This facility enables individuals to make payments via pre-sanctioned credit lines issued by banks, with the customer's prior consent.
- Earlier, in September 2023, RBI allowed Scheduled Commercial Banks to offer pre-sanctioned credit limits through UPI.
- **Significance:** Aims to boost financial inclusion and expand access to credit, particularly for new-to-credit customers.

About Small Finance Banks (SFBs)

- A SFB is a type of bank in India that is **designed to provide basic banking services to sections of the population that are typically underserved or unserved by larger commercial banks.**
- The **main goal of a small finance bank is to promote financial inclusion**, which means bringing more people and businesses into the formal financial system.
- Established:** Announced in Union Budget 2014-15.
- Registered as a public limited company under the **Companies Act, 2013.**
- Licensed under **Section 22 of the Banking Regulation Act, 1949.**
- Regulated by:** RBI.
- Features of SFBs:**
 - Provide Savings and Loan Services:** SFBs offer basic banking services like **accepting deposits and providing loans**, mainly to small business owners, small and marginal farmers, micro-enterprises, and people in the unorganized sectors.
 - Focus on Unbanked Areas:** They are required to **open at least 25% of their branches in unbanked rural areas.**
 - Provide Credit to Priority Sectors:** They are expected to allocate at least 75% of their lending to the priority sector. The priority sectors include: **Agriculture** (including small and marginal farmers), **MSMEs**, Export credit, education, housing, and renewable energy, among others.
- Capital & Reserve Requirements:**
 - CRR & SLR:** Subject to the same Cash Reserve Ratio (CRR) and Statutory Liquidity Ratio (SLR) norms as Scheduled Commercial Banks (SCBs).
 - Minimum Capital:** ₹200 crores in paid-up voting equity capital (except for SFBs converted from Urban Cooperative Banks).

Criteria	Small Finance Banks (SFBs)	Payment Banks
Eligibility	Resident Indians, Private Companies, Societies, NBFCs, MFIs, Local Area Banks	PPI Providers, Resident individuals, NBFCs, Telecom Companies, Supermarket Chains, PSEs
Minimum Capital Requirement	₹100 crores (to increase to ₹200 crores within 5 years)	₹100 crores
FDI Allowed	Yes, up to 74%	
Deposit Restrictions	No restrictions	Up to ₹2 lakh per customer
Loan Services	Yes; at least 50% of the loan portfolio must consist of loans up to ₹25 lakh	No, lending is not allowed
Debit/Credit Card Issuance	Can issue both Debit and Credit Cards	Can issue only Debit Cards; Credit Cards are not allowed
CRR & SLR Requirements	CRR and SLR applicable as per RBI	CRR applicable; SLR: 75% of Net Demand and Time Liabilities (NDTL)
BASEL Norms	Yes, 15% of Risk-Weighted Assets (RWAs)	
Priority Sector Lending (PSL)	Yes, must allocate 75% of loans to PSL sectors	No, as lending is not permitted

MORMUGAO PORT AUTHORITY

Context: Mormugao Port Authority has been listed as an incentive provider on the Environment Ship Index (ESI) portal for its 'Harit Shrey' Initiative, acknowledged by the International Association of Ports and Harbours (IAPH).

What is the Environment Ship Index?

- The Environment Ship Index (ESI) identifies seagoing ships that **exceed the air emission reduction standards set by the International Maritime Organization.**
- It assesses **emissions of nitrogen oxides (NOx) and sulfur oxides (SOx)** and includes reporting on **greenhouse gas emissions.**
- It is managed by the International Association of Ports and Harbors (IAPH). ESI serves as an indicator of a ship's environmental performance, helping to identify cleaner, more sustainable vessels.

About International Association of Ports and Harbors (IAPH)

- It is a non-governmental organization (NGO) established in November 1955.
- It has been developed into a global alliance of ports, representing about 185 ports and 160 port-related businesses in 88 countries as of 31 August 2024.
- It aims to be the global trade association of choice for port authorities and operators, representing their interests at regulatory level at the International Maritime Organization, the World Customs Organization, the International Standards Organization and other global alliances.
- **Headquarter:** Tokyo, Japan.

About International Maritime Organization (IMO)

- IMO is a specialized **United Nations agency responsible for regulating shipping**.
- It sets global standards for maritime safety, security, and environmental performance.
- Established in 1948, the IMO **aims to ensure safe and efficient international shipping while protecting the marine environment through conventions and protocols**.
- **HQ:** London, United Kingdom
- **Members:** 176-member states and three associate members. India is a member.
- The IMO is governed by an assembly that meets biennially, supported by a council of 40 elected members. India was re-elected to the IMO Council for the 2024-25.

PAN (PERMANENT ACCOUNT NUMBER) 2.0

Context: The Cabinet Committee on Economic Affairs (CCEA) has approved the PAN 2.0 Project of the Income Tax (IT) Department.

About the PAN 2.0 Project:

- This e-Governance initiative aims to **re-engineer taxpayer registration services through technology-driven transformation**. PAN 2.0 will enhance the existing PAN/TAN 1.0 ecosystem.
- **PAN (Permanent Account Number):** A unique **10-digit alphanumeric identifier** issued by the IT Department to track transactions (such as tax payments) linked to the individual.
- **Issuing Agencies:** Protean (formerly NSDL e-Governance) and UTI Infrastructure Technology and Services Ltd (UTIITSL).
- **Benefits:** PAN 2.0 will serve as a common identifier across all digital systems of designated government agencies, ensuring data consistency and creating a **Single Source of Truth**.

SEBI'S WHEN-LISTED MECHANISM

Context: The Securities and Exchange Board of India (SEBI) is set to introduce a "When-Listed" platform

What is the "When-Listed" Platform?

- The "When-Listed" platform will **allow trading of IPO-allotted shares before their official listing on stock exchanges**.
- It provides a **regulated alternative to the grey market, ensuring transparency in the pre-listing phase**.
- The mechanism is designed to **bridge the gap between IPO allotment (T+1) and listing (T+3)**, reducing speculative activities and market volatility.

Initial Public Offering (IPO)

- **An Initial Public Offering (IPO)** is the process through which a private company offers its shares to the public for the first time.
- This allows the company to raise capital by listing its shares on a recognized stock exchange.

Current IPO Listing Timeline

- **IPO Bidding Closes**
- **T+1 (Allotment Day):** Shares are allotted to investors.
- **T+2 (Pre-Listing Period):** Investors often engage in grey market trading.
- **T+3 (Official Listing):** Shares are officially listed on stock exchanges.

What is the Grey Market?

- The grey market or “*kerb trading*” refers to the unofficial, unregulated trading of IPO shares before their official listing.
- Trades occur in cash without actual delivery of shares, creating market inefficiencies and potential investor risks. Retail investors often use grey market premiums (GMP) to evaluate IPO investments.
- For instance, if the IPO price band is ₹90-100 per share, the grey market premium could be ₹10, ₹20, or ₹30 higher.

NATIONAL CRITICAL MINERALS MISSION

Context: The Union Cabinet has approved the National Critical Mineral Mission (NCMM) with a total outlay of Rs 34,300 crore over seven years.

About National Critical Mineral Mission (NCMM)

- NCMM is a government initiative **to secure India’s access to critical minerals** essential for clean energy technologies, high-tech industries, and defense applications.
- The mission is **part of the broader Atmanirbhar Bharat initiative** and aims **to build a resilient value chain for critical minerals**.

Key Features of NCMM	
Duration	Seven years
Objectives	• Enhance domestic exploration, mining, and processing of critical minerals. • Offer financial incentives for mineral exploration and recovery from waste materials. • Encourage Indian PSUs and private companies to acquire critical mineral assets abroad. • Promote the recycling and recovery of critical minerals from end-of-life products. • Establish stockpiles of essential minerals for strategic needs.
Implementation Strategy	Exploration & Mining: • Intensify mineral exploration within India and its offshore regions. • Expedite approvals for mining projects. Processing & Recycling: • Develop mineral processing parks to support domestic value addition. • Encourage recovery of minerals from industrial waste and tailings. International Collaboration: • Strengthen trade ties with resource-rich nations. • Support overseas acquisitions of critical mineral assets. Regulatory & Policy Support: • Mines and Minerals (Development and Regulation) Act, 1957 was amended in 2023 to facilitate faster exploration and mining of strategic minerals. • Elimination of customs duties on critical minerals (announced in Union Budget 2024-25) to encourage domestic processing. Whole-of-Government Approach: Collaboration with various ministries, PSUs, private sector, and research institutions.
Infrastructure & Innovation	• Encourage recycling of critical minerals and establish a Centre of Excellence for Critical Minerals. • Financial incentives for industries setting up processing units in India. • Expand PRISM initiative to fund startups & MSMEs in the critical minerals sector.

Recent Developments in Critical Minerals

- **India's Critical Mineral List (30 Minerals Identified):** Includes Antimony, Beryllium, Bismuth, Cobalt, Copper, Gallium, Germanium, Graphite, Hafnium, Indium, Lithium, Molybdenum, Niobium, Nickel, PGE, Phosphorous, Potash, REE, Rhenium, Silicon, Strontium, Tantalum, Tellurium, Tin, Titanium, Tungsten, Vanadium, Zirconium, Selenium, and Cadmium.
- **Legislative Reforms**
 - **Mines and Minerals (Development & Regulation) Act, 1957:** Amended (2023) enabling Auction of 24 strategic mineral blocks.
 - **Offshore Areas Mineral (Development & Regulation) Act, 2002;** Amended (2023): Introduces transparent auction for offshore mining rights. Mandates composite licenses for exploration & production.

INDIA'S FIRST GLASS BRIDGE OVER SEA

Context: Tamil Nadu recently inaugurated India's first glass bridge over the sea, connecting the Thiruvalluvar Statue and the Vivekananda Rock Memorial in Kanyakumari.

- The bridge costs ₹37 crore and is the 10-metre-wide bridge spans 77 metres.

About the Thiruvalluvar Statue:

- **Location:** Situated in Kanyakumari, Tamil Nadu, on a rock near the Vivekananda Rock Memorial.
- **Official Name:** Known as the "Statue of Wisdom" by the state government.
- **Dimensions:**
 - **Total Height:** 133 feet (denotes the 133 chapters of Tirukkural), including the pedestal.
 - **Weight:** 7000 tonnes.
- **Design:** Crafted by sculptor V. Ganapathi Sthapathi in an Indian architectural style, with a hollow interior.
- **Inauguration:** The statue was dedicated on January 1, 2000, by the then Chief Minister M. Karunanidhi.

About the Vivekananda Rock Memorial:

- **Location:** Situated on a rock about 500 meters from the mainland in Kanyakumari.
- **Historical Significance:** Erected in 1970 to honor Swami Vivekananda. The rock is believed to be the site where Swami Vivekananda attained enlightenment.
 - It is also considered the location where goddess Kanyakumari prayed to Lord Shiva, with an imprint of her feet preserved on the rock.
- **Architectural Style:** The memorial blends various architectural styles, including Sripada Mandapam and Vivekananda Mandapam.
- **Statue:** A life-sized bronze statue of Swami Vivekananda is located at the memorial.
- **Natural Surroundings:** The rock is surrounded by the Laccadive Sea, where the Bay of Bengal, Indian Ocean, and Arabian Sea converge.



PIG BUTCHERING SCAM

Context: Pig Butchering Scams, a form of online financial fraud, are increasingly becoming a global issue, with a notable rise in cases in India as well.

Key Features of the Pig Butchering Scam:

- **Origin and Name:** The term "**pig butchering**" is derived from the metaphor of fattening a pig before slaughter. It is believed to have originated in China in 2016.

- **Approach:** Scammers typically contact victims through social media, dating platforms, or email. They often pose as friendly strangers, potential romantic partners, or financial advisors.
- **"Fattening" Phase:** Over the course of weeks or even months, the scammer gains the victim's trust, forming a personal connection to manipulate them emotionally and financially.
- **Fake Investment Opportunities:** Once trust is established, scammer introduces fraudulent investment opportunities, involving cryptocurrency or stocks, claiming high returns with little to no risk.
- **Encouraging Larger Investments:** Victims are initially allowed to make small profits, further convincing them of the scheme's legitimacy. This leads them to invest larger amounts.
- **The Scam Unravels:** When victims attempt to withdraw their earnings, they are either blocked, ignored, or asked for additional fees. At this point, the scammer disappears with the invested money.

INVITS, REITS AND MUNICIPAL BONDS

Context: The chairperson of the SEBI has said that Real Estate Investment Trusts (REITs), infrastructure investment trusts (InvITs) and Municipal Bonds will see strong fund raising in the coming decade.

What are Real Estate Investment Trusts (REITs)?

- A Real Estate Investment Trust (REIT) is a **company or trust that owns, operates, or finances income-generating real estate properties.**
- REITs **work similarly to mutual funds**, allowing multiple investors to pool their money and invest in real estate assets without directly owning physical properties.
- REITs must be listed on stock exchanges, allowing investors to buy and sell REIT units just like shares of listed companies.
- **Key Features:**
 - 90% of income is distributed as dividends.
 - At least 80% of investments are in revenue-generating properties.
 - Minimum asset base of ₹500 crore.
 - Leverage capped at 70% of net asset value.
 - Sponsors must hold 15% of units for a 3-year lock-in.
- **Significance:** Offers liquidity, long-term capital appreciation, and allows small investors to participate in real estate.
- **Target Investors:** Retail and institutional investors. The minimum subscription amount is in the range of ₹10,000 to ₹15,000/- and the trading lot is 1 unit.
- **Investments focus on commercial real estate sectors such as:** Offices, Hotels, Retail (Shopping Malls, Stores, etc.), Industrial Properties (Warehouses, etc.), Healthcare Facilities
- **Non-Permitted Assets:** Agricultural Land, Speculative Landbank

What are Infrastructure Investment Trusts (InvITs)?

- An InvIT is a trust or company that raises funds from many investors to invest in **income-generating infrastructure projects such as highways, power plants, pipelines, and bridges.**
- They allow **both retail and institutional investors** to directly invest in infrastructure projects by pooling money together.
- InvITs combine features of both equity (ownership) and debt (loans) instruments.
- **Key Features:**
 - 90% of net distributable cash flows are distributed as dividends.
 - Fixed maturity period.
- **Significance:** Provides funds for infrastructure projects and attracts long-term investors, including pension funds and sovereign wealth funds.
- **Target Investors:** Institutional investors and long-term investors.

What are Municipal Bonds (Munibonds)?

- Municipal bonds are financial instruments issued by urban local governments and agencies to raise funds for infrastructure projects.

- These bonds have existed in India since **1997**, with **Bangalore Municipal Corporation being the first urban local body to issue them**.
- In **2015**, the Securities and Exchange Board of India (SEBI) introduced detailed guidelines to facilitate urban local bodies in issuing these bonds for fund generation.
- **Ghaziabad issued India's first green municipal bond** raising ₹150 crores to fund a tertiary water treatment plant.
- Municipal bonds are of two types:
 - **Revenue Bonds:** Backed by revenue from a specific project, such as water supply or sewer systems. The generated income, like user charges, is used for repayment.
 - **General Obligation Bonds:** Repaid through taxation or municipal revenue, not tied to a specific project. These funds can be used for broader public needs.
- **Target Investors:** Public investors interested in fixed returns and tax benefits.
- **Examples:** Urban infrastructure such as sanitation, roads, and schools.

EMPOWHER BIZ

Context: The Women Entrepreneurship Platform (WEP) of NITI Aayog has launched EmpowHER Biz – Sapno Ki Udaan in partnership with The New Shop, India's largest 24/7 convenience retail chain.

About EmpowHER Biz – Sapno Ki Udaan

- This initiative, under WEP's Award to Reward (ATR) program, **aims to empower women entrepreneurs by equipping them** with essential skills and resources to succeed in the organized retail sector.
- EmpowHER Biz will **provide mentorship and comprehensive training in retail management, digital tools, financial literacy, and business development**.
- By fostering a robust retail ecosystem, WEP and New Shop seek to drive sustainable growth and entrepreneurship among women.
- **Selection:** 50 women entrepreneurs (aged 18–35) will be chosen through an online application.
- **Franchise Support:** The top 20 participants will receive a 100% waiver on New Shop franchise fees.
- **States:** Delhi NCR, Punjab, Rajasthan, Uttar Pradesh, Haryana, Madhya Pradesh, and Gujarat.

About Women Entrepreneurship Platform (WEP)

- WEP, launched by **NITI Aayog** in 2018 as an **aggregator platform**, transitioned into a **public-private partnership in 2022**.
- It **provides end-to-end support to women entrepreneurs** through finance access, market linkages, training, mentoring, compliance assistance, and business development services.
- With over **30 public and private sector partners**, WEP fosters impactful collaborations to support women-led businesses.

SECURITIES TRANSACTION TAX

Context: Despite stock market volatility, Securities Transaction Tax (STT) collections surged over 75% to ₹44,538 crores by January 12, 2025.

What is Securities Transaction Tax (STT)?

- STT is a **direct tax** levied on the **purchase and sale of securities** listed on recognized stock exchanges in India. STT was introduced in the Indian capital market in 2004.
- It is governed by the **Finance Act of 2004**, which specifies the types of transactions subject to STT.
- **Applicability:** STT applies to **equities, derivatives, and equity-oriented mutual fund units**. It does not apply to off-market transactions or trades involving commodities and currencies.
- **Liability:** The responsibility for applying STT lies with the broker, who collects it from clients during stock market transactions. The collected amount is then remitted to the government.

NATIONAL TURMERIC BOARD

Context: The Ministry of Commerce & Industry launched the National Turmeric Board (NTB) to promote turmeric cultivation, production, processing, and marketing.

About the National Turmeric Board (NTB)

- The Board aims to enhance awareness, boost international markets, encourage research and innovation, and support farmers in value addition and skill development.
- **Ministry Oversight:** The Ministry of Commerce & Industry has expanded its product-specific boards to six, adding turmeric alongside tea, coffee, rubber, spices, and tobacco.
- **Composition:** The Chairperson will be appointed by the Central Government, with members from: Ministry of AYUSH, Agriculture, Pharmaceuticals, Commerce & Industry, State Governments (on rotation basis), National and state research institutions, Turmeric farmers and exporters, Secretary appointed by the Department of Commerce.
- **Mandate:**
 - Enhancing turmeric yield, logistics, and supply chains.
 - Research & Development (R&D), value addition, and awareness of medicinal properties.
 - Expanding international markets, ensuring quality & safety standards.
 - Coordination with the Spices Board and government agencies for sector growth.
- **HQ: Nizamabad, Telangana**

Turmeric in India

- **Scientific Name:** *Curcuma longa* (part of the Ginger family Zingiberaceae).
- **Active Compound: Curcumin**, known for anti-inflammatory, antioxidant, & antimicrobial benefits.
- **Major Growing States:** Maharashtra, Telangana, Karnataka, Tamil Nadu, Andhra Pradesh, Madhya Pradesh, Meghalaya.
- **India's Global Standing:** Largest producer, consumer, and exporter of turmeric.
 - Produces over 70% of the world's turmeric across 30 varieties.
 - In 2022-23, India produced 75% of global turmeric and held 62% of the global export market.
 - **Top export markets:** Bangladesh, UAE, USA, Malaysia.
- **GI (Geographical Indication) Tagged Turmeric Varieties:** **Lakadong** (Meghalaya), **Kandhamal** (Odisha), **Erode** (Tamil Nadu), **Sangli, Waigaon, and Vasmal** (Maharashtra)

TOBACCO BOARD

Context: The Tobacco Board has undertaken several strategic activities to ensure the sustainability and growth of the tobacco industry.

Tobacco Board of India

Established	1st January 1976
Governing Law	Tobacco Board Act, 1975 (Act 4 of 1975)
Headquarters	Guntur, Andhra Pradesh
Nodal Ministry	Ministry of Commerce and Industry
Functions	• Promotes export of all tobacco varieties and allied products. • Regulates production, distribution (domestic and export), and trade of Flue Cured Virginia (FCV) tobacco. • Ensures fair and remunerative prices for tobacco farmers. • Provides financial assistance to farmers through banks for quality tobacco production. • Engages in extension and development activities to promote sustainable cultivation. • Supports farmers with training and assistance to meet international quality standards.

India's Tobacco Industry

- India is the 2nd largest producer of tobacco in the world after China.
- India is the 4th largest producer of FCV tobacco in the world after China, Brazil and Zimbabwe.
- India is the 2nd largest exporter of unmanufactured tobacco (quantity terms) after Brazil.

ANTI-DUMPING DUTY ON CYPERMETHRIN

Context: China Imposes Anti-Dumping Duty on Cypermethrin Imports from India

What is Anti-Dumping Duty?

- Anti-Dumping Duty is a **trade remedy measure imposed by a country to counteract the effects of dumping**, where **goods are exported at a price lower than their normal value**. This is done to prevent harm to the domestic industry.
- Normal value refers to the selling price of the product in the exporting country.

Key Points

- **Purpose:** To ensure fair trade and prevent distortion in international markets caused by unfair pricing.
- **WTO Compliance:** Recognized by the World Trade Organization (WTO) as a legitimate tool to protect domestic industries from injury due to dumping.
- **Not a Protectionist Measure (in principle):** It aims to correct unfair trade practices, not to shield domestic industries from competition.
- **Impact:**
 - Helps domestic producers compete fairly by neutralizing the price advantage gained through dumping.
 - Can lead to higher prices for domestic consumers.
 - May reduce international competition for local manufacturers.

Cypermethrin

A synthetic pyrethroid insecticide

USES

- Widely used in **commercial agriculture and household pest control**.
- **Targets pests on crops** like cotton, vegetables, corn, and flowers.
- **Kills ants, cockroaches**, and other agricultural pests.

MODE OF ACTION

- Acts as a **neurotoxin**, disrupting the central nervous system of insects.
- Breaks down quickly in sunlight, water, and oxygen but **remains effective for weeks on indoor surfaces**.

Aspect	Anti-Dumping Duty	Normal Customs Duty
Concept	Imposed to counteract unfair trade practices like dumping.	Levied as part of trade and fiscal policy to generate revenue.
Purpose	Protects domestic industry from injury due to price discrimination .	Aims to raise government revenue and support economic development .
Scope	Country-specific and exporter-specific ; imposed only on exporters/ countries found guilty of dumping.	Universally applicable to all imports, regardless of origin.
Additional Charge	Levied over and above normal customs duty.	Charged as per general import duty structure.

DIAMOND IMPREST AUTHORIZATION SCHEME

Context: The Commerce Ministry recently introduced the Diamond Imprest Authorization (DIA) Scheme, aiming to enhance the global competitiveness of India's diamond industry.

About Diamond Imprest Authorisation (DIA) Scheme

- It was introduced by the Department of Commerce **to allow duty-free import of natural cut and polished diamonds for export purposes**. The Scheme will be implemented from 01.04.2025.

Key Features:

- **Duty-Free Import:** The scheme allows the duty-free import of natural cut and polished diamonds, specifically those weighing less than $\frac{1}{4}$ carat (25 cents).
- **Export Obligation:** An export obligation with a value addition of 10% is mandated under the scheme.
- **Eligibility:** Only diamond exporters holding at least Two Star Export House status and exporting US \$15 million or more per year are eligible to avail of the benefits.
- **Beneficiary Countries:** The scheme aligns with beneficiation policies in diamond mining countries like Botswana, Namibia, and Angola, where diamond manufacturers are required to open cut and polishing facilities to ensure a minimum value addition.

- **Support for MSMEs:** The scheme is designed to level the playing field, enabling smaller MSME exporters to compete with larger industry players.

INDIA'S FIRST ORGANIC FISH CLUSTER

Context: The Ministry of Fisheries, Animal Husbandry and Dairying launched the country's first organic fisheries cluster in Sikkim under PMMSY.

Organic Fisheries Cluster:

- This initiative focuses on **producing fish free from antibiotics, chemicals, and pesticides to cater to environmentally conscious markets worldwide.**
- It **promotes sustainable aquaculture and eco-friendly fish farming practices**, ensuring minimal pollution and safeguarding aquatic ecosystems.
- The National Bank for Agriculture and Rural Development (**NABARD**) will provide financial support for infrastructure development, capacity building, and the establishment of Fisheries-based Farmer Producer Organizations (FFPOs) to strengthen the cluster.
- **Key Species:** Amur carp will be a significant species in this initiative.

About Pradhan Mantri Matsya Sampada Yojana (PMMSY)

- Launched in **2020**, **PMMSY** is a flagship Ministry of Fisheries scheme with a total investment of **Rs 20,050 crore for five years (until FY 2024-25).**
- It addresses critical gaps in fish production, quality, post-harvest infrastructure, and technology.
- **Cluster-based Approach:** PMMSY adopts a cluster-based approach to enhance competitiveness, economies of scale, and strengthen the fisheries value chain across India.
- **New Projects:** The Ministry has laid the foundation for 50 key projects worth Rs 50 crore under PMMSY, which cover all northeastern states except Arunachal Pradesh and Mizoram.

TRANSITIONING INDUSTRIAL CLUSTERS INITIATIVE (TICI)

Context: India's Gopalpur Industrial Park, Kakinada Cluster, Kerala Green Hydrogen Valley, Mundra Cluster, and Mumbai Green Hydrogen Cluster have joined the Transitioning Industrial Clusters Initiative (TICI) to advance sustainable industrial growth.

About Transitioning Industrial Clusters Initiative (TICI)

- TICI is a **global initiative supporting industrial hubs in cutting greenhouse gas (GHG) emissions while fostering economic growth and job creation.**
- Launched by the **World Economic Forum at COP26** (Glasgow, 2021).
- Currently, it includes 33 clusters across 16 countries and five continents, making it the largest coalition of co-located businesses and public institutions committed to sustainable industrial transformation.
- **Collaboration:** Developed in collaboration with **Accenture** and the **Electric Power Research Institute (EPRI).**

What is Industrial Cluster?

Industrial clusters are geographic areas where industries, companies, and institutions are concentrated, collaborating to foster economic growth.

Five Indian Clusters in TICI

- **Kerala Green Hydrogen Valley:** Focused on scaling hydrogen-powered transport, central to India's decarbonization efforts.
- **Gopalpur Industrial Park:** Located in **Odisha**, this park aims to attract investments in green energy and cutting-edge technology.
- **Kakinada Cluster:** Port-anchored in **Andhra Pradesh**, providing decarbonization solutions such as green ammonia, hydrogen, and sustainable aviation fuel.
- **Mundra Cluster:** In **Gujarat**, integrating green power initiatives to support large-scale industrial projects.
- **Mumbai Green Hydrogen Cluster:** Promoting green hydrogen and connecting industries with sustainable energy sources.

RISE IN RB-IOS COMPLAINTS

Context: The Reserve Bank - Integrated Ombudsman Scheme (RB - IOS), saw a 32.81% rise in complaints from banking customers, reaching 9.34 lakh FY 2023-24.

- Top contributors to complaints were Chandigarh, Delhi, Rajasthan, Gujarat, and Uttarakhand. Conversely, Mizoram, Nagaland, Ladakh, Manipur, and Lakshadweep reported the least complaints.

About Reserve Bank - Integrated Ombudsman Scheme (RB-IOS)

- RB-IOS was launched by the Reserve Bank of India (RBI) in 2021, **to simplify and enhance the grievance redressal process for customers of regulated entities**. It merges three previous schemes:
 - **Banking** Ombudsman Scheme, 2006
 - Ombudsman Scheme for **Non-Banking Financial** Companies, 2018
 - Ombudsman Scheme for **Digital Transactions**, 2019
- **Appointment of Ombudsman:** The RBI may appoint one or more of its officers as Ombudsman and Deputy Ombudsman for a **tenure** of up to **three years** per term to redress the complaints from customers of the REs against “**deficiency in service**”, as defined under Clause 3(1)(g) of the RB-IOS, 2021.
- **Entities Covered**
 - **Banks:** All commercial banks, Regional Rural Banks, Small Finance Banks, Payment Banks, and Scheduled and Non-Scheduled Primary (Urban) Cooperative Banks with deposits of ₹50 crore and above.
 - **NBFCs:** Registered NBFCs (excluding Housing Finance Companies) that either accept deposits or have ₹100 crore and above assets with customer interface, *excluding Core Investment Companies, Infrastructure NBFCs, and NBFCs under resolution/liquidation*.
 - **Payment System Participants:** Banks and non-banks issuing Prepaid Payment Instruments (PPIs) and enabling transactions via NEFT, RTGS, IMPS, UPI, BBPS, AePS, USSD, and Bharat QR Code.
 - **Credit Information Companies:** Registered under the Credit Information Companies (Regulation) Act, 2005.

Benefits of RB-IOS

- Cost-free grievance redressal for customers.
- Simplified complaint filing via the CMS portal, accessible nationwide.
- Single contact point (one address, one email) for complaints.
- Automatic acknowledgments and real-time tracking of complaints.
- ‘One Nation, One Ombudsman’ approach for unified grievance redressal.
- Facility for online document submission and voluntary feedback.

DEEPSEEK: A NEW CHATBOT RIVAL TO CHATGPT

Context: Chinese startup DeepSeek has launched AI models that compete with U.S. models at a much lower cost.

About DeepSeek

- It is an AI startup based in Hangzhou, China, gaining international recognition for its **low-cost yet highly capable AI models**.
- The company has introduced **DeepSeek-V3 and DeepSeek-R1 (a reasoning model)**, positioning them as potential challengers to OpenAI's GPT-4.
- DeepSeek is able to **deliver comparable AI performance at a fraction of the cost**.
- DeepSeek models are significantly cheaper than OpenAI models for both input and output tokens, making them ideal for high-volume applications.
- DeepSeek models have much **lower training costs** compared to OpenAI models.
- **DeepSeek's open-source nature** allows for self-hosting, which can reduce recurring API costs and enhance privacy and flexibility.

GLOBAL CORPORATE MINIMUM TAX DEAL

Context: Trump declared that the global corporate minimum tax deal "has no force or effect" in U.S.

What is Global Corporate Minimum Tax?

- It is a **framework designed to establish a baseline tax rate on corporate income worldwide**, preventing tax avoidance by multinational corporations (MNCs).
- The new GMT sets a proposed rate of 15% on profits. The OECD proposal has received the support of 137 countries and was approved at the October 2021 Summit in Rome, effecting from 2024.

OECD Two-Pillar Plan of Global Corporate Minimum Tax

Pillar One: Reallocation of Profits	Reallocates taxing rights to countries where a company's customers or users are located, particularly targeting large MNEs in the digital sector.	- Redistributes a portion of excess profits from MNEs to market jurisdictions. - Ensures fair taxation in countries where economic activities occur. - Includes dispute prevention and resolution mechanisms to minimize double taxation risks.
Pillar Two: Global Minimum Tax	Establishes a 15% minimum corporate tax rate for MNEs with global revenues exceeding €750 million , preventing profit shifting to low-tax jurisdictions.	Income Inclusion Rule (IIR): Requires the parent company to include foreign subsidiaries' income in its taxable income if taxed below 15%. Undertaxed Profits Rule (UTPR): Allows countries to impose additional taxes on foreign subsidiaries if their income is below the minimum rate. Subject to Tax Rule (STTR): Enables countries to tax inter-company payments that would otherwise be under-taxed.

INTERNATIONALIZATION OF RUPEE

Context: The Reserve Bank of India (RBI) announced liberalised norms to encourage use of Indian Rupee and local/national currencies to settle cross border transactions.

What is Rupee Internationalisation?

- It refers to its **increasing acceptance in global trade and financial transactions without the need for conversion into a dominant foreign currency like the US dollar**.
- In a fully internationalised system, the rupee would be widely used for cross-border trade, investments, and held as a reserve currency by other countries.

RBI's Promotion of Rupee Internationalisation

The recent RBI reforms aim to reduce India's reliance on the dollar and other foreign currencies by enabling trade settlements in rupees. This includes:

- MoUs with UAE, Indonesia, and Maldives** to promote trade in local currencies.
- Special Rupee Vostro Accounts (SRVAs)** to allow foreign banks to hold rupee accounts.
- Liberalised FEMA regulations**, allowing non-residents to use INR for transactions and investments.
- Allowing Indian exporters to hold foreign currency accounts for trade settlements**.

Vostro Account	Nostro Account
- A foreign bank's account held in a domestic bank in the local currency. - Example: If Chase Bank (US) holds an account in PNB (India) in INR, it is a Vostro account for PNB. - Allows foreign banks to operate in another country and facilitate transactions.	- A domestic bank's account held in a foreign bank in the currency of that foreign country. - Example: If PNB (India) holds an account in Chase Bank (US) in USD, it is a Nostro account for PNB. - Helps a domestic bank conduct transaction in foreign currencies easily.

DEPRECIATION OF RUPEE

Context: The RBI has eased its control over the rupee, allowing it to depreciate against the US dollar, shifting from its earlier strategy of tight management until late 2024.

What is Rupee Depreciation?

- Rupee depreciation refers to the decline in the value of the Indian Rupee (INR) compared to a foreign currency, typically the US Dollar (USD).
- When the rupee depreciates, it means that more rupees are required to buy one unit of foreign currency. If the exchange rate was ₹75 = \$1 and it changes to ₹80 = \$1, the rupee has depreciated because now more rupees are needed to buy the same 1 dollar.

Factors Leading to Depreciation of Rupee

- **Higher Demand for Foreign Currency:** Increased demand for dollars for imports, travel, or investments weakens the rupee.
- **Trade & Current Account Deficit (CAD):** A persistent CAD due to excessive imports leads to higher dollar demand, depreciating the rupee.
- **Capital Outflows:** Foreign investors withdrawing funds from Indian markets due to better global opportunities or rising US interest rates increases dollar demand.
- **High Inflation:** Faster inflation in India compared to other countries reduces the rupee's purchasing power, making foreign goods more expensive.
- **Interest Rate Differentials:** If RBI's interest rates are lower than the US Federal Reserve's, investors shift funds to the US, increasing dollar demand.
- **Global Factors:** US monetary policy, geopolitical tensions (wars, sanctions), and global recessions can weaken the rupee by reducing investor confidence in emerging markets.

Negative Impacts

- **Rising Import Costs:** A weaker rupee increases the cost of essential imports such as crude oil, edible oils, and electronics, leading to higher production costs.
- **Inflationary Pressures:** Higher import costs contribute to cost-push inflation, reducing consumer purchasing power and dampening economic sentiment.
- **Increased Debt Servicing Costs:** Companies with foreign currency debt face higher repayment burdens, straining their financial health.
- **Widening Trade Deficit:** A costlier import bill can expand the trade deficit, depleting foreign exchange reserves.
- **Declining Foreign Investment:** A depreciating rupee may reduce investor confidence, triggering capital outflows and lowering foreign direct investment (FDI).

Positive Impacts

- **Boost to Exports:** A weaker rupee makes Indian goods and services more competitive globally, enhancing export earnings, particularly in industries like IT and pharmaceuticals.
- **Higher Remittance Value:** Non-resident Indians (NRIs) benefit from a depreciated rupee as their remittances translate into higher purchasing power in India.
- **Long-Term Growth Potential:** While short-term economic challenges exist, higher export revenues can contribute to long-term economic expansion.
- **Foreign Direct Investment (FDI):** If depreciation is controlled, foreign investors may find Indian markets attractive as their dollars can buy more Indian assets.

WPI BASE YEAR REVISION

Context: The Government of India has decided to constitute a Working Group for base revision of the current series of Wholesale Price Index (WPI) from base 2011-12 to 2022-23.

About the Working Group

- The Working Group for base revision of WPI is chaired by Prof. Ramesh Chand, Member, NITI Aayog.

- Terms of Reference for the Working Group, includes:
 - **Suggest the commodity basket for WPI and Producer Price Index - PPI** (Base Year: 2022-23) considering structural changes in the economy.
 - Enhance the PPI compilation methodology and **plan the transition from WPI to PPI**.
 - Recommend other improvements for better WPI/PPI reliability.
 - To decide on the computational methodology to be adopted for WPI / PPI.

What is the Wholesale Price Index (WPI)?

- The WPI tracks **price changes of goods sold in bulk** between businesses. It is published **monthly** by the **Office of the Economic Adviser**, Department of Industrial Policy and Promotion, Ministry of Commerce and Industry.
- The Wholesale Price Index (WPI) series in India has undergone **seven revisions** with base years of 1952-53, 1961-62, 1970-71, 1981-82, 1993-94, 2004-05, and 2011-12.
- **Calculation Method:** WPI is determined using a weighted average of selected commodities, divided into three broad categories:
 - **Primary Articles (22.62%):** Includes food items, non-food articles, minerals, crude petroleum, and natural gas.
 - **Fuel and Power (13.15%):** Covers coal, mineral oils, and electricity.
 - **Manufactured Products (64.23%):** Comprising 22 sub-categories of industrial goods.

What is the Producer Price Index (PPI)?

- The PPI measures the **average change over time in the selling prices received by domestic producers for their output**.
- **Types of PPI**
 - **Output PPI:** Measures the price changes of products sold by producers in domestic or export markets.
 - **Input PPI:** Tracks the price fluctuations of raw materials, intermediate goods, and services purchased by producers.
 - **Value-Added PPI:** A weighted average of input and output PPIs, providing a more comprehensive picture.

Why is PPI Considered Over WPI?

- **Avoids Multiple Counting:** PPI eliminates the issue of counting the same product at different stages of production.
- **Includes Services:** Unlike WPI, which focuses only on goods, PPI covers services, a significant part of Indian Economy (i.e. 55% of GDP)
- **Excludes Indirect Taxes:** Ensures that price changes reflect actual production costs, not tax variations.
- PPI is widely used by advanced economies like the U.S., U.K., and European Union, making it a more globally accepted inflation measure.

CENTRAL BANK DIGITAL CURRENCY

Context: In a recent move, U.S. President Donald Trump signed an executive order prohibiting the creation of a central bank digital currency (CBDC).

About Central Bank Digital Currency (CBDC)

- A CBDC is a **digital form of a country's official currency, issued and regulated by the central bank**.
- Unlike cryptocurrencies such as Bitcoin or Ethereum, which are decentralized, a CBDC is **fully controlled by the government and functions as a legal tender**
- **Two Main Types:**
 - **Retail CBDC:** Used by the general public for everyday transactions.
 - **Wholesale CBDC:** Used by banks and financial institutions for interbank settlements.

- Many countries, including China (Digital Yuan), India (Digital Rupee), Brazil, Japan, Russia, etc. are actively developing their CBDCs.

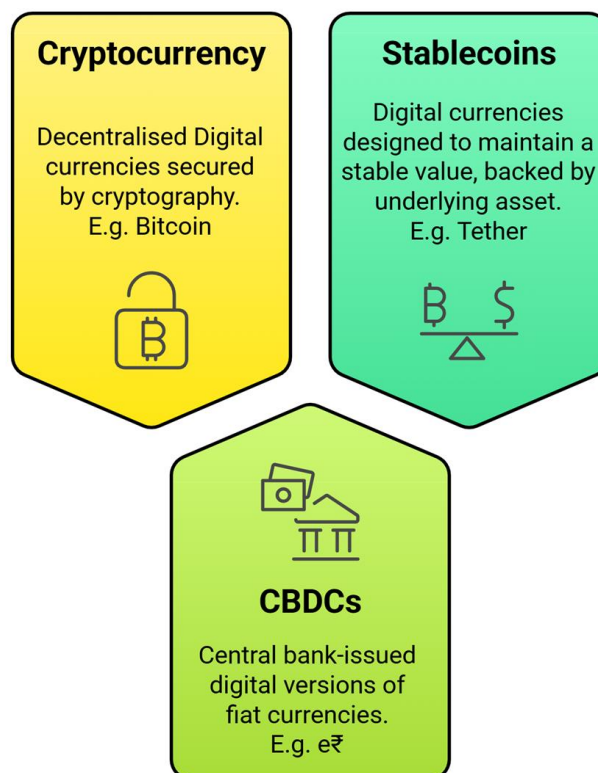
RBI's Retail CBDC- Digital Rupee (₹)

- The Digital Rupee (₹) is India's Central Bank Digital Currency (CBDC)—a digital version of the physical Rupee (₹) issued by the Reserve Bank of India (RBI).

Key Features of ₹:

- Issued by RBI:** The Digital Rupee is officially issued by the RBI in electronic form and retains the fundamental features of physical cash, such as RBI's guarantee, ease of use, and finality of settlement.
- Stored in Digital Wallets:** Users can store ₹ in digital wallets and use it for transactions, just like physical currency.
- Modes of Transaction:** ₹ can be transacted via digital wallets provided by banks and non-banking financial institutions (NBFCs) for both person-to-person (P2P) and person-to-merchant (P2M) payments.
- Issuance Process:** Similar to paper currency, the RBI creates and issues ₹ electronically to banks and non-banks. These institutions then distribute ₹ and facilitate digital wallet onboarding for customers.
- Legal Tender Status:** Under Section 26 of the RBI Act, 1934, every banknote is legal tender in India. Since ₹ is the digital equivalent of a banknote, it holds the same legal status and is an RBI liability.
- Programmability Feature:** ₹ can be programmed for specific uses by governments or corporations. It allows restrictions based on parameters such as expiry dates, geographic locations, merchant categories, and virtual payment addresses (VPAs). Currently, its applications are being explored in Direct Benefit Transfers (DBT), interest subvention schemes, loans, and employee allowances.

Types of Digital Currencies



NBFCs IN THE UPPER LAYER (NBFC-UL)

Context: The RBI has released the list of **Non-Banking Financial Companies (NBFCs)** classified under the **Upper Layer (NBFC-UL)** for 2024-25. The list includes LIC Housing Finance Limited, PNB Housing Finance Limited, Shriram Finance Limited, among others.

What is NBFC-UL?

- The NBFC-UL classification is based on the **Scale-Based Regulation (SBR) framework**, which categorizes NBFCs into different layers based on their size, risk exposure, and systemic importance.
- Once an NBFC is classified as NBFC-UL, it is subjected to **enhanced regulatory requirements for at least five years**.

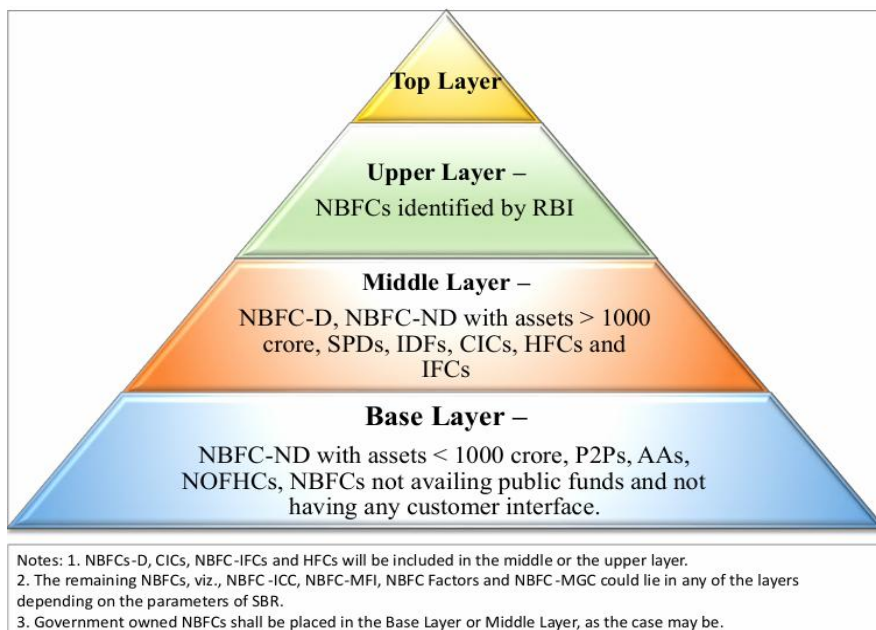
What is Scale-Based Regulation (SBR) Framework?

- SBR is a **regulatory structure introduced by the RBI in 2021** to categorize NBFCs based on their size, complexity, and risk exposure.
- It ensures **proportional regulation**, meaning that **larger and riskier NBFCs face stricter rules, while smaller ones have simpler regulations**.

What is a Non-Banking Financial Company (NBFC)?

- NBFCs are registered under the **Companies Act, 1956** and regulated by RBI.

- They are engaged in lending and financial activities but do not include institutions primarily involved in agriculture, industrial activity, trading goods (except securities), or real estate transactions.
- **How are NBFCs Different from Banks?**
 - Cannot accept demand deposits (only term deposits are allowed).
 - Not part of the payment & settlement system (cannot issue cheques).
 - No deposit insurance facility for depositors.



TREASURY BILLS (T-BILLS)

Context: The government is set to borrow Rs 3.94 lakh crore from the market via treasury bills (T-bills).

What are Treasury Bills (T-Bills)?

- Treasury Bills (T-Bills) are **money market instruments** issued by the **Government of India as short-term debt securities**. They are **primarily used to meet short-term funding needs** and manage liquidity in the economy.
- Currently, T-Bills are issued in three different tenors: 91-day T-Bill, 182-day T-Bill, 364-day T-Bill
- Unlike regular bonds, T-Bills **do not pay interest**. Instead, they are **zero-coupon securities**, meaning they are **issued at a discount** and redeemed at their face value upon maturity.
 - For example: A ₹100 T-Bill may be sold at ₹95 at the time of issuance. Upon maturity, the buyer receives ₹100, earning a profit of ₹5.
 - The returns on T-Bills depend on the liquidity situation in the economy: When there is a **liquidity crisis, returns on T-Bills tend to be higher**. On the other hand, when liquidity is abundant, returns are lower.
- Treasury Bills were first introduced in India in **1917**. They are issued by the RBI on behalf of the Government of India through auctions conducted on **E-Kuber**, which is **RBI's Core Banking Solution (CBS) platform**.
- RBI conducts auctions every Wednesday to issue T-Bills of 91-day, 182-day, and 364-day tenors.
- **T-Bills can be purchased by:** Individuals, Trusts, Financial Institutions, Banks (Non-Resident retail investors eligible to invest in Government Securities like T-Bills under FEMA, 1999.)
- **T-Bills and Banks:**
 - Banks use T-Bills as **collateral** to borrow money from the RBI under the **repo (repurchase) agreement**.
 - They also help banks meet their **Statutory Liquidity Ratio (SLR) requirements**, which is a regulatory obligation to maintain a certain percentage of liquid assets.

BAANKNET (BANK ASSET AUCTION NETWORK)

BAANKNET is an e-auction portal launched by the **Department of Financial Services (DFS)**, serving as a **one-stop platform for buyers and investors to access assets auctioned by public sector banks (PSBs)**.

Key Features

- It is designed to help banks and lending institutions recover Non-Performing Asset (NPA) loans through efficient property auctions.
- **Centralized Listings:** Aggregates auction details of residential, commercial, industrial, agricultural properties, vehicles, and machinery from all PSBs.
- **Seamless Process:** Provides a smooth pre-auction, auction, and post-auction experience.
- **Integrated Payment & KYC:** Features an automated payment gateway and KYC tools, enabling easy verification and transactions.
- **Analytics & Reports:** Offers Spend Analytics and MIS Reports for better decision-making.

PREPAID PAYMENT INSTRUMENTS (PPI)

Context: The RBI has allowed PPI holders to make and receive Unified Payments Interface (UPI) payments through third-party mobile applications.

What are Prepaid Payment Instruments (PPIs)?

- PPIs are **digital tools that allow users to purchase goods and services, conduct financial transactions, and make remittances based on the stored value.**
- PPIs can be **issued as cards or wallets** and can be loaded/reloaded using cash, bank accounts, credit, or debit cards.
- Cash loading is limited to **₹50,000 per month**, subject to the overall PPI limit.
- Currently, UPI payments from / to a bank account can be carried out using the UPI application of that bank or of any third-party application provider. However, UPI payments from / to a PPI can only be carried out using the mobile application provided by the PPI issuer.
- **Types of PPIs**
 - **Small PPIs:** PPIs up to ₹10,000 (with cash loading facility); PPIs up to ₹10,000 (without cash loading facility).
 - **Full KYC PPIs:** Issued after completing full Know Your Customer (KYC) verification.
- **Who Can Issue PPIs:** PPIs can be issued **by both banks and non-banking entities** after obtaining RBI approval. Some approved PPI-issuing banks include Airtel Payments Bank, Axis Bank, Bank of Baroda, Jio Payments Bank, and Kotak Mahindra Bank.

PROJECT VISTAAR

- Vistaar (Virtually Integrated System to Access Agricultural Resources) is a pilot project launched through a collaboration between the Indian Institute of Technology (IIT) Madras and the Union **Ministry of Agriculture and Farmers Welfare.**
- It aims to **digitize and enhance the efficiency of the agricultural extension system by integrating comprehensive information about agriculture-related startups and innovations.**

Key Features of Vistaar

- It is designed to **connect farmers and stakeholders with agriculture and allied sector startups.**
- It provides access to information about **12,000 agri-startups in India.**
- The platform is enriched with **details on government schemes** related to agriculture, rural development, and allied sectors.

LEADS 2024 REPORT

Context: The Union Ministry of Commerce & Industry unveiled the 6th edition of “Logistics Ease Across Different States (LEADS) 2024” report recently.

About the LEADS Report

- The LEADS report **evaluates logistics efficiency at the state/UT level**, offering insights for better policy formulation and infrastructure development.
- **Framework:** Based on four key pillars: **Logistics Infrastructure; Logistics Services; Operating and Regulatory Environment; Sustainable Logistics** (newly introduced in 2024)

- **Methodology:** Unlike the World Bank's Logistics Performance Index (LPI), which is entirely perception-based, LEADS includes both perception-based and objective indicators.
- **Categorization of States and UTs:** States are grouped in Coastal, Landlocked, North-Eastern, and Union Territories—and ranked as Achievers, Fast Movers, and Aspirers based on their logistics performance.
- In addition to the launch of the LEADS 2024 Report, the event also hosted the felicitation function for the Logistics Excellence, Advancement, and Performance Shield (LEAPS 2024) Awards.
- It was given in various categories, including core logistics services, MSMEs, startups, and institutions.

Performance Highlights of LEADS 2024

Category	Achievers	Fast Movers	Aspirers
Coastal States	Gujarat, Karnataka, Maharashtra, Odisha, Tamil Nadu	Andhra Pradesh, Goa	Kerala, West Bengal
Landlocked States	Haryana, Telangana, Uttar Pradesh, Uttarakhand	Bihar, Himachal Pradesh, Madhya Pradesh, Punjab, Rajasthan	Chhattisgarh, Jharkhand
North-Eastern States	Assam, Arunachal Pradesh	Meghalaya, Mizoram, Nagaland, Sikkim, Tripura	Manipur
Union Territories	Chandigarh, Delhi	Dadra & Nagar Haveli and Daman & Diu, Jammu & Kashmir, Lakshadweep, Puducherry	Andaman & Nicobar Islands, Ladakh

ANJI KHAD BRIDGE

Context: Indian Railways has completed the Anji Khad Bridge, India's first cable-stayed rail bridge, enhancing connectivity between Kashmir Valley and the rest of India.

About Anji Khad Bridge

- Located in **Reasi, Jammu & Kashmir**, part of the **Udhampur-Srinagar-Baramulla Rail Link (USBRL) Project**. It spans the **Anji River**, which is a **tributary of Chenab River**.
- Built with **inputs from IIT Roorkee and IIT Delhi for structural stability**.
- **Features:**
 - **725.5 metres long, with a 193-metre-tall pylon** rising 331 metres above the riverbed.
 - Withstands wind speeds up to 213 km/h, supports trains at 100 km/h.

RESTRUCTURED SKILL INDIA PROGRAMME

Context: The Union Cabinet, chaired by PM Modi, has approved the continuation and restructuring of the **Central Sector Scheme, Skill India Programme (SIP)**, until 2026.

About Restructured Skill India Programme

- The Skill India Programme now consolidates three key initiatives under its framework:
 - **Pradhan Mantri Kaushal Vikas Yojana 4.0 (PMKVY 4.0)**
 - **Pradhan Mantri National Apprenticeship Promotion Scheme (PM-NAPS)**
 - **Jan Shikshan Sansthan (JSS) Scheme**
- These schemes collectively **aim to provide structured skill development, on-the-job training, and community-based learning, ensuring accessibility for urban and rural populations, including marginalized communities**.
- The initiative comes with a financial outlay of Rs. 8,800 crore for the period 2022-23 to 2025-26.

1. Pradhan Mantri Kaushal Vikas Yojana 4.0 (PMKVY 4.0)

- PMKVY 4.0, under the Skill India Programme, is being implemented from **FY 2022-2026**. It focuses on process simplification, flexibility, and market-driven skilling to meet emerging workforce demands.
- **Design Principles**
 - Strengthen industry partnerships and promote **On-the-Job Training (OJT)**.

- Emphasize **Recognition of Prior Learning (RPL)** with better monitoring.
- **Digitize skilling** processes for efficient training and assessment.
- Introduce new-age skills like **AI, ML, Web 3.0, Green Economy, and Climate Change**.
- Promote community engagement and **skill development for the informal sector**.
- **Implementation Structure**
 - **The Ministry of Skill Development and Entrepreneurship (MSDE)** provides overall policy direction, guidelines, and strategic oversight.
 - **National Council of Vocational Education and Training (NCVET)** establishes a unified regulatory framework and ensures alignment with the **National Skills Qualification Framework (NSQF)**.
 - **National Skill Development Corporation (NSDC)** acts as the nodal agency for implementation.
- **Administrative Structure**
 - **Steering Committee (headed by MSDE Secretary)** oversees policy direction and monitoring.
 - **Executive Committee (led by Additional/Joint Secretary, MSDE)** handles operations and approvals.
 - **District Skill Committees (DSC)**, chaired by District Collectors, oversee implementation at the local level.

2. Pradhan Mantri National Apprenticeship Promotion Scheme (PM-NAPS)

- Recognizing apprenticeship as a vital component of skill development, the National Policy on Skill Development and Entrepreneurship, 2015, emphasizes on-the-job training as a crucial mechanism for building a skilled workforce.
- **Financial Support:** The Central Government covers 25% of the stipend, up to Rs. 1,500 per month per apprentice, via Direct Benefit Transfer (DBT).
- **Eligibility:** Open to individuals aged 14-35 years, ensuring wide demographic participation.
- **Industry Alignment:** Apprenticeships are encouraged in traditional manufacturing sectors as well as emerging fields such as AI, Blockchain, Robotics, Green Energy, and Industry 4.0.
- **Support for MSMEs and Underserved Areas:** The scheme prioritizes apprenticeships in MSMEs and regions like aspirational districts and the North-East.

3. Jan Shikshan Sansthan (JSS) Scheme

- The JSS scheme, originally known as **Shramik Vidyapeeth**, was launched by the Government of India in **1967** and is **implemented through NGOs**. It was renamed **Jan Shikshan Sansthan in 2000** and transferred from the Ministry of Education to the Ministry of Skill Development & Entrepreneurship in July **2018**.
- The scheme is **fully funded by the Government of India**, and JSSs are registered under the Societies Registration Act, 1860. Each **JSS is managed by a Board of Management, approved by the government**.
- JSS aims to provide vocational training in a non-formal mode to:
 - Non-literate individuals, neo-literates, and those with basic education (up to 8th standard).
 - School dropouts up to the 12th standard, aged 15-45 years.
 - Priority groups: Women, SC, ST, minorities, and other disadvantaged sections.
- JSS is linked with key initiatives of the Government like: PM JANMAN, Understanding of Lifelong Learning for All in Society (ULLAS).

MUTUAL CREDIT GUARANTEE SCHEME FOR MSMEs (MCGS-MSME)

Context: The Mutual Credit Guarantee Scheme for MSMEs has been approved by the Central Government to provide collateral-free loans to MSMEs for business expansion.

About MCGS-MSME

- MCGS-MSME aims to **support MSMEs in expanding their businesses, purchasing machinery, and strengthening the manufacturing sector**.

- It is managed by the **National Credit Guarantee Trustee Company Limited (NCGTC)**, which offers guarantee coverage to registered Member Lending Institutions (MLIs).
- Loan Guarantee Coverage:** Provides 60% guarantee to MLIs for loans up to ₹100 crores. Available to MSMEs with a **valid Udyam registration number**.
- Eligible Lending Institutions:** Scheduled Commercial Banks (SCBs), Non-Banking Financial Companies (NBFCs), All India Financial Institutions (AIFIs)
- Project & Loan Specifications:**
 - Minimum 75% of the project cost must be allocated for equipment/machinery.
 - Loans up to ₹50 crores:** Repayment period of up to 8 years, with a moratorium of up to 2 years on principal repayment.
 - Loans above ₹50 crores:** Higher repayment and moratorium periods may be considered.
- Initial Contribution:** Borrowers must deposit 5% of the loan amount when applying for guarantee cover.

About NCGTC

- Established in 2014 under the Indian Companies Act, 1956.
- Fully owned by the Government of India and functions under the Ministry of Finance, Department of Financial Services.
- Paid-up capital: ₹10 crore.

Revised MSME Classification

Type	INVESTMENT		TURNOVER	
	Current	Revised	Current	Revised
MicroEnterprise	Rs 1cr	Rs 2.5cr	Rs 5cr	Rs 10cr
Small Enterprise	Rs 10cr	Rs 25cr	Rs 50cr	Rs 100cr
Medium Enterprise	Rs 50cr	Rs 125cr	Rs 250cr	Rs 500cr

Source: Budget 2025-2026, Speech of Nirmala Sitharama, Union Minister of Finance February 1, 2025.

TEAM INITIATIVE FOR MSMES

Context: The **Ministry of MSME**, in collaboration with the Open Network for Digital Commerce (ONDC), has launched the **MSME Trade Enablement and Marketing (TEAM) Initiative**.

About MSME TEAM (Trade Enablement and Marketing) Initiative

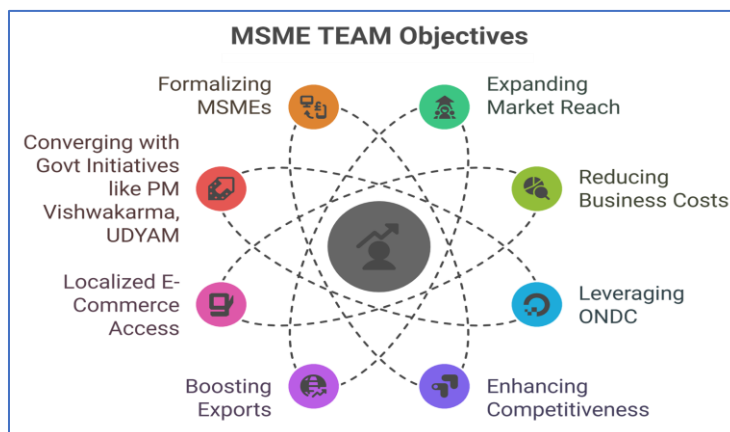
- The Ministry of MSME has launched the MSME TEAM initiative under the **World Bank-supported RAMP (Raising and Accelerating MSME Productivity) Programme**.
- This initiative equips MSMEs with digital tools and guidance to leverage e-commerce marketplaces effectively.
- Its key objective is to integrate MSMEs with e-commerce platforms, expanding market access and boosting income. Additionally, it enhances their credibility by building a digital presence and transaction history.

Key Features of the MSME TEAM Initiative

- Outlay:** ₹277.35 Cr
- Duration:** 3 years (FY 2024-25 to FY 2026-27)
- Implementing Agency:** National Small Industries Corporation (NSIC)
- Beneficiaries:** 5 lakh MSEs (50% women-owned)
- Sunset Clause:** Assistance remains valid until funds are fully utilized or initiative ends.

About Open Network for Digital Commerce (ONDC)

- Launched in **2021**, the ONDC is an initiative of the **Department for Promotion of Industry and Internal Trade (DPIIT)** under the Ministry of Commerce and Industry.



- It has been **established as a private sector-led, non-profit organization** to create an inclusive digital commerce ecosystem, enabling small retailers to leverage e-commerce opportunities.

(For more information on ONDC, Refer to Prelims Quick Revision Part 1 - Page No. 150)

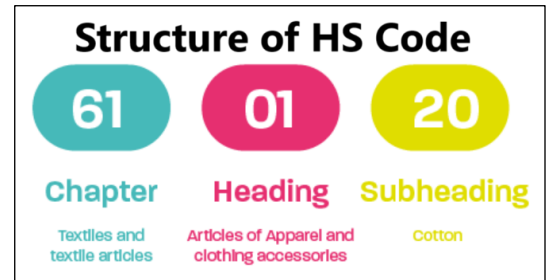
HS CODE FOR GI RICE VARIETIES

Context: The Customs Tariff Act was recently amended to provide for an HS (Harmonised System) code for the export of Geographical Indication (GI) recognised rice.

- It is the first time in the world that an HS code has been introduced for GI-recognised rice.
- The Indian Patent Office has given a GI tag to 20 rice varieties such as Navara, Palakkadan Matta, Pokkali, Wayanad Jeerakasala, Wayanad Gandhakasala, Joha, Gobindobog, Kalanamak, etc.

HS Code (Harmonized System Code)

- The HS Code is a six-digit identification code developed by the **World Customs Organization (WCO)**.
- Over 200 countries use the system as a basis for:
 - Customs tariffs, Internal taxes, Quota controls, Rules of origin,
 - Gathering international trade statistics,
 - Formulating trade policies, Monitoring goods, Economic research and analysis
- The system helps in harmonizing customs and trade procedures, reducing costs in international trade.
- More than 98% of merchandise in global trade is classified using the HS Code.**
- The system consists of approximately **5,000 commodity groups**, each identified by an HS Code.



World Customs Organization (WCO)

- The WCO is an independent intergovernmental body headquartered in **Brussels, Belgium**.
- Established in **1952** as the **Customs Co-operation Council (CCC)**, its **primary objective is to enhance the effectiveness and efficiency of Customs administrations worldwide**.
- WCO is internationally recognized as the global authority on customs and plays a crucial role in:
 - Development and promotion of modern customs systems
 - Implementation of international customs procedures
 - Ensuring smooth global trade operations
- The organization represents **186 Customs administrations (Including India)**, which collectively process approximately 98% of world trade.

GOVERNMENT PLANS TO INCREASE DEPOSIT INSURANCE COVER

Context: To strengthen depositor protection, the government is exploring an increase in the deposit insurance cover, which is currently capped at ₹5 lakh per depositor.

What is Deposit Insurance?

- Deposit insurance **protects bank customers' deposits in the event of bank insolvency (failure)**. A bank is considered insolvent when its liabilities exceed its assets due to poor lending or investment decisions.
- If a bank fails, **depositors are compensated up to a certain threshold amount by the Deposit Insurance and Credit Guarantee Corporation (DICGC)**.
- Banks**, not depositors, **bear the cost of deposit insurance**. The DICGC collects premiums from member banks at a rate based on their risk profile.
- The deposit insurance scheme is compulsory and no bank can withdraw from it.

Current Deposit Insurance Coverage in India

- Each depositor in a bank is insured up to a **maximum of ₹5 lakh, covering both principal and interest**.
- This limit applies **collectively to all accounts held by a depositor across all branches of the same bank**.

- The **DICGC**, a wholly owned subsidiary of the Reserve Bank of India (RBI), provides this insurance.

History of Deposit Insurance Coverage in India

- **Introduced in 1962**, deposit insurance in India has been **enhanced six times**.
- The latest increase was in February 2020, when the cover was raised from ₹1 lakh to ₹5 lakh.
- As of March 31, 2024, there were 1,997 insured banks under the scheme. **97.8% of accounts are fully protected, exceeding the global benchmark of 80%.**

Covered Banks:	Exclusions:
• Public & private sector banks • Local area banks • Small finance banks • Regional rural banks • Cooperative banks • Indian branches of foreign banks • Payments banks	• Deposits of foreign governments • Deposits of Central/State Governments • Inter-bank deposits • Deposits of State Land Development Banks with State cooperative banks • Deposits received outside India • Any amount specifically exempted by RBI-approved corporation • Primary Cooperative societies

MAKHANA BOARD

Context: The Union Budget has proposed setting up a Makhana Board in Bihar to enhance its cultivation, processing, and export potential. The board will have a budget of ₹100 crore and focus on farmer training, market linkages, and export infrastructure development.

What is Makhana?

- Makhana, or **fox nut**, is the **dried edible seed of the prickly water lily** (*Euryale ferox*), found in freshwater bodies across South and East Asia.
- It is recognized for its nutritional value, being **rich in carbohydrates, protein, and minerals**.
- Due to its health benefits, makhana is widely **used in snacks, medicine, and dietary supplements**.
- The seeds, covered in a black or brown outer shell, are processed into popped makhana ('lava'), earning it the nickname **"Black Diamond."**

Ideal Climatic Conditions for Makhana

- Grows in **stagnant water bodies** (ponds, lakes, wetlands).
- **Optimal temperature:** 20-35°C
- **Relative humidity:** 50-90%
- **Annual rainfall:** 100-250 cm

Makhana Cultivation in India

- **Bihar produces 90% of India's makhana**, mainly in the Mithilanchal region (Darbhanga, Madhubani, Purnea, Katihar, Saharsa, Supaul, Araria, Kishanganj, Sitamarhi).
- In 2022, **'Mithila Makhana' received a GI tag** to recognize its regional uniqueness.
- Other areas cultivating makhana include Assam, Manipur, West Bengal, Tripura, and Odisha, as well as Nepal, Bangladesh, China, Japan, and Korea.

SOVEREIGN GREEN BOND

Context: India has turned to Sovereign Green Bonds (SGRBs) to finance its transition to a low-carbon economy, but their success in India has been limited due to weak investor demand.

Understanding Green Bonds

- Green bonds are **debt instruments** issued by governments, corporations, and multilateral banks to **finance climate-friendly projects that reduce carbon emissions and enhance environmental sustainability**.
- Issuers often offer green bonds **at lower yields than conventional bonds**, ensuring that funds are used exclusively for green investments.
- The **difference in yield between green bonds and conventional bonds is called the green premium or greenium**. A higher greenium allows issuers to borrow at lower costs, making green projects more financially viable.

Sovereign Green Bonds in India

- SGrBs are **government-issued green bonds** designed to fund projects that align with India's sustainable development goals.
- In 2022, India introduced a framework defining "**green projects**" as those that: Improve energy efficiency in resource utilization; Reduce carbon emissions; Enhance climate resilience; Promote natural ecosystem conservation.
- Since 2022-23, India has issued SGrBs eight times, **raising nearly ₹53,000 crore**.
- A significant portion (~50%) of proceeds has funded energy-efficient electric locomotives under the Ministry of Railways.

Excluded Projects in SGrBs in India

- Projects involving fossil fuels
- Nuclear power generation
- Direct waste incineration
- Alcohol, weapons, tobacco, gaming, or palm oil industries
- Renewable energy projects generating energy from biomass using feedstock originating from protected areas
- Landfill projects
- Hydropower plants larger than 25 MW
- Subsidy/incentive for private transportation using CNG

PRIME MINISTER DHAN-DHAANYA KRISHI YOJANA

Context: The government has launched PMDKY to enhance agricultural productivity, promote sustainable farming, and strengthen rural infrastructure, benefiting 1.7 crore farmers across India.

- **District Coverage:** PMDKY will be implemented in **100 districts**, selected based on **low productivity, moderate cropping intensity, and below-average credit access**.
- **Focus: Areas with lower cropping intensity**, encouraging better land utilization.
- **Funding Mechanism:** The program will be **financed through existing schemes** under the Ministry of Agriculture & Farmers' Welfare and the Ministry of Fisheries, Animal Husbandry & Dairying, without a separate budget allocation.

Objectives of PMDKY

- Increase **agricultural productivity** through modern techniques.
- Promote **crop diversification** and sustainable practices.
- Improve **post-harvest storage** at panchayat and block levels.
- Enhance **irrigation facilities** for better water management.
- Ensure easy access to short-term and long-term **agricultural credit**.

PROJECT WATERWORTH

- Meta has launched Project Waterworth, a **50,000 km-long subsea cable connecting India, the US, Brazil, South Africa**, and other key regions to enhance global connectivity.
- It will be the longest subsea cable project in the world.

Key Features

- **Deep-Sea Deployment:** Reaches depths of **7,000 meters in deep waters**.
- **AI-Driven Infrastructure:** To optimize deployment, maintenance, and resilience of subsea networks.
- **Enhanced Protection:** Employs advanced burial techniques in high-risk coastal areas to prevent damage from anchors and hazards.

INLAND WATERWAYS TERMINAL AT JOGIGHOPA

Context: The Union Ministry of Ports, Shipping, and Waterways has inaugurated an Inland Waterways Terminal (IWT) at **Jogighopa, Assam, on the Brahmaputra River**.

Key Features of IWT Jogighopa

- **Strategic Connectivity:** The terminal is linked to a Jogighopa Multi-modal Logistics Park (MMLP), with a proposed railway connection.
- **Trade Facilitation:** Enhances trilateral trade between India, Bhutan, and Bangladesh.

- Located 108 km from Bangladesh, 147 km from Guwahati, and 91 km from Gelephu, Bhutan, where a modern city is under development.
- Part of the Bharatmala Programme's Dalu-Tura-Goalpara-Gelephu multimodal trade route.
- Declared a **port of call** under the India-Bangladesh Protocol on Inland Water Transit and Trade (PIWTT).

About Inland Waterways Authority of India

- It is a **statutory body** established in 1986 under the Inland Waterways Authority of India Act (IWAI), 1985.
- **Purpose:** The Authority primarily undertakes **projects for development and maintenance of IWT infrastructure on national waterways** through grants received from the Ministry of Ports, Shipping and Waterways.
- **Headquarters:** Noida, Uttar Pradesh
- **Nodal Ministry:** Ministry of Ports, Shipping and Waterways.
- The **Inland Waterways Development Council (IWDC)** is the apex body for policy deliberation on the inland waterways network in the country, chaired by the Union Shipping Minister.
- India has about **14,500 km** of navigable waterways which consist of rivers, canals, backwaters, creeks, etc. About 133.03 Million Metric Tonnes(MMT) of cargo is being moved annually by Inland Water Transport (IWT).

BHARAT TEX 2025

Context: Bharat Tex 2025, India's largest global textile event, was recently held at Bharat Mandapam, New Delhi.

- The event brought together manufacturers, exporters, and importers, offering them a platform to showcase their expertise, latest innovations, and collections to an international audience.
- It also played a crucial role in advancing the government's "**Farm to Fibre, Fabric, Fashion, and Foreign Markets**" 5F vision, strengthening India's position in the global textile industry.

India's Textile Industry

- India ranks as the **sixth-largest textile exporter globally**, contributing **8.21% to the country's total exports in 2023-24**.
- The sector holds a **4.5% share in global textile trade**, with the United States and the European Union accounting for 47% of India's textile and apparel exports.
- The industry provides **direct employment to over 45 million people** and indirectly supports the livelihoods of over 100 million individuals, including a significant number of women and rural workers.
- It is closely aligned with key government initiatives such as **Make in India, Skill India, Women Empowerment, and Rural Youth Employment**, reinforcing its role in inclusive economic growth.



LIQUIDITY INJECTION MEASURES

Context: The RBI has announced a series of liquidity injection measures, marking the largest monetary easing since the pandemic. These steps aim to address the liquidity shortfall caused by the central bank's dollar-selling interventions to stabilize the rupee.

Liquidity Injection Measures by RBI: To ease the liquidity strain, RBI has announced the following measures:

1. Open Market Operations (OMO) Purchases: RBI will conduct OMO purchase auctions totaling ₹60,000 crore in three tranches.

- **What is OMO?**

- OMO refers to the **sale and purchase of government securities (bonds) by the RBI**. OMOs also help regulate bond yields and overall money supply.
- When **liquidity is excessive**, **RBI sells** government securities to absorb surplus liquidity.
- When **liquidity is tight**, **RBI buys** government securities to inject liquidity.

2. Variable Rate Repo (VRR) Auction: RBI will conduct a 56-day VRR auction for ₹50,000 crore to provide long-term liquidity to banks.

- **What is VRR?**

- A VRR Auction is a mechanism used by the RBI to inject liquidity into the banking system when banks are unwilling to borrow at the fixed Repo Rate.
- In this auction, the RBI allows banks to borrow funds at an interest rate determined by the market, which is typically lower than the fixed Repo Rate but cannot be below the Reverse Repo Rate.

Feature	Repo Rate	Variable Repo Rate (VRR)
Definition	The rate at which banks borrow from RBI overnight by pledging government securities.	The rate at which banks borrow from RBI for more than one day, when banks are unwilling to borrow at the Repo Rate.
Rate Determination	Fixed by the RBI (e.g., 6.25% as of 2025).	Determined by market forces via auctions but cannot exceed the repo rate.
Purpose	Increases liquidity in the economy to support growth.	Provides flexibility in liquidity infusion based on market demand .
Duration	Overnight (1-day).	More than one day (e.g., 2, 3, 7, 16 days).

3. US Dollar-Rupee Swap Auction: RBI will conduct a \$5 billion dollar-rupee buy/sell swap with a six-month tenure.

- **How does the swap work?**

- A bank sells US dollars to the RBI and simultaneously agrees to buy back the same amount at the end of the swap period.
- In the reverse leg of the transaction, banks return rupee funds to RBI along with a swap premium to repurchase the dollars.

RBI REVIEWS ECONOMIC CAPITAL FRAMEWORK

Context: The RBI is currently reviewing its Economic Capital Framework (ECF). The review will assess whether adjustments are needed in the contingency risk buffer (CRB).

What is the Economic Capital Framework (ECF)?

- The ECF is a policy that **determines how the central bank manages its financial reserves, risk provisions, and surplus transfers to the government**.
- The framework was first **implemented in 2015-16** and was later reviewed by the **Bimal Jalan Committee in 2018, which recommended key changes to enhance financial stability**.
- **Purpose of the ECF:** The ECF provides a structured methodology for:
 - **Risk provisioning:** Ensuring the RBI maintains adequate reserves to handle financial crises.
 - **Profit distribution:** Determining how much surplus the RBI should transfer to the central government under **Section 47 of the RBI Act, 1934**.
 - **Maintaining financial resilience:** Keeping risk buffers at a level comparable to international central banks.

About Contingency Risk Buffer (CRB)

- It is a key component of the ECF. CRB is the **financial reserve maintained by the RBI to handle unforeseen economic crises**.
- This buffer ensures that the RBI can function effectively as the Lender of Last Resort (LoLR) during financial crises.
- CRB consists of:**
 - Contingency Fund (CF):** Used for managing unforeseen monetary, exchange rate, and financial risks.
 - Asset Development Fund (ADF):** Allocated for investments in RBI subsidiaries and capital expenditures.
- The **Bimal Jalan Committee (2018)** recommended that the **CRB should be maintained between 5.5% and 6.5% of the RBI's balance sheet**.
- Since 2019, the RBI has followed these recommendations, and any revisions could impact the surplus funds transferred to the government in future years.
- The Bimal Jalan Committee suggested that the **ECF should be reviewed every five years**.
- As of March 31, 2024, the CRB stands at 6.5%, but the review could lead to an increase or decrease in the required buffer. However, no immediate changes have been confirmed.

Balance Sheet of RBI	
Liabilities	Assets
Capital - Reserve Fund - Other Reserves - Deposits - Risk Provisions - Contingency Fund - Asset Development Fund - Revaluation Accounts - Other Liabilities	Assets of Banking Department (BD) - Notes, Rupee Coin, Small Coin - Gold - BD - Investments - Foreign - BD - Investments - Domestic - BD - Bills Purchased and Discounted - Loans and Advances - Investment in Subsidiaries - Other Assets Assets of Issue Department (ID) <i>(As backing for Notes Issued)</i> - Gold - ID - Rupee Coin - Investments - Foreign - ID - Investments - Domestic - ID - Domestic Bills of Exchange and other Commercial Papers
Liabilities of Issue Department Notes Issued	

INDIA'S SINGLE LARGEST SOLAR CELL MANUFACTURING UNIT

- India's single largest photovoltaic solar cell and module manufacturing unit was inaugurated at **Gangaikondan SIPCOT Industrial Growth Centre, Tirunelveli, Tamil Nadu**.
- Set up by **TP Solar Limited** (TATA Power's solar energy manufacturing arm), with an investment of ₹3,800 crore, the facility is India's largest integrated solar manufacturing unit at a single location having an **annual capacity of 4.3 GW**.
- The unit would also manufacture some of the raw materials for module manufacturing and will provide employment to over 4,000 people, including an 80% female workforce.

INITIATIVE LAUNCHED TO STANDARDISE OPERATIONS OF INDIA'S MAJOR PORTS

Context: The Union Minister of Ports, Shipping & Waterways launched a series of major initiatives of the Ministry of Ports, Shipping & Waterways (MoPSW).

Initiative	Objective	Key Features
One Nation-One Port Process (ONOP)	Standardizing port operations across major Indian ports	- Reduces inconsistencies in documentation and inefficiencies. - Cuts container operation documents by 33% (from 143 to 96). - Reduces bulk cargo documents by 29% (from 150 to 106).
Sagar Ankalan - Logistics Port Performance Index (LPPI)	Enhancing port competitiveness and operational efficiency	Evaluates key metrics like cargo handling, turnaround time, berth idle time, and ship berth-day output.
Bharat Global Ports Consortium	Expanding India's maritime trade reach	Integrates companies like IPGL (operations), SDCL (finance), and IPRCL (infrastructure development).

		Supports 'Make in India' and strengthens global trade connectivity.
MAITRI (Master Application for International Trade and Regulatory Interface)	Digital transformation in trade	- Uses AI and blockchain to streamline trade processes and reduce bureaucratic delays. - Supports Virtual Trade Corridor (VTC) with UAE and aligns with IMEEC and is expected to expand to BIMSTEC, and ASEAN nations.
National Centre of Excellence in Green Port and Shipping (NCoEGPS)	Promoting sustainability in maritime operations	- Focuses on carbon footprint reduction, cleaner fuels, and eco-friendly port management. - A dedicated website was launched for green port initiatives.

TEA HORSE ROAD CONNECTING INDIA – CHINA

Context: Recently, China's Ambassador to India, Xu Feihong, highlighted the historical significance of the Tea Horse Road.

About Tea Horse Road

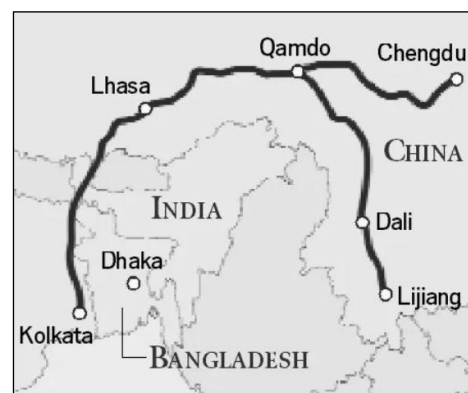
- The Tea Horse Road was an **ancient trade route that connected China, Tibet, and India**, facilitating the **exchange of tea, horses**, and other commodities.
- Spanning over 2,000 km, it traversed some of the world's most challenging terrains, including the Himalayas and Tibetan Plateau.
- The route dates back to the **Tang Dynasty (618–907 CE)** when trade between Southwest China, Tibet, and India flourished.
- Buddhist monk Yijing (635–713 CE)** documented the early trade, mentioning goods like sugar, textiles, and rice noodles moving to Tibet and India, while horses, gold, saffron, and medicinal herbs were sent to China.
- By the **Song Dynasty (960–1279 CE)**, official markets were set up to regulate the tea-horse trade, as China needed strong Tibetan horses for its military, while Tibetans depended on Chinese tea for survival in harsh climates.

Strategic and Economic Importance

- The route facilitated the spread of **Buddhism, Confucianism, and Taoism**, influencing the regions.
- Tibetan horses were vital for the Chinese military**, especially in conflicts with Mongol and Central Asian tribes.
- Tea became a valuable commodity**, often pressed into brick-shaped blocks used as currency in Tibet.

Decline and Legacy

- The route remained significant until the early 20th century, with Yunnan's tea industry growing as China engaged in the global market.
- During World War II, it served as an alternative supply route when Japan controlled China's coastline.
- After the **People's Republic of China** was established in 1949, land reforms and modern transportation networks led to its decline.
- Today, remnants of the route survive in places like **Lijiang**, which became a **UNESCO World Heritage Site in 1997** due to its historical importance.



MINERAL RESOURCES OF UKRAINE

Context: The United States is interested in Ukraine's minerals to reduce its dependency on China, which dominates 75% of the global rare earth supply.

Mineral Resources of Ukraine

- Ukraine is rich in mineral resources, with deposits of key raw materials essential for industries ranging from renewable energy to aerospace and defense.
- The country holds **about 5% of the world's critical raw materials**, making it a strategically important player in the global supply chain.

Major Mineral Resources and Their Uses

- Graphite:** Ukraine has 19 million tonnes of proven graphite reserves, making it one of the world's top suppliers. Graphite is a crucial component in electric vehicle (EV) batteries.
- Titanium:** The country holds 7% of Europe's titanium reserves, used in aerospace, defense, and power plant construction.
- Lithium:** Ukraine has one-third of Europe's lithium deposits, which are vital for battery production in electronics and EVs.
- Beryllium and Uranium:** These minerals are crucial for nuclear energy and military applications.
- Copper, Lead, Zinc, Silver, Nickel, Cobalt, and Manganese:** Essential for industrial production, electronics, and steel manufacturing.
- Rare Earth Elements (REEs):** Ukraine possesses significant reserves of these 17 elements, which are used in weapons systems, wind turbines, and advanced electronics.



MISSION FOR COTTON PRODUCTIVITY

Context: FM Nirmala Sitharaman announced a five-year mission for cotton productivity, providing major relief for cotton farmers faced with lower productivity.

About the Mission

- The mission aims **to increase cotton productivity, particularly among extra-long staple varieties**, leveraging Science and Technology support for farmers, ensuring that the cotton-growing community benefits from modern techniques to boost yield.
- According to the Ministry of Textiles, this initiative aligns with the **5 F principle**—Farm to Fibre, Fibre to Factory, Factory to Fashion, Fashion to Foreign—and will help increase the income of farmers, ensure a steady supply of quality cotton.
- Implemented over five years with an allocation of ₹2,500 crore**, the mission comprises **three key mini-missions**:
 - Kapas Kranti:** Led by the **Central Institute for Cotton Research**, this initiative focuses on enhancing cotton yield and productivity through research, extension programs, and human resource development. Given India's current cotton yield of 450 kg per hectare, which is significantly lower than the global average of 800+ kg per hectare, this intervention is crucial.
 - Modernization of Ginning and Pressing Units:** Anchored by the **Cotton Corporation of India**, this initiative aims to upgrade 1,000 ginning and pressing units with advanced technology to enhance cotton quality and processing efficiency.
 - Promotion of Sustainable Natural Fibers:** This mission focuses on the development of alternative natural fibers such as banana, milkweed, and bamboo.

Cotton and India

- India ranks 1st globally in cotton acreage**, with 124.69 lakh hectares under cultivation, covering **39% of the world's cotton area**. However, in **productivity**, India stands **33rd**, with a yield of 441

kg/ha.

- India is the only country growing all four-cotton species: *G. Arboreum* & *G. Herbaceum* (Asian cotton), *G. Barbadense* (Egyptian cotton), *G. Hirsutum* (American Upland cotton)
- Cotton is primarily grown in nine states, grouped into three agro-ecological zones:
 - **Northern Zone:** Punjab, Haryana, Rajasthan
 - **Central Zone:** Gujarat, Maharashtra, Madhya Pradesh
 - **Southern Zone:** Telangana, Andhra Pradesh, Karnataka
- India ranks **2nd in global cotton production** (23.83% of world production) in 2023-24 and is also the **2nd largest consumer** (22.69% of world consumption).
- India is a major cotton exporter, shipping 27 lakh bales (5% of world exports) yet imports less than 10% of its consumption to meet specific textile industry needs.

About Extra Long Staple Cotton

- ELS cotton, often considered the gold standard in textile manufacturing, is prized for its superior quality. It primarily comes from the species ***Gossypium barbadense***, also known as **Egyptian or Pima cotton**, with **fibre lengths of 30 mm or more**.
- Originally from South America, ELS cotton is now mainly **cultivated in China, Egypt, Australia, and Peru**.
- In India, it is grown in rain-fed regions of Atpadi (Maharashtra's Sangli district) and around Coimbatore (Tamil Nadu). The warm climate and fertile soil in these regions produce long, uniform fibres, resulting in stronger, finer yarns.
- Unlike regular cotton, ELS **requires minimal finishing**, preserving its natural softness and durability.

Kasturi Cotton Bharat

- Kasturi Cotton Bharat is a premium branding initiative by the Ministry of Textiles, aimed at enhancing the value of Indian cotton through traceability, certification, and quality benchmarking.
- Formalized through an MoU between the Cotton Corporation of India and the Cotton Textiles Export Promotion Council in 2022, the initiative ensures QR-based certification and a Blockchain-powered platform for end-to-end traceability.
- The programme operates nationwide, with promotion on national and international platforms.
- Ginners across India are certified to produce Kasturi Cotton Bharat as per set protocols.

URBAN CHALLENGE FUND (UCF)

Context: Finance Minister announced the setting up of a Rs 1 lakh crore Urban Challenge Fund in the Union Budget 2025–26.

About Urban Challenge Fund (UCF)

- The Urban Challenge Fund is a ₹1 lakh crore initiative **to develop cities as growth hubs, enhance infrastructure, and promote creative redevelopment**.
- **Funding Structure:** The fund will **finance up to 25% of bankable projects**, with at least 50% of the cost raised through bonds, bank loans, or Public-Private Partnerships (PPP). ₹10,000 crore has been allocated for Fiscal Year 2025-26.
- **Alignment with Urban Reforms:** It **complements the Urban Infrastructure Development Fund (UIDF)** and the incubation of new cities.
- **Strategic Focus:** The initiative aims at **Transit-Oriented Development (TOD), brownfield redevelopment, and strengthening municipal governance**.

About Urban Infrastructure Development Fund (UIDF)

- UIDF was announced in Budget 2023-24 to **finance urban infrastructure projects in tier-2 and tier-3 cities** by **utilizing the priority sector lending shortfall from banks**. It aims to support public agencies, municipal corporations, and urban local bodies in improving basic infrastructure.
- **Managed by: National Housing Bank**

- **Purpose:** Funds public agencies for projects like sewerage, solid waste management, water supply, sanitation, and drainage improvement.
- **Corpus:** ₹10,000 crore, modelled after the Rural Infrastructure Development Fund (RIDF).
- **Coverage:** Supports 459 tier-2 and 580 tier-3 cities.
- **Loan Terms: Interest at Bank Rate** - 1.5%, repayable in five annual installments over seven years, with a two-year moratorium.
- **Additional Funding:** States can leverage 15th Finance Commission grants and existing schemes for better implementation.

AI FOR ENTREPRENEURSHIP' MICRO-LEARNING MODULE

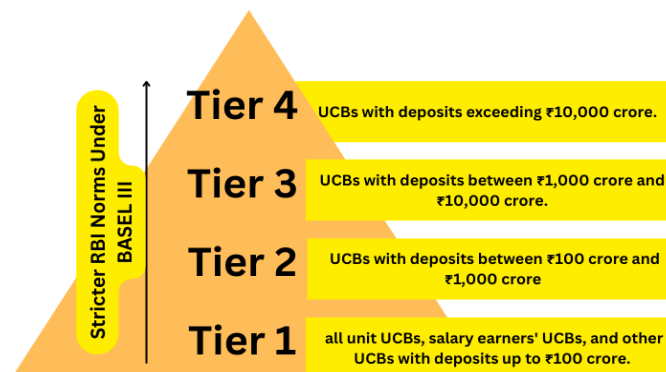
- The 'AI for Entrepreneurship' micro-learning module is a **joint initiative recently launched by the Ministry of Skill Development & Entrepreneurship (MSDE) and Intel to train 1 lakh youth in artificial intelligence (AI) and entrepreneurial skills** by 2025.
- The National Skill Development Corporation (NSDC) is a key partner in the program.
- **Implementation:** Conducted under a Public-Private Partnership (PPP) model.
- Participants who complete the module will receive an industry-endorsed joint certification from MSDE, NSDC, Skill India, and Intel.

URBAN CO-OPERATIVE BANKS (UCBS)

Context: RBI has called upon UCBs to prioritise their responsibilities towards depositors, highlighting the need for prudent management and robust financial practices.

About Urban Cooperative Banks (UCBs)

- Though not formally defined, UCB refers to primary cooperative banks located in urban and semi-urban areas. These banks, till 1996, were allowed to lend money only for non-agricultural purposes. This distinction does not hold today.
- UCBs are **registered as cooperative societies under the provisions of**, either the **State Cooperative Societies Act** of the State concerned or the **Multi State Cooperative Societies Act, 2002**.
- They are **regulated and supervised by the Registrar of Cooperative Societies (RCS)** of the State concerned or by the **Central Registrar of Cooperative Societies (CRCS)**, Depending on whether they are a single-state or multi-state cooperative bank.
- The **RBI regulates and supervises the banking functions of UCBs** under the provisions of the Banking Regulation Act, 1949 (As Applicable to Coop Societies).
- At present, there are over 1,500 scheduled and non-scheduled Urban Cooperative Banks with a total number of branches exceeding 11,000 in India.
- **Functions:**
 - These entities cater to banking requirements of small businesses, individuals, and communities.
 - Services include deposit accounts, loans, remittances, and other financial products and services.
- **Banking Regulation (Amendment) Act, 2020 (BR Amendment, 2020)**
 - The BR Amendment, 2020 brought significant changes to the regulatory framework for cooperative banks in India.
 - Co-operative banks were exempted from several provisions of the Banking Regulation Act, 1949. The 2020 Act applies some of these provisions to them, making their regulation under the Act similar to that of commercial banks.
- **Four-tiered Classification:** The RB recently announced a four-tiered regulatory framework for categorization of UCBs.



E-SHRAM MICROSITES & OCCUPATIONAL SHORTAGE INDEX (OSI)

Context: Recently, the Union Ministry for Labour & Employment launched two initiatives – State and Union Territory Microsites under the e-Shram initiative and the Occupational Shortage Index (OSI).

About e-Shram Microsite

- The e-Shram Microsite is a **state-specific digital platform integrated with the national e-Shram database**, ensuring **seamless access to government welfare programs for unorganised workers**.
- Facilitating two-way integration between State portals and the eShram portals, this will facilitate simplified registration of unorganised workers

Occupational Shortage Index (OSI)

- OSI **helps match labour market demand and supply**, improving employment outcomes in India.
- **Using ILO methodology and quarterly PLFS data**, it identifies occupations facing shortages, ensuring better alignment between job seekers' skills and industry needs.

ENHANCED CERTIFICATE OF ORIGIN (ECOO) 2.0 SYSTEM

Context: The Directorate General of Foreign Trade (DGFT) has launched the Enhanced Certificate of Origin (eCoO) 2.0 System to streamline the certification process for exporters & improve trade efficiency.

Features:

- **Multi-User Access:** Exporters can authorize multiple users under a single Importer Exporter Code.
- **Flexible Signing Options:** Supports Aadhaar-based e-signing and digital signature tokens.
- **Integrated Dashboard:** Provides access to eCoO services, Free Trade Agreement (FTA) details, trade events, and other resources.
- **In-lieu Certificate of Origin:** Allows exporters to request corrections to previously issued certificates online.
- **Efficient Processing:** Handles 7,000+ eCoOs daily, connecting 125 issuing agencies, including 110 chambers of commerce and over 650 issuing officers.

About Certificate of Origin (CoO)

- A CoO certifies that goods in a shipment are wholly obtained, produced, manufactured, or processed in a specific country. Local chambers operate as the natural and trusted agent in issuing CoOs.
- **Types of CoOs:**
 - **Preferential CoO:** Issued **under Free Trade Agreements (FTAs)** or Preferential Trade Agreements (PTAs), **granting duty-free or reduced tariffs** to qualifying goods. To avail tariff benefits, goods must:
 - Meet the Rules of Origin under the specific trade agreement.
 - Provide a CoO in the prescribed format.
 - Be transported directly to the destination without alteration.
 - **Non-Preferential CoO:** Issued **based on a country's national trade laws** for implementing trade remedies and restrictions under Most Favored Nation (MFN) duties. These **do not provide tariff benefits**.

TONNAGE TAX SCHEME

Context: The Budget 2025-26 extended the tonnage tax scheme.

- The benefits of the **existing tonnage tax scheme** are proposed to be extended to **inland vessels** registered under the **Indian Vessels Act, 2021**, to **promote inland water transport in the country**. It was earlier only available to sea going ships.

About Tonnage Tax Scheme

- Introduced in **2004** under the **Finance Act**, the Tonnage Tax Scheme aims **to enhance the competitiveness and efficiency of the shipping industry**.

- Instead of taxing actual income, the **scheme calculates a company's tax liability based on the tonnage of its qualifying ships.**

DIGITAL PAYMENTS INDEX (DPI)

Context: The RBI Digital Payments Index (DPI) rose to 465.33 as of September 2024, compared to 445.5 in March 2024, reflecting the rapid adoption of digital payments in the country.

About RBI's Digital Payments Index

- The RBI's Digital Payments Index (DPI) measures the **extent of digital payment adoption across India**. Launched in January **2021**, it tracks the **growth and penetration of digital transactions using multiple parameters. It is published on a semi-annual basis.**
- The RBI-DPI comprises **5 broad parameters** that enable measurement of deepening and penetration of digital payments in the country over different time periods.
 - Payment Enablers (weight 25%)
 - Payment Infrastructure – Demand-side factors (10%)
 - Payment Infrastructure – Supply-side factors (15%)
 - Payment Performance (45%)
 - Consumer Centricity (5%).
 - Each of these parameters have sub-parameters which, in turn, consist of various measurable indicators.
- **Base Year:** March 2018 (DPI score set at 100).

MARKET INFRASTRUCTURE INSTITUTIONS (MIIs)

Context: SEBI came out with guidelines for the evaluation of the performance of statutory committees of market infrastructure institutions (MIIs).

About Market Infrastructure Institutions (MIIs)

MIIs comprise Stock Exchanges, Clearing Corporations, and Depositories, which play a crucial role in ensuring smooth and secure financial market operations.

- **Stock Exchange:** Facilitates, regulates, and oversees the trading of securities. For example, BSE, the NSE, the Multi Commodity Exchange of India, etc.
- **Clearing Corporation:** Manages the clearing and settlement of trades executed on stock exchange platforms. For example, Multi Commodity Exchange Clearing Corporation.
- **Depository:** Holds investors' securities in dematerialized form through registered depository participants. For example, Central Depository Services Ltd. & the National Securities Depository Ltd.

ALGORITHMIC TRADING

Context: The SEBI has introduced a **regulatory framework to facilitate retail investor participation in Algorithmic (Algo) Trading**, effective from August 1, 2025.

- **Previously, Algo trading was limited to institutional investors**, but this move aims to enhance market efficiency, liquidity, and investor protection.

Key Highlights of the Framework:

- Retail investors can access approved algos only through registered brokers, ensuring compliance and safeguarding investor interests.
- Brokers must obtain exchange approval for each algorithm, and modifications require fresh approval.
- All algo orders will carry a unique identifier to ensure audit trails and regulatory oversight.
- Stock exchanges will supervise algo trading, conduct simulation testing, maintain a kill switch, and implement Standard Operating Procedures (SOPs) for algo approval.

What is Algorithmic (Algo) Trading?

- Algorithmic Trading refers to the use of pre-programmed computer algorithms to automate trading decisions in financial markets. These algorithms execute buy or sell orders based on predetermined criteria such as price, timing, volume, or market trends.

RuTAGE SMART VILLAGE CENTER (RSVC)

Context: The RSVC was recently launched in Mandaura, Haryana, marking a milestone in rural technological transformation.

About Rural Technology Action Group (RuTAGE) Smart Village Center (RSVC)

- This initiative, spearheaded by the **Office of the Principal Scientific Adviser (PSA)** to the Government of India, **to integrate cutting-edge technologies with rural needs, fostering sustainable development and economic empowerment.**
- The RSVC is designed to serve as a permanent presence at the **Panchayat level**, providing deep handholding to cater to the technological needs of 15-20 villages over several years.
- The center aims to build trust and confidence among the community members, ensuring the seamless adoption of innovative solutions.

Key Features of the RSVC Model

- **Quality Assurance:** Ensured through guidance from Selco, IIT Madras, and the Assistive Tech Foundation for effective technology deployment. These entities guide the RSVC team in the on-the-ground deployment of technologies from platforms like Manthan and RuTAG.
- **Market Access:** Collaborates with ONDC, Amazon, and Market Mirchi (a RuTAG innovation by IIT Bombay) to connect rural producers to larger markets; a Help Desk aids in accessing government schemes.
- **Government Integration:** Aligns with Rural Development, Agriculture, Animal Husbandry, and Labour Ministries to enhance rural welfare.
- **Scalability:** Plans for 20 new centers; the Techpreneurs (Foot Soldiers) program will empower women entrepreneurs to promote rural technologies.

GLOBAL CAPABILITY CENTERS

Context: Madhya Pradesh has become the first state to bring a dedicated Global Capability Centre (GCC) policy. This policy is India's first dedicated framework for fostering GCC growth in tier-2 cities.

What is a Global Capability Centre (GCC)?

- A GCC is an **offshore unit set up by multinational corporations (MNCs) to handle key business functions** such as IT, research & development (R&D), analytics, finance, and customer support.
- These centers **support the parent company's global operations** by providing specialized services and innovation. E.g. Microsoft India Development Center (IDC), Mercedes-Benz Research & Development India - Bengaluru, etc.
- They are also called **Global In-House Centres (GICs)**. Initially focused on cost-saving, GCCs have now evolved into strategic hubs for innovation, digital transformation, and high-value expertise.
- **India is a major destination for GCCs** due to its skilled workforce, cost advantages, and strong IT ecosystem. As of December 2024, there are over **2,900 GCC units in India** with some companies having multiple units across cities. The GCC workforce stands at around 1.9 million.

SOIL HEALTH CARD SCHEME

Context: Soil Health Card Scheme completed 10 years of implementation.

About Soil Health Card Scheme

Launch	19th February 2015 by Ministry of Agriculture and Farmer Welfare
Objective	To provide farmers with soil nutrient status and fertilizer recommendations for improving soil health and fertility.
Integration with RKVY	Merged into Rashtriya Krishi Vikas Yojana (RKVY) in 2022-23 under the "Soil Health & Fertility" component.
Implementation	Respective States' Department of Agriculture
Soil Parameters Covered	12 parameters: • Macro-nutrients (N, P, K, S), • Micro-nutrients (Zn, Fe, Cu, Mn, Bo),

	• Other Indicators (pH, Electrical Conductivity (salinity), and Organic Carbon (soil fertility)).
Soil Sample Collection	Conducted twice a year, post Rabi & Kharif harvests, or when there is no standing crop in the field.
Village Level Soil Testing Labs (VLSTLs)	• Introduced in June 2023. • Can be set up by entrepreneurs, SHGs, FPOs, schools, and universities. • Eligibility: Age 18-27 years for individual entrepreneurs. • 665 labs established across 17 states (as of February 2025).
School Soil Health Programme	• Launched as a pilot project in collaboration with DA&FW, ICAR, and State Governments. • Implemented in 1020 schools (as of 2024), with 1000 soil testing labs and 125,972 students enrolled.
SHC Mobile App & Revamped Portal (2023)	• Available in all major languages and 5 dialects • Integrated with the GIS system for mapping soil test results. • Features QR code linking, geo-mapping, and automated data entry. • State, district, taluka, and panchayat boundaries mapped for better visualization. • Developed by: National Informatics Centre (NIC) for digitizing Soil Health Cards.

AGRICULTURE INFRASTRUCTURE FUND

Context: Punjab has utilised 100% of the Rs 4,713 crore allocated to it by the Centre under the Agriculture Infrastructure Fund (AIF) scheme.

About Agriculture Infrastructure Fund

- The AIF was launched as part of AtmaNirbhar Bharat Package **2020 to address the lack of infrastructure in agriculture and attract more investment into this crucial sector**.
- The scheme aims **to modernize agriculture infrastructure and improve farmers' incomes** by supporting the development of storage, supply chain, and post-harvest facilities.
- **Objective of AIF:** To provide **medium to long-term debt financing for: Post-harvest management infrastructure** (like cold storage, warehouses, etc.); **Community farming assets** (like sorting, grading, packaging units)
- **Eligible Beneficiaries:** Individual Farmers, Farmer Producer Organizations (FPOs), Startups and Agri-entrepreneurs, Primary Agricultural Credit Societies (PACS), Marketing Cooperatives, Self Help Groups (SHGs) & their Federations, Joint Liability Groups (JLGs), Multipurpose Cooperative Societies, State and Central Government Agencies, Public-Private Partnership (PPP) Projects, Agricultural Produce Market Committees (APMCs)

Key Features of the Scheme

- The government has set aside a total fund of **₹1 lakh crore**, which will be provided as loans through banks and financial institutions **until 2025-26**.
- Beneficiaries can avail **loans up to ₹2 crore at a 3% interest subsidy**, with **loan repayment period up to 7 years**. The govt also **reimburses the credit guarantee fees to banks** till FY2032-33.

LIVESTOCK HEALTH & DISEASE CONTROL PROGRAMME (LHDCP)

Context: The Union Cabinet has approved the revised version of the Livestock Health and Disease Control Programme (LHDCP) to strengthen animal healthcare in India.

About Livestock Health and Disease Control Programme (LHDCP)

- The scheme aims to improve the animal health sector by implementing prophylactic vaccination programmes against various diseases of livestock and poultry, capacity building, disease surveillance, and strengthening the veterinary infrastructure.

Components of Livestock Health and Disease Control Programme (LHDCP)	
National Animal Disease Control Programme (NADCP)	- A flagship scheme launched in 2019 for control of Foot & Mouth Disease (FMD) and Brucellosis by vaccinating 100% cattle, buffalo, sheep, goat and pig population for FMD and 100% bovine female calves of 4-8 months of age for brucellosis. - It is a Central Sector Scheme where 100% of funds shall be provided by the Central Government to the States / UTs.
Livestock Health and Disease Control (LH&DC)	This component includes three sub-components: Critical Animal Disease Control Programme (CADCP): Targets the two critical diseases: Peste des Petits Ruminants (PPR) and Classical Swine Fever (CSF) through 100% vaccination coverage. Establishment and Strengthening of Veterinary Hospitals and Mobile Veterinary Units (ESVHD-MVU): Upgrades existing veterinary facilities and introduces mobile units to reach remote areas. Assistance to States for Control of Animal Diseases (ASCAD): Supports states in disease surveillance and control activities.
Pashu Aushadhi (New Component)	- Aims to provide affordable and good-quality generic veterinary medicines. - Also offers incentives for the sale of medicines through PM-Kisan Samridhi Kendras and Cooperative Societies.

About Pashu Aushadhi

- The government will open Pashu Aushadhi stores across the country to provide affordable generic veterinary medicines to people engaged in animal husbandry and dairying.
- It has been conceptualised on the lines of the Pradhan Mantri Bharatiya Janaushadhi Kendras (PMBJK), which provide quality generic medicines at affordable prices to people.
- Run by **Cooperative Societies** and **Pradhan Mantri Kisan Samridhi Kendras (PMKSK)**.
- The Pashu Aushadhi Kendras will also sell **ethnoveterinary medicines**, based on **traditional beliefs and indigenous knowledge and practices, to treat animal diseases**.
- Traditional Formulations:** The National Dairy Development Board (NDDB) has compiled a list of traditional formulations targeting bovine ailments such as: Mastitis; FMD-related lesions (mouth and foot); Fever, diarrhoea, bloating, indigestion; Worm infestations.

FORMATION & PROMOTION OF 10,000 FPOS

Context: The target of forming 10,000 Farmer Producer Organizations (FPOs) was achieved under the Central Sector Scheme - Formation and Promotion of 10,000 FPOs. 10,000th FPO has been registered in Khagaria district (Bihar)

What are Farmer Producer Organizations (FPOs)?

- FPOs are formal groups of farmers, especially small, marginal, and landless farmers, who come together to carry out agricultural and allied activities collectively.
- FPOs are registered under Part IXA of the Companies Act or the Co-operative Societies Act of respective states.
- Purpose of FPOs:**
 - Leveraging economies of scale in production and marketing with a view to enhance productivity through efficient
 - Cost effective and sustainable resource use for ensuring sustainable income-oriented farming
 - Helping in reduction of cost of farm production and Increase in farmers' income

About Formation and Promotion of 10,000 Farmer Producer Organizations (FPOs)

- The Formation and Promotion of 10,000 FPOs **central sector scheme** was launched in **2020** with an outlay of Rs 6,865 crore till 2027-28.

- **Supporting Agency:** Small Farmers' Agribusiness Consortium (SFAC)

Key Features

- **Focus:** Priority to **aspirational districts, with at least one FPO per block.**
- **Cluster Approach:** FPOs to be formed under the **One District One Product (ODOP) model** to boost specialization, processing, marketing, branding, and exports.
- **Handholding Support:** Each newly formed FPO receives handholding support for five years, along with financial assistance of up to ₹18 lakh for management costs over the first three years.
- **Access to Institutional Credit:** A credit guarantee facility is provided for project loans of up to ₹2 crore per FPO, ensuring easier access to credit from eligible financial institutions.
- **Credit Guarantee Funds:** ₹1,000 crore in NABARD, ₹500 crore in NCDC, Concessional loans to States/UTs via Agri-Market Infrastructure Fund (AMIF).
- **Capacity Building:** Provision of training and handholding support for FPOs.

Key Initiatives under the FPO Scheme

- **Credit Guarantee Fund (CGF):** A dedicated CGF has been set up to provide credit guarantees to banks and institutions for loans given to FPO.
- **ONDC Platform Integration:** Around 5,000 FPOs have been onboarded on the Open Network for Digital Commerce (ONDC)
- **CSC Conversion MoU:** An MoU was signed between the Ministry of Agriculture and CSC SPV to convert 10,000 FPOs into Common Service Centres (CSCs)
- **Inclusivity Focus:** Special emphasis is given to include small, marginal, women, SC/ST, and other economically weaker farmers as members to make FPOs

REINSURANCE IN INDIA

Context: The Insurance Regulatory and Development Authority of India (IRDAI) has granted a reinsurance license to Valueattics Reinsurance, making it the first private reinsurer in India.

- Until now, the only reinsurer operating in the country was the public sector General Insurance Corporation (GIC Re).

What is Reinsurance?

- Reinsurance is essentially **insurance for insurance companies**. It **allows insurance companies to transfer a part of their risk**—such as those related to motor, home, or business insurance—to another company, called a reinsurer.
- Reinsurers act as a **second line of protection, helping insurance companies manage large or unexpected losses (like natural disasters)**.
- Insurance companies that transfer risk to reinsurers are known as **ceding companies**.
- Reinsurance helps ensure: Financial stability (solvency) of insurance companies, Fair pricing and contract conditions, Consumer protection and ethical market practices

RBI WINS DIGITAL TRANSFORMATION AWARD 2025

Context: The Reserve Bank of India (RBI) has received the Digital Transformation Award 2025 from Central Banking (London, UK) for its innovative digital platforms — Sarthi and Pravaah.

Sarthi (Launched in 2023)	• Aimed at digitizing RBI's internal workflows, • Enables secure document storage, sharing, and tracking, • Enhances record management, data analysis, and collaboration, • Replaces fragmented manual processes with a unified digital system across departments.
Pravaah (Launched in 2024)	• A digital portal for external users to submit regulatory applications to RBI, • Integrates with Sarthi, ensuring smooth and secure handling of applications, • Supports over 70 types of applications across 9 departments,

- Led to an 80% rise in monthly submissions due to improved user experience and efficiency.

UNIFIED LOGISTICS INTERFACE PLATFORM (ULIP)

Context: ULIP recorded over 100 crore Application Programming Interface (API) transactions, marking a significant step towards building a tech-driven logistics ecosystem in India.

About Unified Logistics Interface Platform (ULIP)

- ULIP, launched as part of the National Logistics Policy (NLP) in 2022, is an **initiative in the logistics sector that aims to bring ease of doing business in the logistics sector** by simplifying the logistics processes, improving its efficiency, bringing in transparency and visibility, and reducing logistics cost & time.
- The ULIP platform will enable the industry players to get secure access to information related to logistics and resources available with various Ministries.
- ULIP has a dedicated portal that makes the process of data request simpler, faster, and transparent.
- ULIP provides **opportunities to the private sector to develop use cases on ULIP**. By signing Non-Disclosure Agreements (NDAs) and after due diligence, data on ULIP can be accessed through API integration and private players can develop apps/use cases.
- **National Industrial Corridor Development Corporation (NICDC)** was mandated by NITI Aayog in January 2021 to develop ULIP by leveraging the Logistics Data Bank Project.

PARVATMALA PARIYOJANA

Context: The Cabinet Committee on Economic Affairs (CCEA) has approved two ropeway projects in Uttarakhand under the **National Ropeways Development Programme – Parvatmala Pariyojana**.

About the Ropeway Projects

Kedarnath Ropeway Project	• One of the 12 Jyotirlingas, it is situated at an elevation of nearly 12,000 feet in Rudraprayag district. • The 12.9 km Sonprayag to Kedarnath ropeway is sanctioned at Rs 4,081 crore. • It will have a capacity of 1,800 passengers per hour per direction and will reduce travel time from 8-9 hours to just 36 minutes.
Hemkund Sahib Ropeway Project	• A Sikh shrine, where the 10th Sikh Guru - Guru Gobind Singh is believed to have meditated in one of his earlier births. • It is at an elevation of 14200 feet in Chamoli district. • The 12.4 km Govindghat to Hemkund Sahib ropeway will be developed with a capacity of 1,100 passengers per hour per direction replacing the challenging 21-km trek with a modern transport system • This ropeway will have a Govindghat to Ghangaria section, which serves as to the Valley of Flowers National Park, a UNESCO World Heritage site, and Ghangaria to Hemkund Sahib section.
• Both projects will be executed under the Design, Build, Finance, Operate, and Transfer (DBFOT) model in a Public-Private Partnership (PPP) framework. • The projects will be based on the monocable detachable gondola (MDG) and tricable detachable gondola (3S) technology.	

About National Ropeway Development Programme “Parvatmala”

- Launched in the **Budget 2022**, to improve last-mile connectivity in remote and hilly areas
- **Administrative Ministry:** Ministry of Road Transport and Highways
- Implemented under the **Public-Private Partnership (PPP)** mode by the **National Highway Logistics Management Limited (NHLML)**
- The initiative envisions the development of over 250 ropeway projects covering 1,200 km over the next five years.

- Aligned with the 'Make in India' vision, the programme mandates a minimum of 50% indigenous components in ropeway construction.

GUM ARABIC

Context: Gum Arabic is increasingly being trafficked from rebel-held areas of war-torn Sudan, complicating efforts to insulate supply chains from conflict.

About Gum Arabic

- Gum arabic is the **dried sap** of certain species of **acacia trees** (*Senegalia senegal* and *Vachellia seyal*). It is used mainly as an additive in the soft drinks industry.
- Sap is extracted from acacia trees by cutting incisions in their bark that allow the liquid to seep out. After that, the sap turns into gum.
- Its distinct qualities and water solubility make it useful across a range of sectors, including **pharmaceuticals, food and beverages, and personal care industries**.
- It is an ingredient in processed meals, soft drinks and confections, a thickening agent in chewing gums, a binder in watercolour paints, as additive in ceramic glazes and an adhesive in the rolling papers used in cigarettes. It is a well-known emulsifier, an additive which helps two liquids mix. It's also used in textiles and medicines.
- Gum arabic is produced mainly in the Sahel area of Africa which is dry and semi-arid region, ideal for acacia plants. In addition, the Sahel's climate is perfect for the harvesting of the sap. During harvesting season, it has high temperatures, low humidity and little rainfall.
- **Sudan accounts for about 70% of global gum arabic exports.** Another well-known producer is Chad.

GOLD MONETISATION SCHEME (GMS)

Context: The government has discontinued the **Medium Term and Long Term Government Deposit (MLTGD) components of the GMS**. However, short-term deposits will continue at the discretion of banks based on commercial viability.

About Gold Monetisation Scheme (GMS)

- The GMS was announced in 2015 with the **objective to reduce the country's reliance on the import of gold** in the long run and **mobilise gold held by households and institutions in the country to facilitate its use for productive purposes**.

Component of GMS	Duration	Lock-in	Interest Rate
Short Term Bank Deposit (STBD)	1–3 years	As determined by banks	
Medium Term Government Deposit (MTGD)	5–7 years	3 years	2.25% per annum
Long Term Government Deposit (LTGD)	12–15 years	5 years	2.50% per annum

- The **minimum deposit allowed was 10 gm of raw gold** (bars, coins, jewellery excluding stones and other metals). There was **no maximum limit** for deposit under the scheme.
- Till November 2024, approximately 31,164 kg of gold had been mobilised under GMS.

Sovereign Gold Bonds (SGBs)

- Sovereign Gold Bonds (SGBs) are government securities denominated in grams of gold, issued by the Reserve Bank of India (RBI) on behalf of the Government of India. They serve as substitutes for holding physical gold, offering investors a secure and convenient way to invest in gold without the need for physical storage.
- Started in 2015, the SGB Scheme has not seen any new issuances for the FY2024-25 and no new issues are expected.

DALLE CHILLY

Context: The Agricultural and Processed Food Products Export Development Authority (APEDA) has exported the first consignment of GI-Tagged Dalle Chilly from **Sikkim** to the Solomon Islands.

About Dalle Chilly

- Dalle Chilly, also called **Fire Ball Chilly** or **Dalle Khursani of Sikkim**, is famous for its spicy taste, bright red color, and rich nutritional value.
- The Dalle Chilly **received its Geographical Indication (GI) tag in 2020**.
- **Extremely Spicy:** It is one of the hottest chilies in the world, with a Scoville Heat Unit (SHU) score ranging from 1,00,000 to 3,50,000
- **Nutrient-Rich:** It is a good source of vitamins A, C, and E, as well as potassium
- **Multiple Uses:** Cooking, Traditional medicine

EQUALISATION LEVY

Context: The Central government has proposed to abolish the equalisation levy on online advertisements, as a part of amendments to the Finance Bill, 2025.

About Equalisation Levy

- The Equalisation Levy was first introduced through the **Finance Act, 2016**. It was mainly targeted at **payments made to non-resident companies (i.e., foreign companies) for online advertisement services**.
- Later, through the **Finance Act, 2020**, the government expanded this levy to include **e-commerce goods and services sold or facilitated by foreign companies** on or after April 1, 2020.
- Any income that is already covered under the Equalisation Levy is not taxed again under regular income tax rules.

1. Equalisation Levy on Online Advertisements (2016-2025)

- If an Indian business pays a foreign company for online advertisement services (like Google Ads or Facebook Ads), this payment is subject to an Equalisation Levy.
- The rate is **6%** of the total amount paid or payable.
- Equalisation levy is not charged if the aggregate amount specified services in a previous year does not exceed Rs. 1 lakh.
- **Example:** If an Indian company pays ₹1,00,000 to a foreign company for online ads, ₹6,000 will be collected as an Equalisation Levy, which will be deducted by the recipient of the service (the Indian company).

2. Equalisation Levy on E-commerce Transactions (2020-2024):

- Applies to foreign e-commerce operators (like Amazon, or others) who sell goods or services to Indian customers.
- If they receive payment for such sales made or facilitated between April 1, 2020, and July 31, 2024, they must pay Equalisation Levy.
- **The rate is 2% of the total amount received or receivable.**
- Example: If a foreign online store sells a product worth ₹50,000 to an Indian buyer, the store must pay ₹1,000 (2%) as Equalisation Levy.
- **In July 2024, the government removed the 2% e-commerce levy.** With the latest update, the entire Equalisation Levy structure will end from April 2025.

BHIM 3.0

Context: The NPCI BHIM Services Limited (NBSL) has launched the latest version of its digital payment app—BHIM 3.0.

About BHIM 3.0

- Originally introduced in **2016**, the **Bharat Interface for Money (BHIM) app** has played an important role in promoting digital payments across India.
- BHIM 3.0 aims to make the app easier to use, more inclusive, and helpful for both individuals and small businesses.

Key Features for Regular Users

- BHIM 3.0 can now be used in 15 or more Indian languages.
- Works Better in Poor Network Areas
- Helps users track their spending, manage their budgets, and split bills with friends or family.
- Users can now add family members to the app, share expenses, assign payments, and monitor how money is spent in the household.
- A new tool will remind users about important tasks like unpaid bills, low account balance, or activating UPI Lite.

Special Feature for Shopkeepers – BHIM Vega

- Shopkeepers can now accept payments directly through BHIM 3.0 without asking customers to use any other app. This makes the process faster and easier for both sellers and buyers.

NPCI BHIM Services Limited (NBSL)

• NBSL was incorporated in 2024, as a **wholly owned subsidiary of the National Payments Corporation of India (NPCI)**.

• NBSL aims to enhance the adoption of digital payments through the BHIM platform and is committed to providing a seamless, secure, and user-friendly payment experience to individuals and businesses across India.

National Payments Corporation of India (NPCI)

• **Set up in 2008**, NPCI is an umbrella organisation for operating retail payments and settlement systems in India.

• It is an **initiative of RBI and Indian Banks' Association (IBA)** under the provisions of the **Payment and Settlement Systems Act, 2007**.

It has been incorporated as a **Not for Profit Company** to provide infrastructure to the entire banking system in India for physical as well as electronic payment and settlement systems.

REVISED RASHTRIYA GOKUL MISSION (RGM)

Context: The Union Cabinet has approved the Revised Rashtriya Gokul Mission (RGM) to further support the growth of the livestock sector in India.

About Rashtriya Gokul Mission (RGM)

- The RGM was launched in **2014** to promote the conservation and development of indigenous (native) cattle breeds, improve the genetic quality of livestock, and increase milk production.
- **Implementing Body: Department of Animal Husbandry and Dairying** (Ministry of Fisheries, Animal Husbandry & Dairying) through the State Implementing Agencies (SIA viz Livestock Development Boards).

Key Features of the Revised RGM

- **Outlay:** ₹3,400 crores for period 2021–22 to 2025–26 (15th Finance Commission Cycle)
- **Two New Additions:**
 - **Heifer Rearing Centres (HRCs):** These centres will help **raise young female calves** (heifers) with high genetic quality. One-time assistance of 35% of capital cost for setting up 30 housing facilities for 15,000 heifers.
 - **High genetic merit (HGM) IVF:** 3% interest subvention on loans taken by farmers to purchase HGM In vitro fertilization (IVF) heifers from milk unions/financial institutions.

Components of RGM

1. Availability of High Genetic Merit Germplasm
2. Extension of Artificial Insemination Network
3. Development and Conservation of Indigenous Breeds
4. Skill Development
5. Farmers Awareness
6. R&D and Innovation in Bovine Breeding

KOSI MECHI INTRA-STATE LINK PROJECT

Context: The Cabinet Committee on Economic Affairs (CCEA) has approved the inclusion of Kosi Mechi Intra-State Link Project of Bihar under Pradhan Mantri Krishi Sinchai Yojana -Accelerated Irrigation Benefits Programme (PMKSY-AIBP) of Ministry of Jal Shakti.

- The Kosi Mechi Project will **divert part of surplus water of Kosi river for extending irrigation to Mahananda basin lying in Bihar**.
- This will be done by extending the existing Eastern Kosi Main Canal (EKMC) beyond its tail end up to river Mechi so that rivers Kosi and Mechi which flow through Bihar could be linked together within Bihar.
- It will provide 2,10,516 hectares additional annual irrigation in Kharif season in Araria, Purnea, Kishanganj and Katihar districts of Bihar.

About Pradhan Mantri Krishi Sinchayee Yojana

- It was launched in 2015 to improve farm productivity and ensure better utilization of the resources in the country.
- It is a **Centrally Sponsored Scheme** of the Ministry of Jal Shakti, implemented in an **area development approach**, adopting decentralized state level planning and allowing the states to develop their irrigation development plans based on district/ blocks plans.

PMKSY Components			
Accelerated Irrigation Benefit Programme (AIBP)	Har Khet Ko Pani (HKKP)	Watershed Development	Per Drop More Crop (PDMC)

About Accelerated Irrigation Benefit Programme (AIBP)

- Launched in 1996-97, AIBP focuses on the **creation of irrigation potential** through **major and medium irrigation projects** in different states.
- Implementing Body:** Department of Water Resources, River Development and Ganga Rejuvenation, Ministry of Jal Shakti.
- The central government provides **financial assistance to State Governments** to help them complete ongoing irrigation projects that were delayed due to lack of funds.

INCENTIVE SCHEME FOR BHIM-UPI

Context: The Union Cabinet has approved Incentive Scheme for promotion of low-value BHIM-UPI transactions Person to Merchant (P2M) for the FY 2024-25, with outlay of Rs 1,500 crore.

Features of the Scheme

- Zero Merchant Discount Rate (MDR)** for transactions **across all categories**. The MDR is a fee that merchants and other businesses must pay to a payment processing company for online transactions.
- For each **UPI payment up to ₹2,000 made to small merchants**, the government will give a **0.15% incentive**.
- The **incentive is paid by the government to the Acquiring Bank** (merchant's bank) and is then shared among other stakeholders: Issuer Bank (customer's bank), Payment Service Provider Bank (facilitates UPI onboarding/ API integration), and App Providers.
- 80% of the claimed amount by banks will be paid directly without any conditions. The remaining 20% will be paid only if the bank meets technical standards:
 - 10% extra if the bank keeps its failure rate (technical decline) below 0.75%.
 - 10% extra if the bank's system is up and running more than 99.5% of the time.

PROJECT FARM VIBES

Context: Project Farm Vibes is being tested in Baramati, a town in **Pune** district, Maharashtra, in collaboration with **Microsoft** Research and local agricultural bodies.

About Project Farm Vibes:

- Launched in 2023, this project is a joint effort between Microsoft and the Agricultural Development Trust in Baramati. The project **aims to improve crop yield, reduce costs**, and make farming more sustainable.
- It **uses a set of advanced tools and technologies like Artificial Intelligence (AI)** to help farmers make **better decisions by analyzing data** from satellites, drones, weather stations, and soil sensors.
- PFV utilizes solutions like **Azure Data Manager for Agriculture (ADMA)**, which gathers data from satellites, weather providers, and on-ground sensors, creating a comprehensive view of field conditions.
- Farmvibes.AI** uses artificial intelligence to monitor vital parameters—soil moisture, temperature, humidity and pH.
- Agripilot.ai** taps into Azure Maps and Azure OpenAI to offer farmers actionable insights for sustainable food production.

RISE IN KCC BAD LOANS

Context: Between March 2021 and December 2024, bad loans under KCC accounts in Scheduled Commercial Banks (SCBs) increased by 42%.

- Uttar Pradesh reported the highest outstanding KCC loan amount, followed by Rajasthan, Madhya Pradesh, Maharashtra, Gujarat, and Karnataka.

From year 2018-19, GoI introduced the **KCC scheme for Animal Husbandry and Fisheries** to provide short-term working capital loans to Animal Husbandry and Fish farmers.

About the Kisan Credit Card Scheme

Launched	in 1998 by Ministry of Agriculture & Farmers Welfare
Aim and Objective	Providing adequate and timely credit support from the banking system under a single window with the flexible and simplified procedures to the farmers for their cultivation - To meet the short-term credit requirements for the cultivation of crops - Post-harvest expenses - Produce marketing loan - Consumption requirements of farmer household - Working capital for maintenance of farm assets and activities allied to agriculture - Investment credit requirement for agriculture and allied activities
Eligible beneficiaries	Small and marginal farmers, sharecroppers, tenant farmers, oral lessees, and even Self-Help Groups (SHGs) or Joint Liability Groups (JLGs).
Loan Limit	- In the 2025–26 Budget, the loan limit was raised from ₹3 lakhs to ₹5 lakhs. - Loans up to ₹2 lakhs are offered without collateral - Part of Priority Sector Lending (PSL) of Banks
Government Support	- Under the Modified Interest Subvention Scheme (MISS) (a central sector scheme), the government gives: 1.5% interest subvention to banks for short-term loans up to ₹3 lakh at 7% interest. - An extra 3% discount (Prompt Repayment Incentive) for farmers who repay on time, reducing the effective interest rate to 4%.

How NPAs are Classified in KCC Loans:

- Short-duration crops:** Loan is NPA if unpaid for 2 crop seasons.
- Long-duration crops:** Loan is NPA if unpaid for 1 crop season.
- For short duration crops, the crop season is 12 months and for long duration crops it is 18 months in most states

REVISED NATIONAL PROGRAMME FOR DAIRY DEVELOPMENT

Context: Cabinet has approved the Revised National Program for Dairy Development (NPDD).

About Revised National Program for Dairy Development (NPDD)

- The Revised NPDD is a **Central Sector Scheme** aimed at strengthening and modernizing India's dairy sector. With an additional allocation of ₹1,000 crore, the total budget now stands at ₹2,790 crores for the 15th Finance Commission cycle (2021–22 to 2025–26).
- The Revised NPDD seeks to **boost milk procurement, processing capacity, and quality control systems**. It helps rural farmers, especially women, by: Improving access to markets, Ensuring better prices through value addition, Enhancing the efficiency of the dairy supply chain, and Promoting sustainable rural development.
- The Revised NPDD aims to establish **10,000 new Dairy Cooperative Societies**, processing in the NER and form **2 Milk Producer Companies (MPCs)** in addition to the ongoing projects of NPDD.

Components of NPDD	
A: Infrastructure Development	B: Dairying through Cooperatives (DTC)
Focus on setting up: - Milk chilling plants - Milk testing labs and certification systems - Promotion of new Village Dairy Cooperative Societies Special support for: - North Eastern Region (NER) - Hilly regions and Union Territories (UTs) - Establishment of 2 Milk Producer Companies (MPCs) with grant assistance	- Implemented with support from Japan International Cooperation Agency (JICA) Focused on: - Sustainable development of dairy cooperatives - Better production, processing, and marketing infrastructure 9 States: Andhra Pradesh, Bihar, Madhya Pradesh, Punjab, Rajasthan, Telangana, Uttarakhand, Uttar Pradesh, and West Bengal

ELECTRONICS COMPONENT MANUFACTURING SCHEME

Context: Ministry of Electronics and Information Technology (MeitY) notified the **Electronics Components Manufacturing Scheme** to make India Atmanirbhar in the electronics supply chain.

About Electronics Component Manufacturing Scheme

- This scheme **aims to develop a robust component ecosystem by attracting large investments (global/domestic) in the electronics component manufacturing ecosystem**, increasing Domestic Value Addition (DVA) by developing capacity and capabilities, and integrating Indian companies with Global Value Chains (GVCs).
- The **scheme also focuses on capital goods**, mainly large machinery that is in and of itself used to manufacture other components.
- The tenure of the scheme is six years with one year of gestation period. Payout of a part of the incentive is linked with employment targets achievement.
- Greenfield as well as brownfield investment for the target segment shall be eligible under the scheme. Budget outlay of the scheme is ₹22,919 crores.

Targeted Incentives Across Component Segments	
Segment	Nature of Incentive
Sub-Assemblies: Display modules, Camera modules	Turnover-linked
Bare Components: Passive components (non-SMD), Electro-mechanicals, Multi-layer PCBs, Li-ion cells (for digital use), Enclosures	Turnover-linked
High-tech Bare Components: HDI / MSAP / Flexible PCBs, SMD passive components	Hybrid
Ecosystem Support: Capital goods, parts used in sub-assemblies and components	Capital expenditure

RACE TO SECURE COPPER AND COBALT SUPPLIES

Context: Recently, India secured a 9,000-sq-km block in Zambia to explore copper and cobalt, crucial for overseas mining as domestic production declines.

Cobalt (Co) (Atomic No. 27)	Copper (Cu) (Atomic No. 29)
a silver-gray, hard, lustrous metal with strong magnetic properties	a reddish-brown, soft, ductile metal with high electrical conductivity.

• Global Cobalt Reserves: The world has 8.3 million tonnes of cobalt, with 48% of reserves in the Democratic Republic of the Congo. Other major reserves are in Australia (18%), Indonesia (7%), and Cuba (6%). • Cobalt in India: Cobalt is found in regions like Jharkhand, Odisha, Rajasthan, Nagaland, and Madhya Pradesh.	• Global Copper Reserves: The world's copper reserves are estimated at 890 million tonnes. Chile holds the largest share, with 21% of global reserves, followed by Australia (11%), Peru (9%), Russia (7%), and Mexico (6%). • Copper in India: The largest copper reserves in India are in Rajasthan, with (52.25%), followed by Madhya Pradesh (23.28%) and Jharkhand (15.14%).
Applications of Cobalt • Vital in lithium-ion batteries for electronics and electric vehicles. • Used in superalloys for jet engines and spacecraft due to heat resistance. • Speeds up chemical reactions in petroleum refining and hydrogenation. • Crucial in manufacturing hard magnets for motors and medical devices. • Part of Vitamin B12 and used in radiation therapy for cancer treatment.	Applications of Copper • Used in wiring and electronic devices for excellent conductivity. • Applied in plumbing, roofing, and building materials for durability. • Essential for solar panels, wind turbines, and electrical components. • Used in electric vehicles, batteries, and motors for efficient energy transfer. • Key in making alloys like bronze and brass for various industries
• Both Copper and Cobalt are listed as Critical Mineral by Government of India, while Cobalt is placed in Part D Critical and Strategic Minerals of Mines and Minerals (Development and Regulation) Amendment Act, 2023	

DUBAI AS GLOBAL FDI DESTINATION

- **Dubai has retained its position as the world's top destination for Greenfield Foreign Direct Investment (FDI)** for the fourth consecutive year, attracting a record AED 52.3 billion (\$14.24 billion) in estimated FDI. This represents a 33.2% increase compared to 2023.
- **India has overtaken the USA, France, and the UK to become the largest source of FDI into Dubai in 2024, accounting for 21.5% of the total FDI inflow.**
- Other major contributors include the USA (13.7%), France (11%), and the UK (10%).

What is Foreign Direct Investment (FDI)?

- FDI is typically a long-term investment and is primarily a non-debt creating form of capital flow.
- FDI in India refers to **investment made by a person or entity residing outside India in an unlisted Indian company**, or by **acquiring 10% or more of the post-issue paid-up equity capital (on a fully diluted basis) of a listed Indian company.**

INDIA LAUNCHES CITIES COALITION FOR CIRCULARITY (C-3)

Context: Union Minister for Housing and Urban Affairs, recently announced the Cities Coalition for Circularity (C-3).

About Cities Coalition for Circularity (C-3)

- It is a **multi-nation alliance for city-to-city collaboration, knowledge-sharing, and private sector partnerships.**
- Its goal is to act as a catalyst for resource efficiency and the development of a low-carbon economy, enhancing cooperation between policymakers, industry leaders, and researchers to create a sustainable future.

- This forum would provide a critical platform for policymakers, industry leaders, researchers, and development partners to discuss and implement sustainable solutions for waste management and resource efficiency as economies in the Asia-Pacific region.
- India has proposed formation of a working group of member nations to finalise the coalition's structure and operational framework.
- C-3 was announced at the 12th Regional 3R and Circular Economy Forum in Asia and the Pacific, held in Jaipur.

About Regional 3R and Circular Economy Forum in Asia and the Pacific

- Launched in **2009**, the Forum aims to promote sustainable waste management, resource efficiency, and the principles of a circular economy across the region.
- A significant milestone in its journey was the adoption of the **Hanoi 3R Declaration (2013-2023)**, which established 33 voluntary goals for transitioning towards a more resource-efficient and circular economy.
- **A Circular Economy** keeps materials and products in circulation for as long as possible. It involves sharing, leasing, reusing, repairing, refurbishing and recycling existing materials and products as long as possible.

12th Regional 3R and Circular Economy Forum in Asia and the Pacific (Jaipur)

- **Jaipur Declaration:** Focuses on different waste streams and circular economy goals for each. It emphasizes resource efficiency, sustainable material use, and addresses informal sectors, gender and labour issues. It also includes implementation tools like partnerships, technology transfer, funding, and research.
- **Theme:** "Realizing Circular Societies Towards Achieving SDGs and Carbon Neutrality in Asia-Pacific"

INDIAN DIGITAL ECONOMY RANKED 28TH ON USER SPENDING

Context: According to a report by the Indian Council for Research on International Economic Relations (ICRIER) and the Prosus Centre for Internet and Digital Economy (CIDE), India ranks 28th in the world's digital "user" economy.

About the State of India's Digital Economy (SIDE) Report

- The Report uses Connect–Harness–Innovate–Protect–Sustain (CHIPS) framework to evaluate digitalisation based on factors such as access quality, affordability, data intensity, fintech industry strength, AI readiness, and green energy investments.
- Using the **CHIPS** framework, the report concludes that while **India is the third-largest economy overall** and ranks **28th in terms of its digital "user" economy**, it stands **8th when considering the combined strength of these two categories**.
- This means while India as a country has achieved high level digitalisation at the aggregate level, the level of digitalisation for the average Indian remains fairly modest."
- Within India, "Southern and Western States are far more advanced in digitalisation than the Eastern and Northern States."

REGIONAL RURAL BANKS (RRBS)

Context: The Department of Financial Services (DFS) has notified the amalgamation of 26 RRBs as part of the "One State One RRB" initiative. This marks the fourth phase of consolidating RRBs.

About RRBs

- **Formation:** Recommended by the Narasimham Committee on Rural Credit (1975), RRBs were established through an ordinance in 1975 and the RRB Act of 1976.
- **Purpose:** To provide credit and other banking services to small farmers, laborers, artisans, and rural entrepreneurs, supporting agriculture, trade, and small industries.
- **Ownership Structure:** RRBs are jointly owned by the Central Government (50%), State Government (15%), and the sponsoring bank (35%).

- **Regulatory Authority:** RRBs are governed by the Reserve Bank of India (RBI) under the Banking Regulation Act, 1949.
- **Supervision:** The National Bank for Agriculture and Rural Development (NABARD) oversees the operations of RRBs.
- **Tax Status:** RRBs are classified as cooperative societies for tax purposes under the Income Tax Act, 1961.
- **Capital Adequacy:** RRBs must maintain a Capital to Risk-Weighted Assets Ratio (CRAR) of at least 9%, in accordance with RBI regulations.
- **Priority Sector Lending:** At least 75% of their Adjusted Net Bank Credit (ANBC) or Credit Equivalent of Off-Balance Sheet Exposure (CEOBE), whichever is higher, must be directed towards Priority Sector Lending (PSL).

Consolidation of RRBs

- In line with the **Vyas Committee's** recommendations, the process of consolidating RRBs began in 2004–05. Over three phases, the number of RRBs has decreased from 196 to 43 by the fiscal year 2020–21.
- Under “**One State One RRB Concept**” each state will now have a single RRB, which will be sponsored by a major public sector bank. Example: Baroda Gujarat Gramin Bank and Saurashtra Gramin Bank in Gujarat are merged into Gujarat Gramin Bank, headquartered in Vadodara, sponsored by Bank of Baroda.

NITI NCAER STATES ECONOMIC FORUM PORTAL

Context: Recently, the Finance Minister launched NITI NCAER States Economic Forum portal.

- It is a **comprehensive repository of data on social, economic and fiscal parameters, research reports, papers, and expert commentary on State Finances** for a period of about **30 years (i.e 1990-91 to 2022-23)**.
- Developed by **NITI Aayog** with National Council of Applied Economic Research (**NCAER**).
- The portal has **four main components**, including **State reports, Data repository, State fiscal and economic dashboard and Research and commentary**.
- The Forum will **help States make meaningful interventions**, raise revenues, and manage debts effectively. States can also **learn from each other's experiences**. Additionally, the Forum will **promote awareness** and enhance fiscal learning across States.

DEFENCE AND SECURITY

PROTECTED AREA REGIME

Context: The Ministry of Home Affairs has reinstated the Protected Area Permit (PAP) in Manipur, Nagaland, and Mizoram due to security concerns stemming from the influx of individuals from neighboring countries.

About Protected Area Permit (PAP)

- PAP is a special permit **required by foreign nationals to visit certain areas in India** deemed sensitive due to their proximity to international borders.
- **These areas fall between the "Inner Line" and the international borders as defined under the Foreigners (Protected Areas) Order, 1958.**
- The PAP regime covers entire states of **Arunachal Pradesh, Manipur, Mizoram, Nagaland, Sikkim** (partly in Protected Areas and partly in Restricted Area) & parts of **Himachal Pradesh, Jammu & Kashmir, Ladakh, Rajasthan, and Uttarakhand.**

Key Features of the PAP Regime

- **Eligibility:** Foreigners, except Bhutanese citizens, need a PAP (Protected Area Permit) to enter and stay in these regions.
- **Permissible Visits:** Group tourists (minimum of two persons). Restricted tourist circuits/routes specified in the permit.
- **Validity and Compliance:** PAP is valid only for the specified area, route, and time. Permit holders cannot stay beyond the permit's validity. Photocopies of the permit must be deposited at entry and exit points.
- **Restrictions:** Citizens of Afghanistan, China, and Pakistan (and those of Pakistani origin) require prior approval from the Ministry of Home Affairs (MHA). Diplomats and officials require special instructions from the Ministry of External Affairs.
- **Registration:** Foreigners must register with the Foreigners Registration Officer (FRO) of the district within 24 hours of arrival.
- **Regulations: Foreigners (Protected Areas) Order, 1958:** Defines areas as protected and prescribes the requirement for obtaining PAP.

Restricted Area Permit (RAP)

- As per the **Foreigners (Restricted Areas) Order, 1963**, foreign nationals require a **Restricted Area Permit (RAP) to visit certain regions in India.**
- Since 2009, RAP has been mandatory for all visits to the **Andaman and Nicobar Islands and specific parts of Sikkim.**
- RAP is generally available to individual travelers and can be issued by Indian embassies abroad or, in some cases, on arrival.
- **Indian citizens do not require special permission to enter these restricted areas.**

Inner Line Permit (ILP)

- The ILP is an official document issued by the Government of India, **allowing Indian citizens from other states to enter protected areas for a limited period.**
- Originally introduced under the **Bengal Eastern Frontier Regulations, 1873** to protect British commercial interests, ILP now serves to safeguard tribal cultures in Northeast India.
- There are different types of ILPs, including tourist permits (granted routinely) and long-term permits for employment or residency.
- **States requiring ILP: Arunachal Pradesh, Mizoram, Nagaland and Manipur.**

Entry Permit to Lakshadweep

As per the Laccadive, Minicoy, and Amindivi Islands (Restriction on Entry and Residence) Rules, 1967, **non-natives must obtain a permit from the competent authority to enter or reside in Lakshadweep.**

CCTNS - CRIME AND CRIMINAL TRACKING NETWORK AND SYSTEMS

Context: All 17,130 police stations in India are now connected through the Crime and Criminal Tracking Network and Systems (CCTNS).

About Crime and Criminal Tracking Network and Systems (CCTNS)

- CCTNS is a centralised online platform launched by the Government of India in 2009 to enhance the efficiency and transparency of the policing system across the country.
- **Parent department:** Ministry of Home Affairs (MHA)

Key Features

- **Comprehensive Crime Records:** Includes information on accused persons, convicts, habitual offenders, missing persons, unidentified bodies, and stolen vehicles.
- **Online Filing of Reports:** Facilitates the e-filing of FIRs and other investigation documents.
- **Analytical Capabilities:** Generates reports and statistics at the police station level for better planning and resource allocation.
- **Search Tools:** Allows the police to search for crime trends, missing persons, and stolen property.

Objectives of CCTNS

- **Centralised Database:** Establish a unified system to store & access data related to crimes & criminals.
- **Efficient Record Management:** Digitise FIRs, chargesheets, and investigation records
- **Data Accessibility:** Allow law enforcement authorities across the country to access real-time crime data.

60TH RAISING DAY OF BSF

Context: Home Minister speaking at the 60th Raising Day Parade of the Border Security Force (BSF) in Jodhpur, announced plans for India to establish a comprehensive anti-drone unit to counter drone threats.

About Border Security Force (BSF)

- The BSF is India's **primary border guarding organization**, established on 1st December 1965.
- **Deployment:** Responsible for guarding the **Indo-Pakistan International Border and the Indo-Bangladesh International Border**.
 - In addition, BSF is also performing Anti-Infiltration role in Kashmir Valley, Counter Insurgency in North East region, Anti Naxal Operations in Odisha and Chhattisgarh states and security of Integrated Check Posts along Pakistan and Bangladesh International Border.
- **Nodal Ministry:** The BSF is one of the seven Central Armed Police Forces (CAPFs) of India, functioning under the administrative control of the **Ministry of Home Affairs**.
- **Powers of BSF:**
 - It has the authority to arrest, search, and seize under **various laws**, including the **Criminal Procedure Code (CrPC), the Passports Act, the Passport (Entry into India) Act, and the NDPS Act**.
 - Before October 2021, the BSF's jurisdiction extended 15 km from the border in **Punjab, West Bengal, and Assam**. However, a 2021 notification issued by the central government expanded this **limit to 50 km** in these states.
 - **Within this extended jurisdiction, the BSF can exercise powers only under the CrPC, the Passport (Entry into India) Act, and the Passports Act**, while for other laws, the 15-km limit remains unchanged.



- In the states/UTs of **Manipur, Meghalaya, Mizoram, Nagaland, Tripura, Jammu & Kashmir and Ladakh**, it extends to the **entire area of the state**. While **Rajasthan and Gujarat** also have **50km limit**.
- **Conducts search and seizure operations to address:** Smuggling of narcotics and other prohibited items, Illegal entry of foreigners, Offences punishable under Central Acts.

NATIONAL INVESTIGATION AGENCY (NIA)

Context: Supreme Court ruled that the powers of the NIA are not restricted to probing offences mentioned in the schedule of the NIA Act or accused committing such “scheduled offences”.

- The Apex Court upheld the NIA's authority to investigate non-scheduled offences if they are linked to scheduled offences. The Court interpreted Section 8 of the NIA Act in a holistic manner.
- **Section 8 of the NIA Act:** While investigating a Scheduled Offence, the NIA may also investigate any other offence committed by the accused, if it is connected to the scheduled offence.

About National Investigation Agency (NIA)

- The NIA was established by an **Act of the Parliament, National Investigation Agency Act, 2008**, following the 26/11 Mumbai terror attacks.
- At present NIA is functioning as the **Central Counter Terrorism Law Enforcement Agency in India**.
- **Objective:** To investigate and prosecute offences that threaten India's sovereignty, security, integrity, and international relations.
- **Headquarters:** New Delhi
- **Leadership:** Headed by a **Director-General (DG)**, a senior Indian Police Service (IPS) officer.
- **Jurisdiction:** Extends across **India**, and applies to: Indian citizens abroad, Government personnel, Ships & aircrafts registered in India, Offences committed outside India affecting Indian citizens or India's interests.
- **Powers of NIA**
 - **Investigation:** The Central Government can direct the NIA to investigate a Scheduled Offence.
 - **Prosecution:** The NIA can prosecute cases in designated NIA courts.
 - **Coordination with State Police:** Collaborates with state agencies during investigations.
 - **Extraterritorial Operations:** Can investigate and prosecute offences outside India, subject to international cooperation.
- **State Government vis-a-vis NIA**
 - A State Government can request the Central Government to transfer a case to the NIA if there is reasonable evidence of a scheduled offense under the NIA Act.
 - Under Section 6(5) of the NIA Act, 2008, the Central Government has the authority to suo-moto take over an investigation.
 - State Governments can investigate scheduled offenses unless the case is taken over by the NIA.

Schedule of Offences Under the NIA Act

The NIA investigates offences under various laws, including:

- Explosive Substances Act, 1908
- Atomic Energy Act, 1962
- Unlawful Activities (Prevention) Act, 1967
- Anti-Hijacking Act, 2016
- Civil Aviation Security Act, 1982
- SAARC Convention (Suppression of Terrorism) Act, 1993
- Maritime Navigation and Fixed Platforms Security Act, 2002
- Weapons of Mass Destruction Act, 2005
- Other Serious Crimes Included:
 - **Waging war against the country** (Indian Penal Code Sections 121-130).
 - **Human trafficking** (IPC Sections 370 and 370A).
 - **Counterfeiting currency** (IPC Sections 489A-489E).
 - **Illegal possession of arms** (Arms Act, Section 25(1AA)).
 - **Cyber terrorism** (Information Technology Act, Section 66F)

UNITED NATIONS CONVENTION ON CYBERCRIME

Context: The United Nations General Assembly has adopted a landmark convention on cybercrime, making it the first legally binding UN instrument in this domain.

About United Nations Convention on Cybercrime

- The Convention is designed to **prevent and combat cybercrime** by promoting international cooperation, technical assistance, and capacity building. It also aims to **enhance the exchange of electronic evidence to aid in the investigation of serious crimes**.
- This treaty marks the **first international anti-crime convention in two decades**. It was adopted by the United Nations General Assembly on December 24, 2024, in New York through Resolution 79/243.

Scope of the Convention

- **Cybercrime Prevention & Prosecution:** Covers investigation, prosecution, & law enforcement actions.
- **Freezing & Confiscation:** Enables authorities to freeze, seize, and return cybercrime proceeds.
- **Electronic Evidence Sharing:** Supports the collection and exchange of digital evidence in criminal cases.

Key Provisions

- **International Cooperation & Data Sharing:** Establishes a 24/7 rapid response network for immediate assistance. Enables mutual legal assistance, extradition, and international cooperation in confiscation procedures.
- **Procedural Measures:** Provides guidelines for law enforcement agencies on preserving, searching, and seizing electronic data.
- **Data Privacy & Protection:** Requires data transfers to comply with domestic privacy laws and include safeguards. The Convention does not require States Parties to transfer personal data if it cannot be provided in compliance with their laws regarding personal data protection
- **Human Rights Safeguards:** Ensures that cybercrime regulations respect fundamental human rights and freedoms.
- **Other Legal Provisions:** Covers extradition, transfer of sentenced persons, criminal proceedings, and joint investigations.

Key Highlights of the Convention

- **Adoption:** Passed by 193 UN Member States through consensus.
- **Signing Venue:** Opens for signature in Hanoi, Vietnam, in 2025.
- **Implementation:** Will take effect 90 days after 40 states ratify the agreement.
- **Secretariat:** United Nations Office on Drugs and Crime (UNODC).

KAVERI ENGINE

Context: The Kaveri engine, developed by the **Gas Turbine Research Establishment** under DRDO, has been approved for inflight testing, marking a significant milestone in India's aerospace self-reliance.

About the Kaveri Engine Project:

- **Initiation:** The Kaveri engine project was **launched in the late 1980s with the aim to power the Light Combat Aircraft (LCA) Tejas**. Later, DRDO pivoted towards developing a dry version of the engine for UAV applications.
- **Current Capability:** The dry Kaveri engine generates 49-51 kN of thrust, making it suitable for UAVs like the Ghatak stealth Unmanned combat aerial vehicle (UCAV).
- **Significance:** The project signifies a strategic accomplishment, contributing to India's self-reliance in aero-engine technology.

SEARCH AND RESCUE AID TOOL (SARAT)

Context: Indian National Centre for Ocean Information Services (INCOIS) has developed an advanced version of SARAT (SARAT Version 2).

Major Improvements in SARAT Version 2:

- **More Accurate Search Areas:** The tool now anchors the search area directly to the Last Known Position (LKP) of the missing object, ensuring greater precision.
- **Exportable Search Data and Enhanced Visualization:** Digital search area data can now be integrated with rescue planning maps. Improved visualization includes color-coded search regions, particle trajectories, and precise markers for LKP.
- **Faster Response and Higher Success Rates:** The enhancements provide quicker and more reliable search results, aiding rescue teams in the Indian Ocean region.
- It will assist Indian Search and Rescue (SAR) agencies, such as the Indian Coast Guard.

About SARAT

- The Search and Rescue Aid Tool (SARAT) is an **advanced technology developed by Earth System Science Organisation (ESSO)- Indian National Centre for Ocean Information Services (INCOIS)** to assist in search and rescue operations at sea.
- It aims to locate individuals or vessels in distress in the shortest possible time, enhancing maritime safety.
- The tool is available as a mobile application, making it easy for users to access rescue information.

About Indian National Centre for Ocean Information Services (INCOIS)

- **Established:** It was established in 1999 as an autonomous body under the Ministry of Earth Sciences (MoES).
- **Mandate:** Providing ocean information, forecasts, and advisory services.
- **Activities:** 24/7 monitoring & warning services for tsunamis, storm surges, high waves, etc. Supports coastal disaster management and marine research. Provides short term (3-7 days) Ocean State Forecasts which are issued daily.

2024 OPCW-THE HAGUE AWARD CONFERRED TO INDIAN CHEMICAL COUNCIL

Context: The Organisation for the Prohibition of Chemical Weapons (OPCW) awarded the Indian Chemical Council (ICC) for its significant contributions to chemical safety and adherence to the Chemical Weapons Convention (CWC). This marks the first instance of the award being conferred on a chemical industry organization.

About Chemical Weapons Convention (CWC)

- CWC is the world's first multilateral disarmament agreement to provide for the elimination of an entire category of weapons of mass destruction within a fixed time frame.
- **Establishment:** Entered into force in 1997 and currently has 193 State Parties. **India is an original signatory.** Only four (Egypt, Israel, North Korea, and South Sudan) countries remain outside the treaty.
- **Objective:** To eliminate weapons of mass destruction by prohibiting the development, production, acquisition, stockpiling, retention, transfer, or use of chemical weapons.
- **Implementation Body:** The **OPCW** oversees the Convention's implementation with a mission to achieve a world free of chemical weapons.
- **How the CWC Works:** The CWC includes a verification system to ensure that states are complying with the treaty:
 - States must declare their chemical weapons programs and facilities
 - Nations can request "challenge inspections" if they believe other states are not complying with the treaty.

About Organisation for the Prohibition of Chemical Weapons (OPCW)

- The OPCW is dedicated to achieving a world free of chemical weapons. It was founded on 29 April 1997, coinciding with the Chemical Weapons Convention coming into force.
- **Membership:** 193 countries have signed the Convention, becoming OPCW Member States. 98% of the global population is protected under the Convention.

- **Achievements:** 100% of declared chemical weapons stockpiles worldwide have been destroyed under OPCW supervision.
- **Recognition:** In 2013, the OPCW was awarded the Nobel Peace Prize for its significant efforts to eliminate chemical weapons.

Implementation in India

- **Responsible Agency:** The National Authority Chemical Weapons Convention (NACWC) oversees the Convention's execution in India.
- **Legal Framework:** NACWC operates under the Chemical Weapons Convention Act, 2000.

About Indian Chemical Council (ICC)

- The ICC, established in 1938, is the **apex body representing India's chemical industry**, covering sectors like organic and inorganic chemicals, plastics, petrochemicals, fertilizers, and specialty chemicals.
- ICC promotes industry growth by addressing policy matters, fostering R&D, and encouraging energy conservation and quality standards.

INDIAN COAST GUARD

Context: The parliamentary standing committee on defense recently conducted a review of the Indian Coast Guard's role in ensuring coastal security.

About Indian Coast Guard:

- It is an **armed force that protects India's maritime interests and enforces maritime law**.
- It has **jurisdiction over the territorial waters of India, including its contiguous zone and exclusive economic zone**.
- **History:** Established in 1978 by the Coast Guard Act, 1978 as an independent Armed force of India.
- **Parent ministry:** It operates under the **Ministry of Defence**.
- **Administration:** The organization is headed by the Director General Indian Coast Guard (DGICG).
- **HQ:** Coast Guard Headquarters (CGHQ) is located at New Delhi.

ASSET RECOVERY INTERAGENCY NETWORK

Context: India, represented by the Directorate of Enforcement (ED), has joined the Steering Committee of ARIN-AP. India will also preside over the network and host the Annual General Meeting in 2026.

About Asset Recovery Interagency Network–Asia Pacific (ARIN-AP)

- ARIN-AP is a **multi-agency network dedicated to tackling crime proceeds across the Asia-Pacific region**. Secretariat of ARIN-AP is located in South Korea.
- It was **established in 2013 to facilitate cross-border collaboration on asset tracing, freezing, and confiscation**.
- **Aim:** To increase the effectiveness of members' efforts in depriving criminals of their illicit profits on a multi-agency basis by establishing itself as the center of professionals' network in tackling the proceeds of crime.
- The network includes **28-member jurisdictions (Including India)** and nine observers. The Directorate of Enforcement (ED) is the nodal agency for India in this network.
- ARIN-AP is also a member of the Global CARIN Network.

About CARIN (Camden Asset Recovery Inter-Agency Network)

- CARIN is an **informal network established in 2004 that brings together law enforcement and judicial experts specializing in asset tracing, freezing, seizure, and confiscation**.
- It facilitates cross-border cooperation among agencies working to prevent criminals from benefiting from illicit activities.
- The CARIN permanent Secretariat is based at Europol Headquarters in the Hague.
- **Objective:** To strengthen its members' ability to deprive criminals of assets acquired through illegal means.

- **Membership:** 61 jurisdictions (including India), which encompass 27 EU member states, 13 international organizations, and connect with 7 regional ARIN networks globally.
- **Eligible Users:** CARIN's support is available to law enforcement officers, prosecutors, judges, magistrates, and officials from Asset Recovery and Management Offices (ARO/AMO).

OPERATION SAGAR MANTHAN

Context: The Narcotics Control Bureau (NCB) has seized 700 kg of Methamphetamine under Operation Sagar-Manthan.

- **Methamphetamine** ($C_{10}H_{15}N$) is a potent and highly addictive stimulant that impacts the central nervous system.

About Operation Sagar-Manthan:

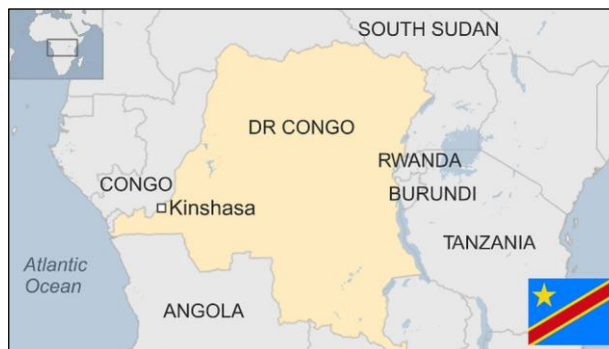
- **Launched by:** Narcotics Control Bureau (NCB) in collaboration with the Indian Navy and Indian Coast Guard.
- **Objective:** Combat drug trafficking through maritime routes; Address threats to national security; Contribute to achieving the vision of a Nasha Mukta Bharat by 2047.

M23 GROUP

Context: M23 rebels, backed by Rwanda, captured **Goma**, the capital of North Kivu province of Democratic Republic of the Congo.

About M23 Group

- It is an **ethnic Tutsi insurgency group** operating in eastern Democratic Republic of the Congo (DRC). The group **derives its name from the March 23, 2009 Accord**, which ended a previous Tutsi-led revolt.
- **Origin:** Formed due to grievances over the DRC government's failure to uphold the peace agreement, which promised the integration of Congolese Tutsis into the national military and administration.
- **Goal:** To protect Tutsi interests, particularly against ethnic Hutu militias like the Democratic Forces for the Liberation of Rwanda (FDLR)—a group formed by Hutus who fled Rwanda after the 1994 genocide.



About Democratic Republic of the Congo (DRC)

- The DRC is the second-largest country in Africa and the 11th largest in the world. It has a small coastline along the Atlantic Ocean.
- **Capital:** Kinshasa, situated on the Congo River—the only river in Africa that crosses the equator twice.
- **Language:** French (Official), Kituba, Lingala, Swahili, and Tshiluba
- **Economic and Mining Resources:** The **Katanga Plateau is a major mining hub**, rich in cobalt, copper, tin, radium, uranium, and diamonds, making DRC one of the world's leading mineral producers.

NATIONAL SECURITY ACT, 1980

Context: Governor Ajay Kumar Bhalla recommended using the NSA to address rising violence, such as ceasefire violations and tensions in buffer zones.

About National Security Act, 1980

- It is a **preventive detention law** that **empowers the central or state government** to detain individuals **to prevent activities jeopardizing national security or disrupting public order**.
- **Constitutional Basis**
 - **Article 22(3):** Allows preventive detention for state security and public order.

- **Article 22(4):** Restricts detention beyond three months unless approved by an advisory board comprising High Court judges.
- **44th Amendment Act (1978):** Reduced the detention period without advisory board approval to two months, though this provision is not yet enforced.
- **Grounds for Detention**
 - No formal charges are necessary during the detention period.
 - Under Section 3 of the NSA, the **Central/ State Government** has the power to order any person's detention & detain them if it thinks it is necessary to prevent them from harming: national defence, relationship with foreign countries, national security, public order, essential supplies and service.
 - District Magistrate has the power to invoke NSA even if the individual is already in police custody.
- **Period of Confinement**
 - **Maximum detention period:** 12 months (extendable with fresh evidence).
 - Detainees can be held for 10 days without being informed of charges.
 - **Legal Process:** The detainee can appeal to the advisory board but is denied legal representation during the trial.
 - **Bail:** If a person is released on bail then he can still be arrested or detained under NSA.

GAZA CEASEFIRE AGREEMENT

Context: Hamas has agreed to a draft ceasefire agreement in the Gaza conflict. Israel's government has also approved the new deal with Hamas.

About the Agreement

- The ceasefire and hostage release deal were reached in **Doha, Qatar**, with mediation from **Qatar, Egypt, and the United States**. Israel's Cabinet needs to approve the deal for it to take effect.
- The ceasefire will be implemented in three phases.

Israel-Hamas War Background

- **Start of Conflict:** Hamas launched an attack on Israel on October 7, 2023, resulting in significant casualties. Israel responded with Operation Iron Sword.
- **Casualties:** The attack killed 1,210 Israelis, and Israel's retaliatory strikes killed 46,707 Palestinians, mostly civilians.

About Gaza Strip

- **Location:** A Palestinian enclave on the Mediterranean Sea, bordered by Israel and Egypt's Sinai Peninsula.
- **Administration:** Controlled by Hamas since 2006, with Israel controlling airspace and shoreline.
- Gaza is often referred to as the "world's largest open-air prison" due to severe movement restrictions imposed by Israel.



BHARATPOL

Context: Union Home Minister and Minister of Cooperation will launch BHARATPOL portal in New Delhi on 07th January, 2025 in Bharat Mandapam.

About BHARATPOL

- BHARATPOL is an **online portal launched by the Central Bureau of Investigation (CBI) to enhance international police cooperation** and connect with the **International Criminal Police Organization (INTERPOL)**.

- It helps Indian law enforcement agencies connect with foreign law enforcement authorities for criminal investigations related to organized crime, cybercrimes, terrorism, drug trafficking, human trafficking, economic fraud, and other transnational offenses.
- The portal **integrates 51 law enforcement agencies** and over 500-unit offices across States, Union Territories (UTs), and Central agencies. It streamlines communication through five modules:
 - **Connect Module:** Links CBI (India's INTERPOL National Central Bureau) with all Indian law enforcement agencies.
 - **Broadcast Module:** Requests for assistance from 195 countries will be immediately available for Agencies in India
 - **INTERPOL References Module:** Enables Indian agencies to seek help from foreign law enforcement via INTERPOL.
 - **INTERPOL Notices Module:** Manages secure requests for issuing INTERPOL notices.
 - **Resources Module:** Provides access to important documents and training materials.

INS SURAT, INS NILGIRI AND INS VAGHSHEER COMMISSIONED

Context: INS Surat, INS Nilgiri, and INS Vaghsheer, were commissioned into the Indian Navy.

1. INS Nilgiri

- Developed under **Project 17A**, these **frigates** are advanced successors of the Shivalik-class (Project 17).
- Designed for blue-water operations, they can handle both conventional and non-conventional threats.
- **Weapon Systems:** Upgraded 76 mm guns and rapid-fire close-in weapon systems. Versatile roles in anti-surface, anti-air, and anti-submarine warfare.

Other Ships in the Class

- P17A ships are **guided missile frigates**, each of which are 149 meters long, with displacement of approximately 6,670 tonnes and a speed of 28 knots.
- **INS Nilgiri is the first of seven frigates in Project 17A.**
- The remaining six frigates in Project 17A—Himgiri, Taragiri, Udaygiri, Dunagiri, Vindhyaagiri—are under construction at Mazagon Dock Shipbuilders Limited (MDL), Mumbai, and Garden Reach Shipbuilders and Engineers (GRSE), Kolkata.

2. INS Surat

- INS Surat is the fourth and final **stealth guided missile destroyer** under **Project 15B**, following INS Visakhapatnam, INS Mormugao, and INS Imphal, commissioned in the past three years.
- It is an advanced iteration of the Kolkata-class destroyers developed under **Project 15A**.
- Being **India's First AI-Enabled Warship**, it utilizes indigenously developed artificial intelligence solutions for enhanced operational efficiency.
- **Specifications:**
 - **Displacement:** 7,400 tonnes.
 - **Speed:** Exceeds 30 knots (56 km/h).
 - **Advanced Armaments:** Equipped with state-of-the-art surface-to-air missiles, anti-ship missiles, torpedoes, and modern sensors for network-centric warfare.

3. INS Vaghsheer

- INS Vaghsheer is the sixth **diesel-electric attack submarine** of the **modern Kalvari-class**, built under **Project 75** for stealth and versatility in naval operations.
- The Kalvari-class submarines of the Indian Navy are INS Kalvari, INS Khanderi, INS Karanj, INS Vela, INS Vagir, and INS Vaghsheer.
- **Design and Capabilities:**
 - **Based on the Scorpene Class:** Developed from the Scorpene design by French defense major Naval Group and Spanish firm Navantia.

- **Silent Diesel-Electric System:** Primarily attack submarines (hunter-killers). Known as one of the world's most silent and versatile diesel-electric submarines.

PRALAY MISSILE

Context: The DRDO showcased the Pralay short-range quasi-ballistic missile at Republic Day parade.

About Pralay Missile:

- It is an **indigenously developed surface-to-surface, short-range, quasi-ballistic missile (SRBM)**.
 - Quasi-ballistic missiles are largely ballistic but can perform maneuvers in flight or make unexpected changes in direction and range.
- It has been developed by the **Defence Research and Development Organisation (DRDO)** based on the Prithvi Defence Vehicle from the Indian ballistic missile programme.
- It has been **developed for deployment along the Line of Actual Control (LAC) and Line of Control (LoC)**.

Features:

- It is powered by a **solid-propellant rocket motor**.
- The missile has a range of 150-500 km and can be launched from a mobile launcher.
- It has a payload capacity of 500-1,000 kg. The missile is capable of carrying conventional warheads.
- It is equipped with guidance systems that provide a **Circular Error Probable (CEP) of less than 10 meters**. It has the ability to change its path after covering a certain range midair.
- The missile reaches terminal speeds of Mach 6.1 and can engage targets such as radar installations, command centers, and airstrips.

INDIA-U.S. SONOBUOY CO-PRODUCTION AGREEMENT

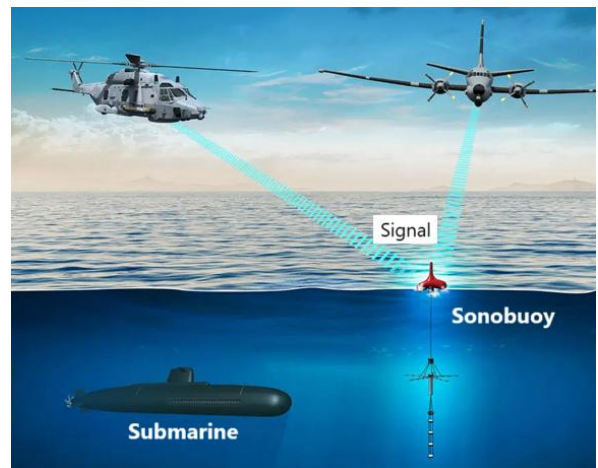
Context: India and the U.S. have announced a landmark agreement for the co-production of U.S. sonobuoys to strengthen the Indian Navy's Undersea Domain Awareness (UDA).

Partnership Details

- The agreement is between Ultra Maritime (UM) and Bharat Dynamics Limited (BDL).
- Sonobuoys will meet U.S. Navy standards and be co-produced in both India and the U.S., aligning with the 'Make in India' initiative.
- Production will take place in Visakhapatnam, with BDL committed to fulfilling the Indian Navy's operational demands.

About Sonobuoys

- A sonobuoy is a **compact sonar device** used primarily by navies and maritime surveillance agencies **to detect and track submarines, underwater objects, and marine activity**.
- These are **dropped from aircraft or ships into the water**, where they transmit data via radio signals to monitoring stations.
- The sonobuoy has **4 main components**: a float, a radio transmitter, a saltwater battery, and a hydrophone.
- **Uses:**
 - Primarily used in anti-submarine warfare (ASW) for tracking submarines.
 - Also employed in scientific research, such as studying marine life and ocean currents.



BHARGAVASTRA

Context: India has successfully tested the Bhargavastra, its first micro-missile system designed to counter swarm drones.

About Bhargavastra:

- **Purpose:** Quickly defends against multiple small drones.
- **Development:** Created by **Economic Explosives Ltd.** and mounted on mobile platforms.
- **Capabilities:** Detects threats from over 6 km away and targets over 2.5 km away.
- **Firepower:** Can launch more than 64 guided micro missiles simultaneously and operates in varied terrains, including high altitudes.

Understanding Drone Swarms:

- Drone swarms are **groups of small, unmanned aerial vehicles (drones) that operate together.** The drones are programmed to work together smartly, sharing tasks and information.
- The strength of a drone swarm lies in its ability to perform multiple tasks at the same time without needing constant human guidance.

INSV TARINI BEGINS THIRD LEG OF CIRCUMNAVIGATION

Context: The Indian Navy's sailing vessel, INSV Tarini, currently on a global circumnavigation expedition, has **passed through Point Nemo**, the remotest point on Earth.

About INSV Tarini

- It is the second **sailboat** of the Indian Navy after INSV Mhadei.
- It is known for circumnavigating the globe with an all-women officer crew in the historic expedition titled '**Navika Sagar Parikrama**' in 2017.
- INSV Tarini is sailing around the world in a historic quest to become India's first team of double-handed circumnavigators.

- **Circumnavigation:** A ship is considered to have completed a **global circumnavigation** expedition when it travels around the Earth, **crosses all longitudes, passes equator at least once, covers at least 21,600 nautical miles, and returns to its starting point without using land transport.**
- **Point Nemo:** Point Nemo, also called the **Oceanic Pole of Inaccessibility**, is the most remote location on Earth, lying farthest from any landmass in the vast expanse of the ocean. Located in the Southern Pacific Ocean, it is about 2,688 km from the nearest landmass.

EURODRONE

Context: Recently, India has joined the Eurodrone programme as an observer state.

About Eurodrone

- Eurodrone—the **Medium Altitude Long Endurance Remotely Piloted Aircraft System (MALE RPAS)**—is a **state-of-the-art unmanned aerial vehicle** that uses **twin turboprop engines**.
- The term “MALE” indicates that the drone is **designed to fly at medium heights for long durations**, ideal for tasks like intelligence gathering, surveillance, target acquisition, & maritime monitoring.

About the Eurodrone Programme

- The Eurodrone programme is a **collaborative project among four European nations—Germany, France, Italy, and Spain**—and is coordinated by the Organisation for Joint Armament Cooperation (OCCAR).
- The programme was launched in 2022 and passed its preliminary design review in 2024. Eurodrone is expected to be operational by 2030.
- As an **observer member**, **India** will monitor and learn from the project's progress without being directly involved in its day-to-day decision-making.

SANJAY SYSTEM

Context: The Raksha Mantri introduced SANJAY, an advanced Battlefield Surveillance System (BSS).

About the SANJAY System:

- The SANJAY System is an **advanced tool designed for battlefield surveillance and reconnaissance.**
- It was developed through a collaboration between the **Indian Army and Bharat Electronics Limited (BEL)** under the 'Aatmanirbhar Bharat' initiative.

- By **collecting and integrating data from both ground and aerial sensors**, the system creates a **unified, real-time picture of the battlefield**.
- This comprehensive view is transmitted using the Army Data Network and Satellite Communication Network, helping military commanders make quicker and better-informed decisions during operations.
- It will monitor the vast land borders, prevent intrusions, assess situations with unparalleled accuracy.

REVISED FREE MOVEMENT REGIME (FMR) ALONG MYANMAR BORDER

Context: As many as 22 out of 43 crossing points along the Myanmar border under the revised Free Movement Regime (FMR) agreement have started functioning.

About Free Movement Regime (FMR)

- The Free Movement Regime (FMR) was introduced in **1968** to facilitate cross-border movement between India and Myanmar without a visa, considering the strong ethnic and familial ties among communities living on both sides of the border.
- Initially, the **regime allowed movement up to 40 km**, which was **reduced to 16 km in 2004**, and further **restricted to 10 km in the latest revisions**.

Revised FMR Guidelines

In response to security concerns and the ongoing conflict in Myanmar, the Union Home Ministry issued new guidelines on December 6, 2024. Under these guidelines:

- **Movement Regulation:** A QR code-enabled border pass is now required for residents crossing the border.
- **Security Measures:** The **Assam Rifles** has been designated to monitor movement and issue passes, while state police in Arunachal Pradesh, Nagaland, Mizoram, and Manipur will conduct security checks at the visitor's place of stay.
- **Operational Gates:** Out of the 43 designated crossing points, 22 are functional, including 10 in Manipur, 5 each in Mizoram and Nagaland, and 2 in Arunachal Pradesh. In the second phase, 21 more border checkpoints will become operational along the India-Myanmar border.
- **Biometric Registration:** Individuals crossing the border must provide biometric data, which is stored in a centralized portal for security verification.

DRDO SUCCESSFULLY CONDUCTS TRIALS OF INDIGENOUS MANPAD

Context: The DRDO has successfully carried out three consecutive flight trials of the Very Short-Range Air Defence System (VSHORADS) from Chandipur, Odisha.

- **Objectives of the Tests:** To assess the system's capability to intercept high-speed, low-altitude aerial threats, including drones.

Key Features of VSHORADS:

- **Fourth-generation**, miniaturized **Man-Portable Air Defence System (MANPAD)**.
 - MANPADS are **portable shoulder-launched surface-to-air missiles**. These short-range missiles can also be **fired from vehicles, tripods, weapon platforms, and warships**.
- Indigenously designed and developed by **DRDO's Research Centre Imarat (RCI)**, Hyderabad, in collaboration with other DRDO laboratories and Indian industry partners.

ANCIENT 'STITCHED' SHIP LAUNCHED IN GOA

Context: India has taken a significant step in reviving its rich maritime legacy with the launch of an ancient 'stitched' ship at Divar Island, Goa.

About the Stitched Ship

- The Stitched Ship project is **executed through** a tripartite agreement between the **Indian Navy, the Ministry of Culture, and Hodi Innovations Pvt. Ltd.**
- It aims to **retrace historic trading routes by the end of 2025**.
- **Traditional Construction:** The ship is built using ancient stitching techniques, where **wooden planks are fastened together with coir rope, natural resins, and fish oil**, without using nails or metal fasteners.

- **Material Used:** The keel is crafted from **Matti wood (Goa's state tree)**, while teak and jackfruit wood are used for the stern, beams, and frames.
- **Design Inspiration:** Modeled on a **5th-century ship painting from the Ajanta Caves**, the vessel features a main mast, mizzen mast, and bowsprit mast, with steering controlled by oars instead of a rudder.
- The vessel, with a 15-member Indian Navy crew, is expected to embark on a **historic journey to Oman, replicating ancient maritime trade routes.**

INDIA TO INDUCT ADVANCED STEALTH FRIGATE TAMAL FROM RUSSIA

Context: India is set to induct Tamal, one of the world's most advanced multi-role stealth guided missile frigates, built at Russia's Yantar Shipyard.

- It is the second of two warships constructed under the 2016 Indo-Russian agreement for four Talwar-class frigates—two built in Russia and two in India.
- The first, INS Tushil, has already joined the Indian Navy.
- India has been operating Talwar-class frigates since 2003, with six currently in service.

Key Features of Tamal

- **Supersonic BrahMos Missile System** which enables high-precision strikes against targets.
- **Equipped with torpedoes and anti-submarine rockets** for underwater combat.
- Capable of **deploying a multi-role helicopter for surveillance and combat missions.**
- **Stealth Technology** designed to evade enemy radar detection
- Can cruise at 30 knots (55 km/h) with an operational range of 3,000 km.

BATTLEFIELD TOURISM INITIATIVE

Context: India has opened Demchok, a key friction point along the India-China border, for civilian visitors under the Battlefield Tourism initiative.

Battlefield Tourism Initiative

- Spearheaded by the Ministry of Defence, Ministry of Tourism, and state governments, covering 77 forward locations, including: 21 sites in Arunachal Pradesh, 14 sites in Ladakh, 11 sites in Jammu & Kashmir, 7 sites in Sikkim
- **Sites:** Tawang, Bum La, Galwan Valley, Pangong Tso, Kargil, Batalik, Drass, Siachen Base Camp
- **Aim:** To **allow citizens to experience historic battle sites**, fostering appreciation for the Indian Defence Forces and their sacrifices in extreme conditions.
- **Safety & Security Measures:** Visitors must coordinate with the Indian Army and adhere to acclimatization protocols due to high-altitude conditions.

Bharat Ranbhoomi Darshan App

- To streamline battlefield tourism, the Defence Minister launched the "**Bharat Ranbhoomi Darshan**" app and website on January 15, 2025, coinciding with Army Day celebrations.
- The app will serve as a one-stop solution for:
 - Information on visiting historic battle zones from the 1962, 1971, and 1999 conflicts.
 - Travel guidelines and permissions required for visiting high-security areas.
 - Interactive content on India's military history, providing details about major battles.

NAVAL ANTI-SHIP MISSILE—SHORT RANGE (NASM-SR)

Context: DRDO and Indian Navy carried out successful flight-trials of the first-of-its-kind Naval Anti-Ship missile (NASM-SR) from Integrated Test Range (ITR), Chandipur.

Key Features of NASM-SR:

- The missile was launched in Bearing-only Lock-on after launch mode with several targets in close vicinity for selecting one among them.
- A special feature is the Man-in-Loop feature, which allows for in-flight retargeting. This capability enables the pilot to Intervene and change the target mid-flight.
- The missile's design allows it to operate in fire-and-forget mode in all weather conditions, day or night.

- It can be launched from ships and land-based vehicles.
- The NASM-SR is intended to replace the Sea Eagle missile currently used by the Indian Navy.

INDIA'S 'OPERATION BRAHMA'

- In the aftermath of the devastating earthquake in **Myanmar** and **Thailand** on 28 Mar 25, India has launched **Operation Brahma** for rendering assistance to **Myanmar**.
- **Search and Rescue (SAR)**: Deployment of an 80-member National Disaster Response Force (NDRF) team to assist in rescue operations.
- **Medical Aid**: Establishment of a 200-bed field hospital in Mandalay by the Indian Army, which has treated over 1,300 patients so far.
- **Relief Material**: Navy ships Satpura and Savitri, from the Eastern Naval Command and Karmuk and LCU 52 from the Andaman and Nicobar Command have sailed to Myanmar with 52 Tons of relief material.

IOS SAGAR

Context: The **Indian Navy's Indian Ocean Ship (IOS) SAGAR** Mission is offering advanced training to 44 personnel from nine friendly foreign countries (FFCs).

- IOS SAGAR is an initiative aimed at bringing together the navies and maritime agencies of the Southwest Indian Ocean Region on an Indian Naval platform.
- The mission will serve as an opportunity to provide comprehensive training to sea-riders from friendly countries and marks an unprecedented collaboration in maritime security.
- Participants from Comoros, Kenya, Madagascar, Maldives, Mauritius, Mozambique, Seychelles, Sri Lanka, and Tanzania are receiving training at naval schools in **Kochi** and aboard the **INS Sunayna**, which has been **renamed IOS Sagar for this mission**.
- This initiative aligns with **MAHASAGAR (Mutual and Holistic Advancement for Security & Growth Across the Region) vision**, which focuses on strengthening regional security partnerships.
- The mission is expected to further deepen India's naval ties with African nations, alongside the upcoming **Africa India Key Maritime Engagement (AIKEYME) exercise** in mid-April.
- The AIKEYME event, **co-hosted by India and Tanzania**, will feature a six-day multilateral exercise with participation from ten African nations.

INDIA LAUNCHES 'TAVASYA,' FINAL KRIVAK-CLASS STEALTH FRIGATE

- India launched Tavasya, the **final ship of the four Krivak-class stealth frigates, at Goa Shipyard Limited (GSL)**.
- As part of the 2016 India-Russia agreement, two frigates were imported from Russia, while two were built at GSL under a technology transfer agreement.
- The **first Indian-built frigate, Tripur, was launched in 2024** and is expected to be delivered in 2026.
- The **first Russian-built frigate, Tushil, was commissioned in December 2024**, and the **second, Tamal, is currently undergoing trials**, with commissioning scheduled for June 2025.
- **Tavasya is expected to be India's last foreign-licensed warship**, as the country moves towards building warships indigenously.

GLOBAL INTELLIGENCE CHIEFS' CONFERENCE 2025

Context: The fourth **Global Intelligence and Security Chiefs' Conference** was hosted by India's National Security Advisor, Ajit Doval.

Global Intelligence and Security Chiefs' Conference

- Organized by the **Research and Analysis Wing (R&AW)** and the **National Security Council Secretariat (NSCS)**, the conference reinforces India's role as a key player in global security cooperation.
- It is modeled after prominent events such as the Munich Security Conference and the Shangri-La Dialogue.

- The event brought together 28 participants from ~20 countries, including the chiefs of **Five Eyes alliance (U.S., U.K., Canada, Australia, and New Zealand)** and Russia.
- The first edition was held in April 2022, just before the **Raisina Dialogue** (India's leading geopolitical forum organized by the Ministry of External Affairs and the Observer Research Foundation (ORF).)

VIBRANT VILLAGES PROGRAMME (VVP)

Context: The Cabinet approved Vibrant Villages Programme-II (VVP-II), with outlay of ₹6,839 crore.

About Vibrant Villages Programme (VVP)

- VVP is a **government initiative aimed at the comprehensive development of strategically located villages along India's international land borders.**
- VVP-I **focused on villages along the India-China border**, aiming to improve living conditions and security in remote areas.
- Building upon this, the **Vibrant Villages Programme Phase-II (VVP-II)** will **cover selected border villages in 17 states and Union Territories**—including Arunachal Pradesh, Jammu & Kashmir, Ladakh, Uttarakhand, Rajasthan, and West Bengal till FY 2028-29.
- Unlike the first phase (Centrally Sponsored) , **VVP-II is a 100% centrally funded scheme.**
- **Objective:** To provide better infrastructure, livelihood opportunities, and social integration in border areas to promote national security.
- **Aim:** To make villagers active partners in national interest—serving as the "eyes and ears" of border forces.
- **Key components:** Infrastructure Development, Education, Tourism Promotion, Sustainable Livelihoods Through Cooperatives and Self-Help Groups, and Outreach Activities.

HANSA-3 TRAINER

Context: The Hansa-(NG) trainer aircraft has been cleared for use to train aircrew for obtaining commercial pilot licences and will now be manufactured in India by the private industry.

About HANSA- 3(NG) Trainer Aircraft

- It is India's first **indigenous flying trainer aircraft.**
- It was designed and developed by **CSIR-National Aerospace Laboratories**, Bangalore.
- It is a two-seater, low-wing aircraft, equipped with a digital display (glass cockpit) system and is powered by an advanced fuel-efficient **Rotax 912 iSc3 Sports engine.**
- Features a bubble canopy with a cabin width of 43 inches and electrically operated flaps.
- Range of 620 nautical miles, 7 hours of endurance, and a maximum cruise speed of 98 Knots Calibrated Airspeed (KCAS).

EXERCISES IN NEWS

Name	Participants	Details
Surya Kiran	India, Nepal	An annual joint military exercise between the countries.
La Perouse	Australia, Canada, USA, France, India, Indonesia, Malaysia, United Kingdom, Singapore	• A multilateral naval exercise hosted by France in the strategic straits of Malacca, Sunda, and Lombok. • It aims to develop common maritime situational awareness
Aero India 2025	Defence companies	• Theme: 'The Runway to a Billion Opportunities'. • held at Yelahanka Air Force Station, Bengaluru. • Asia's largest air show, is a biennial event, organized by the Defence Exhibition Organisation, Ministry of Defence. • a global platform for showcasing cutting-edge aerospace technologies

TROPEX Exercise	Indian Navy, Army, Air Force, Coast Guard	- Theatre Level Operational Readiness Exercise (TROPEX) is the Indian Navy's largest war game. - Conducted biennially in the Indian Ocean Region (IOR).
Exercise CYCLONE-III	India, Egypt	- A joint military exercise between the Indian Army's Special Forces and the Egyptian Special Forces - Focusing on counter-terrorism, hostage rescue, and urban warfare operations.
SAREX-24	Indian Coast Guard (ICG)	Enhancing Search and Rescue capabilities through regional collaboration.
SLINEX	India, Sri Lanka	Bilateral naval exercise between India and Sri Lanka.
Desert Knight	India, France, UAE	Trilateral air combat exercise to improve interoperability among the air forces of the three nations.
Harimau Shakti	India, Malaysia	Annual joint military exercise between India and Malaysia.
Agni Warrior	India, Singapore	Bilateral exercise between the Indian Army and Singapore Armed Forces.
CINBAX	India, Cambodia	Joint Tabletop Exercise focusing on Counter Terrorism operations and discussions on cyber warfare, logistics, and HADR.
MAHASAGAR	India, Bangladesh, Comoros, Kenya, Madagascar, Maldives, Mauritius, Mozambique, Seychelles, Sri Lanka, Tanzania	- Third edition of high-level virtual interaction. - Promotes cooperation in the Indian Ocean Region. - Brings together naval leaders and maritime officials.
Garud Shakti	India, Indonesia	9th edition of India-Indonesia Joint Special Forces Exercise. Conducted in Cijantung, Jakarta.
VINBAX 2024	India, Vietnam	5th edition of India-Vietnam Bilateral Army Exercise. First-time Bi-Service level participation.
SIMBEX-2024	India, Singapore	31st edition of Singapore-India Maritime Bilateral Exercise. Held at Visakhapatnam, Andhra Pradesh.
Tiger Triumph	India, US	It is tri-service Humanitarian Assistance and Disaster Relief (HADR) Exercise between India and US
INDRA	India, Russia	A bilateral naval exercise.
Varuna 2025	India, France	23rd edition of the India-France bilateral naval exercise, first initiated in 1993. Other India-France Military Exercises: FRINJEX: Army Joint Exercise. GARUDA: Air Force Exercise.
Prachand Prahaar	India (Army, Navy, Air Force)	Tri-Service integrated multi-domain warfare exercise, in the high-altitude terrain of Arunachal Pradesh under Eastern Command. Builds on Exercise Poorvi Prahar (November 2024), which focused on aviation asset integration.
Marine Security Belt 2025	Iran, Russia, China	5th annual joint naval drills, Marine Security Belt 2025, in the Gulf of Oman near Iran's Chabahar port. Drills take place amid tensions in the Red Sea, where Yemen's Houthis have attacked Israel-linked ships.

ENVIRONMENT AND GEOGRAPHY

ISFR-2023

Context: The Minister for Environment, Forest, and Climate Change recently released the India State of Forest Report 2023 (ISFR 2023) at the Forest Research Institute, Dehradun.

About the India State of Forest Report

- **Published biennially by the Forest Survey of India (FSI) since 1987**, this report offers a **comprehensive assessment of the nation's forest and tree resources**.
- It uses **remote sensing satellite data and field-based National Forest Inventory (NFI)** for analysis.
- The ISFR 2023 is the 18th in the series and covers aspects like forest and tree cover, mangrove cover, growing stock, carbon stock, forest fires, agroforestry, and more.

Key Highlights of ISFR 2023

• Increase in Forest and Tree Cover:

- **Overall increase:** 1,445.81 km², with a 156.41 km² rise in forest cover.

○ **Maximum increase in forest and tree cover:**

Chhattisgarh (684 km²), Uttar Pradesh (559 km²), Odisha (559 km²), Rajasthan (394 km²).

- **Maximum increase in forest cover:** Mizoram (242 km²), Gujarat (180 km²), Odisha (152 km²).

- **Largest decrease:** Madhya Pradesh (-612.41 km²), Karnataka (-459.36 km²).

• **Top States:**

- **Largest forest cover:** Madhya Pradesh (77,073 km²), Arunachal Pradesh (65,882 km²), Chhattisgarh (55,812 km²).

- **Highest forest cover percentage:** Lakshadweep (91.33%), Mizoram (85.34%), Andaman & Nicobar Islands (81.62%).

• **Carbon Stock:**

- **Forest carbon stock:** 7,285.5 million tonnes, with an increase of 81.5 million tonnes from 2021.
- **India's total carbon stock:** 30.43 billion tonnes of CO₂ equivalent, surpassing the 2005 baseline by 2.29 billion tonnes.

• **Mangrove Cover:**

- **Total:** 4,992 km² (0.15% of the geographical area).
- **Net decrease:** 7.43 km² since 2021. Gujarat saw a decrease of 36.39 km², while Andhra Pradesh and Maharashtra showed increases.
- **Top States/UT:** West Bengal, Gujarat, A & N Islands, Andhra Pradesh

• **Bamboo-Bearing Area:**

- The extent of bamboo bearing area for the country has been estimated as 1,54,670 km².
- As compared to the last assessment done in 2021 there is an increase of 5,227 km² in bamboo area.

- **Forest Fires:** Top states with the most fires were Uttarakhand, Odisha, and Chhattisgarh.

• **Regional Performance:**

- **Western Ghats:** 73% forest cover in the Eco-Sensitive Area (60,286 km²).
- **Northeastern region:** 67% of the geographical area is under forest cover.

Table: Forest and Tree Cover of India

Class	in km ²	
	Area in km ²	Percentage of GA
Forest Cover	7,15,342.61	21.76
Tree Cover	1,12,014.34	3.41
Total Forest and Tree Cover	8,27,356.95	25.17
Scrub	43,622.64	1.33
Non Forest	24,16,489.29	73.50
Geographical Area of the country	32,87,468.88	100.00

Forest Survey of India (FSI)

- **Established:** June 1, **1981**, succeeding the *Pre Investment Survey of Forest Resources (PISFR)*, which was initiated in 1965. The PISFR was launched by the Government of India with support from the *FAO* and *UNDP*.
- **Background:** In 1976, the *National Commission on Agriculture (NCA)* recommended the creation of a National Forest Survey Organization, leading to the establishment of FSI.
- **Parent Ministry:** Ministry of Environment and Forests, Government of India.
- **Primary Objective:** To regularly assess and monitor India's forest resources. FSI also provides training, research, and extension services.
- **Headquarters:** **Dehradun**, with regional offices in Shimla, Kolkata, Nagpur, and Bangalore. The Eastern zone has a sub-centre at Burnihat, Meghalaya.

UPPER SIANG HYDROPOWER PROJECT

Context: Amid China's plans for the world's largest dam on the Yarlung Tsangpo (Brahmaputra), India is advancing the Upper Siang Hydropower Project as a countermeasure.

- China has proposed the **construction of a 60,000 MW (60 GW) Hydropower Project** in **Medog county**, 30 km from the international border close to the Arunachal Pradesh, on the Yarlung Tsangpo, also known as the Brahmaputra in India.

About the Upper Siang Hydropower Project:

- **Location:** Upper Siang district, Arunachal Pradesh, on the Siang River (upper course of the Brahmaputra).
- **Capacity:** Proposed 11,000 MW hydropower plant.
- **Developers:** Jointly Developed by National Hydroelectric Power Corporation (**NHPC**) and North Eastern Electric Power Corporation (**NEEPCO**).
- **Local Context:** The region is home to the Adi Tribe, who depend on the Siang River for agriculture (pani kheti) due to limited farming opportunities in hilly terrain.

About the Adi Tribe:

- The Padams, Milangs, Komkars, Minyongs and Pasis collectively call themselves as ADI meaning hill people. The Adi constitute major group and inhabit the lower part of Lower Dibang Valley district of Arunachal Pradesh,
- The Adi residents here revere the Siang as a provider, referring to it as Aane (mother) Siang.
- The Adis are basically dependent on agriculture. Both wet rice cultivation and shifting cultivation are practiced. Mithun is considered precious for socio-religious activities.
- The society is Patrilineal and Patriarchal. The main festivals are Solung (1st September), Etor (15 May) and Aaran (7 March).
- **Social Organization:** Their villages are typically situated on hill slopes and governed by a council called **Kebang**, which serves both administrative and judicial functions.
- **Language:** **Tibeto-Burman origin**, tracing roots to southern China (16th century).
- **Festivals:** The main festivals are Solung (1st September), Etor (15 May) and Aaran (7 March).
- **Religion:** **Donyi-Polo faith**, a tribal religion which worships the Sun (Donyi) and the Moon (Polo).
- **Unique Practice of Motor or Pator System:** Ritual lockdowns to locate wild herbs during epidemics.

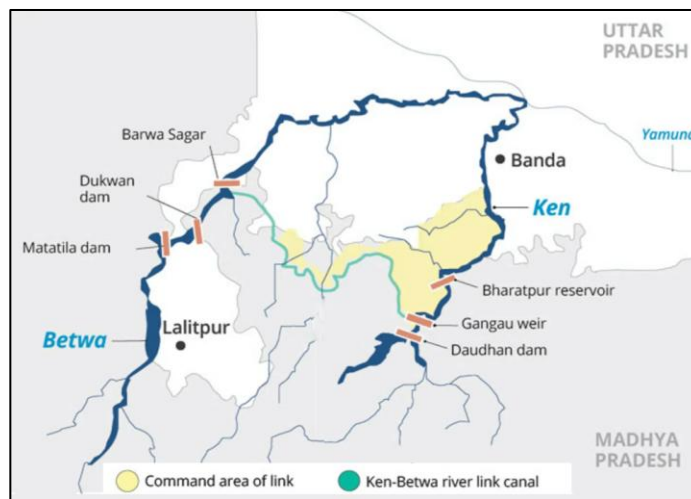
KEN BETWA LINK PROJECT

Context: PM Modi recently laid the foundation stone of the Ken Betwa river Linking National Project.

Ken-Betwa Link Project (KBLP)

- The KBLP is India's first river interlinking initiative under the **National Perspective Plan for interlinking rivers**.
- The KBLP envisages **transferring water from the Ken river to the Betwa river**, both tributaries of the Yamuna.
- The Ken-Betwa Link Canal will be 221 km in length, including a 2-km tunnel.

- According to the Jal Shakti Ministry, the project is expected to provide annual irrigation to 10.62 lakh hectares (8.11 lakh ha in MP and 2.51 lakh ha in UP) of land, supply drinking water to about 62 lakh people, and generate 103 MW of hydropower and 27 MW of solar power.
- The **Bundelkhand region**, which spans parts of Jhansi, Banda, Lalitpur, and Mahoba districts of Uttar Pradesh, as well as Tikamgarh, Panna, and Chhatarpur districts of Madhya Pradesh, frequently suffers from water shortages due to erratic rainfall and overexploitation of groundwater.



- **Construction of the Dhaudhan Dam:** A 77-meter tall and 2-km wide dam to be built on the Ken River within the Panna Tiger Reserve.

- **Ken River:** Originates in the Kaimur Range of Madhya Pradesh and flows through the **Panna Tiger Reserve** before merging with the Yamuna in Banda district, Uttar Pradesh. Known for its scenic beauty and rich biodiversity, particularly within the tiger reserve.
- **Betwa River:** Originates in the Vindhya Range of Madhya Pradesh and joins the Yamuna in Hamirpur district, Uttar Pradesh. Key dams on the Betwa River include Rajghat, Paricha, and Matatila, which serve irrigation and hydropower needs.

MANGANESE WATER CONTAMINATION

Context: A study revealed significant manganese (Mn) contamination in water as a contributing factor to rising cancer cases in Bihar's Gangetic region.

About Manganese

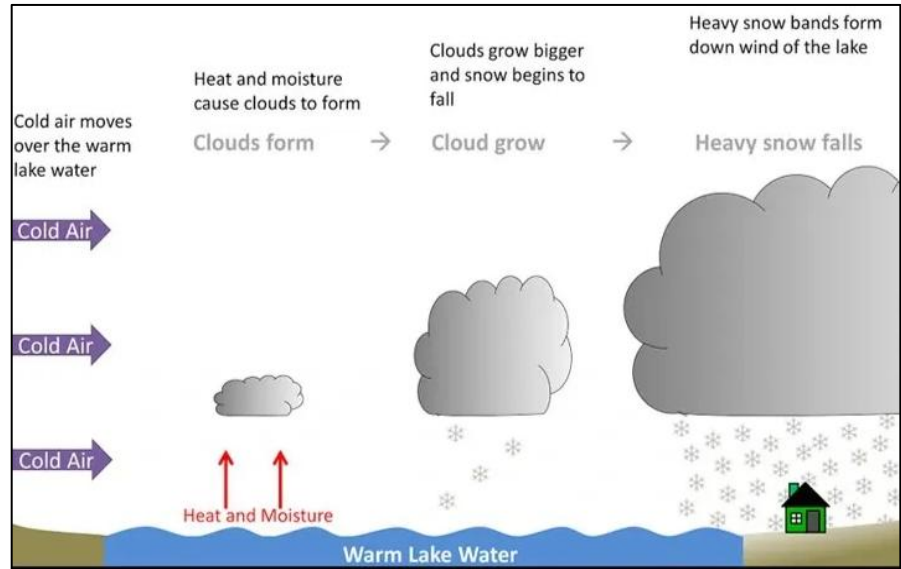
- Manganese is the **fifth-most abundant metal on Earth**, a hard, brittle, silvery metal, primarily found in oxides, carbonates, and silicates.
- **Role in Human Health:** It is an essential trace element needed in small quantities for human health for various bodily functions including bone formation, enzyme activity. However, excessive concentrations in water can lead to serious health risks.
- **Geological Formation:** In India, manganese ore deposits are predominantly **metamorphosed bedded sedimentary deposits** associated with the **Gondite Series**.
- **Water Quality Standards:** According to Indian Standards for Drinking Water (IS 10500:2012): **Acceptable limit:** 100 µg/L and **Permissible limit:** 300 µg/L.
- Elevated manganese levels have been reported in blood samples, with a notable case of 6,022 µg/L in a liver cancer patient.
- **Key Geographical Hotspots in India:** Madhya Pradesh, Maharashtra (Vidarbha Region) and Odisha.
- **Sources of Manganese**
 - **Natural Sources:** Manganese-rich rocks undergo a weathering process which releases Manganese into groundwater.
 - **Anthropogenic Sources:**
 - Industrial Activities: Mining involving manganese ore
 - Agricultural Runoff (from Fertilizers and Pesticides) and Urban Runoff (from Stormwater and Sewage)

LAKE-EFFECT SNOW

Context: Recently, Lake-effect snow blowing in from the Great Lakes has blanketed parts of Michigan, Ohio, Pennsylvania and New York regions.

About Lake-Effect Snow:

- It is common across the Great Lakes region during the late fall and winter.
- Lake Effect snow **occurs when cold air, often originating from Canada, moves across the open waters of the Great Lakes**. As the cold air passes over the unfrozen and relatively warm waters of the Great Lakes, warmth and moisture are released into the bottom of the atmosphere, the air rises, clouds form and grow and snow falls.
- The clouds that build up are then pushed by the wind onshore in lines, known as 'cloud streets'. As a result, the snowfall can be quite localised. Heavy snow can be falling in one location, while the sun may be shining just a mile or two away.
- Lake effect snow occurrence and location is mainly dependent on wind (speed and direction) and topography. For instance, wind direction and speed can affect how narrow or wide a snow band is, as well as its length; whereas topography can influence snowfall rate.



WORLD SOLAR REPORT SERIES

Context: The 3rd edition of the World Solar Report series was released at the 7th Assembly of the International Solar Alliance.

- This series launched 4 reports namely **World Solar Market Report, World Investment Report, World Technology Report, and Green Hydrogen Readiness Assessment for African Countries**.

About the World Solar Report Series

- First introduced in 2022 this report series provides a concise and comprehensive overview of global progress in solar technology, key challenges, and investment trends in the sector.
- Each highlight a crucial area in the global shift towards sustainable energy

Key Findings

- The **World Technology Report** showcases advancements in solar technology. Highlights include record-setting 24.9% efficiency in solar PV modules, an 88% reduction in silicon usage since 2004, and a 90% drop in utility-scale solar PV costs.
- The **World Solar Market Report** reveals exceptional solar growth, with global solar capacity having grown from 1.22 GW in 2000 to **1418.97 GW in 2023** (with a staggering 40% annual growth rate).
- The **Readiness Assessment of Green Hydrogen African Countries** report highlights the potential of green hydrogen to decarbonize industries and support Africa's transition to cleaner energy.
- The latest **World Investment Report** highlights a global shift toward sustainable energy, with energy investments rising from \$2.4 trillion in 2018 to \$3.1 trillion by 2024.

COASTAL HARDENING

Context: A new study has revealed that about 33% of the world's sandy beaches have hardened due to construction of roads, seawalls, etc.

About Coastal Hardening:

- Coastal hardening refers to **'rigid', semi-impermeable structures created by humans that alter the natural landscape**, potentially obstructing the shoreline retreat, and landward translation of sandy beaches, the study stated.
- These structures include impervious surfaces or infrastructure such as seawalls, harbours, roads, highways, buildings, railway revetments or other urban structures.
- The **Bay of Bengal occupies first position with 84% coastal hardening**, a new study has revealed.
- It is followed by western and central Europe, which showed the second-largest coastal hardening with 68%, followed by the Mediterranean with 65%.
- Western North America and east Asia showed 61% and 50% respectively.

Impact on Ecosystems

- **Habitat Disruption:** Coastal hardening can damage or completely destroy natural habitats such as wetlands, mangroves, coral reefs, and beaches.
- **Invasive Species:** Ports, often hotspots for invasive species, become increasingly vulnerable. These species are transported via hulls and ballast water of ships. Artificial structures, lacking natural colonization, provide a suitable environment for these species, enabling them to spread to surrounding areas.
- **Beach Loss:** Coastal hardening leads to beach erosion and loss of critical sandy ecosystems. Beaches serve as storm buffers and are vital habitats for various flora and fauna.
- **Coastal Squeeze:** Defined as **inter-tidal habitat loss**, coastal squeeze occurs when hard structures restrict the natural movement of intertidal zones, particularly under rising sea levels. This process disrupts ecological balances and reduces biodiversity.

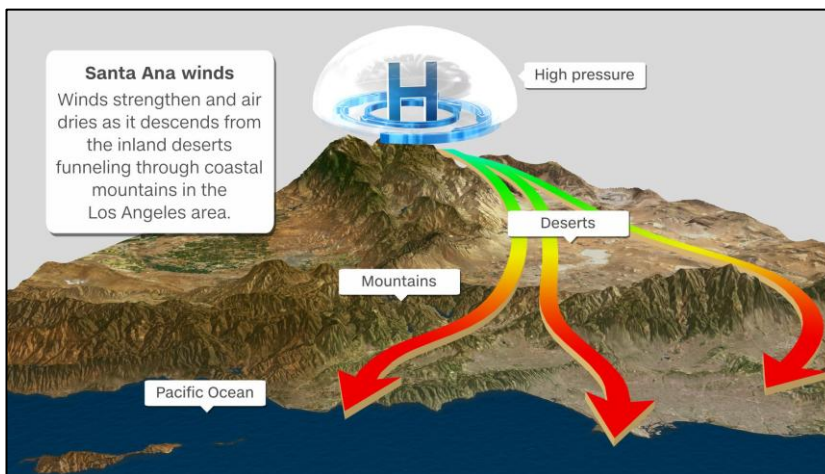
SANTA ANA WINDS

Context: Santa Ana winds are significantly increasing the risk of wildfires and cause damage across affected regions of California.

About Santa Ana Winds (named after Southern California's Santa Ana Canyon)

- Santa Ana Winds are **strong, dry, and hot downslope winds that originate inland and affect coastal Southern California and northern Baja California**.
- They are similar to Foehn winds in the Alps and Chinook winds in North America.
- Santa Ana are **strong and gusty east or north-easterly winds blow from inland towards the coast**.
- They can occur numerous times throughout the year and have been known to happen on over 20 occasions during some years.
- **Origin:**
 - They occur when a large **area of high pressure becomes established over the interior of western US**, centred around the Great Basin- the area between the Rocky Mountains and Sierra Nevada.
 - With winds flowing clockwise around high-pressure systems, they move south and west into southern California, where they descend over the inland Sierra mountains.
 - As the air descends, it dries further and accelerates in speed. Wind speeds can increase further as they funnel through the valleys and gorges in the area.
- A Santa Ana event usually occurs during the cooler months, from late September to May and generally lasts just a couple of days, but on rare occasions can continue for up to a week.

- The low humidity of the air is key to the initial fire taking hold. Like a hair dryer, it then strips the vegetation of a lot of its moisture, meaning that fire can catch quicker and the vegetation burns more readily. The strength of the wind (95-130 km/h) is what helps to spread fires rapidly.
- **Example:** The 2017 Thomas Fire in California, one of the largest in the state's history, was exacerbated by Santa Ana winds.



HYDROXY METHANE SULPHONATE (HMS)

Context: A recent study revealed that hydroxy methane sulphonate, a secondary aerosol, forming in cold urban areas like Fairbanks, Alaska, reshaping understanding of aerosol chemistry.

About Hydroxy Methane Sulphonate (HMS) - $\text{CH}_2\text{OHSO}_3\text{H}$

- HMS is a **secondary aerosol** formed when **sulphur dioxide (SO_2)** reacts with **formaldehyde (CH_2O)** in the presence of liquid water. It was previously believed to form only under warm conditions.
- It is a sulfur-containing molecule that is considered a significant component of particulate matter ($\text{PM}_{2.5}$) in the atmosphere.
- HMS is classified as a **secondary aerosol** because it is not emitted directly into the atmosphere but is instead produced through chemical reactions involving primary pollutants.
- Traditionally, it was thought that HMS formation **mainly occurred in warm and humid conditions, like in clouds and fog.**
- **Chemical Formation:**
 - **Sulfur dioxide (SO_2):** A common air pollutant produced by the burning of fossil fuels and industrial processes.
 - **Formaldehyde (CH_2O):** Another air pollutant that can come from various sources, including vehicle emissions, industrial processes, and even natural sources like vegetation.
 - **Liquid water:** This reaction typically occurs in the presence of liquid water, such as in clouds, fog, or within atmospheric aerosols (tiny liquid or solid particles suspended in the air)
- The formation of HMS increases the acidity of particulate matter ($\text{PM}_{2.5}$), which enhances the formation of other secondary aerosols.
- This process exacerbates air pollution, contributing to reduced air quality and haze formation.
- **Applications of HMS**
 - **Environmental Science:** Key in aerosol and haze formation studies.
 - **Air Quality Monitoring:** Acts as a pollutant marker.
 - **Industrial Use:** Precursor in chemical synthesis, sulfonating agent.
 - **Water Treatment:** Helps remove pollutants, control water chemistry.
 - **Biochemistry:** Used in enzyme kinetics and biological research.

EMISSIONS FROM ARCTIC TUNDRA

Context: Arctic Tundra ecosystem has now become a source of CO_2 & methane CH_4 emissions.

About Arctic Tundra

- **Arctic Tundra** is a **vast, treeless permafrost biome** encircling the Arctic Ocean and stretching south to the coniferous forests of the taiga. It has **low biodiversity** due to extreme conditions.

- **Location:** Lies between 66.5°N to 75°N, covering parts of Alaska, Canada, Greenland, Scandinavia, and Russia.
- **Vegetation:** The soil in the Arctic is largely permafrost (soil that remains frozen year-round) leaving only a thin surface layer of thawed soil in summer for plant roots to grow in. It is dominated by low-growing shrubs, grasses, mosses, and lichens.
- **Climate:** Tundra regions typically get less than 25 centimetres (10 inches) of precipitation annually, which means these areas are also considered deserts. They have long, cold winters with high winds and average temperatures below freezing for six to ten months of the year.
 - **Winters:** Long and bitterly cold, with average temperatures below -30°C.
 - **Summers:** Short and cool, with average temperatures ranging from 3-12°C.
- **Wildlife:** Supports species adapted to harsh climates, including: Arctic foxes, Polar bears, Reindeer, Musk oxen, Lemmings and Wolves

Reasons behind the Emissions

- Increased wildfires and unusually high temperatures are the main reasons behind the dramatic transformation of this Arctic ecosystem.
- The Arctic is warming four times the global rate. As a result, the Arctic's permafrost is thawing, meaning microbes in the soil are becoming active and breaking the organic matter down, releasing CO₂ and CH₄ into the atmosphere.
- Another reason is that, in recent years, the Arctic has witnessed an increase in the frequency and intensity of wildfires. Wildfire smoke adds GHG emissions to the atmosphere while also speeding up the thawing of permafrost.

HYDROTHERMAL VENT

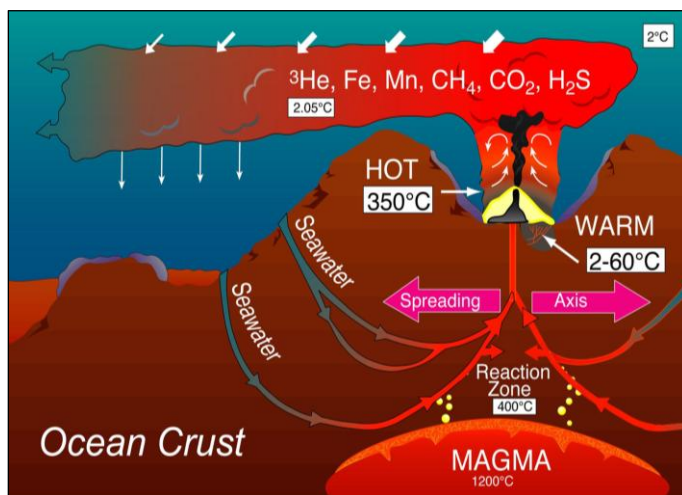
Context: Indian oceanographers have captured the image of an active hydrothermal vent located 4,500 metres below the surface of the Indian Ocean.

About Hydrothermal Vents

- Hydrothermal vents are **fissures in the ocean floor that release geothermally heated water, mineral-rich fluids, and chemicals.**
- **Types**
 - **Black Smokers:** These vents **emit dark, mineral-rich fluids** that contain high concentrations of metal sulfides, giving them a dark, often black appearance
 - **White Smokers:** These vents **emit lighter-colored fluids** that are rich in barium, calcium, and silicon.
- **Formation:** Seawater percolates through fissures in the ocean crust and is heated by magma, causing the water to reemerge as a **hydrothermal vent.**
- **Location:** Near volcanically active places, mid-ocean ridges, ocean basins, and hotspots
- **Temperature:** Seawater in hydrothermal vents can reach temperatures of over 320° Celsius.
- Hydrothermal venting can remain active for a few hundred to as long as 30,000 years

Significance:

- **Minerals Content:** Hydrothermal vents contain valuable metals such as silver, gold, manganese, cobalt, and zinc (Example: Solwara 1 project in the Pacific Ocean explored mining potential.)
- **Life Support:** Hydrothermal vents support diverse biological communities, including tubeworms, shrimp, clams, fish, crabs, and octopods



- **Origin of life:** Vents are hypothesized to mimic early Earth conditions, providing clues to how life might have originated.
- **Astrobiology:** Study of vents informs the search for life on other planets, such as Europa and Enceladus, which have subsurface oceans.
- **Environmental Dimension: Carbon Sequestration:** Hydrothermal vents play a role in the ocean's carbon cycle by influencing carbon deposition and chemical transformations.
- **India's Perspective:** India's **Samudrayaan** Mission under the Deep Ocean Mission aims to explore deep-sea biodiversity and resources. **Example**– Exploration of the Central Indian Ocean Basin (CIOB) for polymetallic nodules.

IPBES: NEXUS ASSESSMENT REPORT

Context: IPBES has released an Assessment Report on the Interlinkages among Biodiversity, Water, Food and Health – known as the Nexus Report.

About IPBES

- The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) is an **independent intergovernmental body** which **provides policymakers with objective scientific assessments** about the state of knowledge regarding the **planet's biodiversity, ecosystems and the benefits they provide to people, as well as the tools and methods to protect and sustainably use these vital natural assets**.
- IPBES was established in **2012**, as an independent body inspired by the Intergovernmental Panel on Climate Change (IPCC) and the Millennium Ecosystem Assessment.
- Although **not a United Nations body**, IPBES **receives secretariat** support from the United Nations Environment Programme (UNEP). Seat of the secretariat located in **Bonn, Germany**.
- IPBES currently has almost 150-member States (including **India**).
- IPBES is funded through generous voluntary contributions from governments and private entities to the IPBES Trust Fund.
- **Key Areas of IPBES Work**
 - **Assessments:** Conducts thematic, methodological, regional, and global studies on biodiversity and ecosystem services.
 - **Policy Support:** Develops and promotes policy-relevant tools and methodologies.
 - **Capacity Building:** Addresses knowledge, data, and expertise needs of member states and stakeholders.
 - **Communication & Outreach:** Expands awareness and impact of IPBES findings.
- **Key Reports:** Global Assessment Report on Biodiversity and Ecosystem Services (2019), Nexus Assessment Report (2024), Assessment Report on Sustainable Use of Wild Species (2022); "Assessment Report on Invasive Alien Species and their Control" (2023)

PROGRAMME OF ACTION FOR LANDLOCKED DEVELOPING COUNTRIES

Context: UN General Assembly adopted Programme of Action for Landlocked Developing Countries (LLDCs) for the Decade 2024-2034.

About PoA for LLDCs 2024-2034

- This initiative builds on the previous Vienna Programme of Action (2014-2024) and the Almaty Programme of Action (2003), which aimed to address the unique challenges faced by LLDCs.
- It aims to accelerate sustainable development by tackling high trade costs, infrastructure deficits, economic vulnerabilities, and climate risks.

The PoA focuses on five priority areas:

- **Structural Transformation & Innovation:** Promoting industrialization, value-added manufacturing, and digital growth.
- **Trade & Regional Integration:** Reducing trade barriers, streamlining transit procedures, and enhancing e-commerce.

- **Transport & Connectivity:** Improving roads, railways, broadband access, and energy infrastructure.
- **Climate Resilience & Disaster Risk Reduction:** Strengthening adaptation strategies and scaling up climate finance.
- **Implementation & Financing:** Mobilizing domestic revenue, attracting foreign investments, and ensuring effective governance.
- The PoA aligns with global frameworks like the 2030 Agenda for Sustainable Development, the Paris Agreement, and the Sendai Framework.
- Regular monitoring, including a midterm review in 2029, ensures progress towards a more inclusive and resilient future for LLDCs.

About Landlocked Developing Countries (LLDCs):

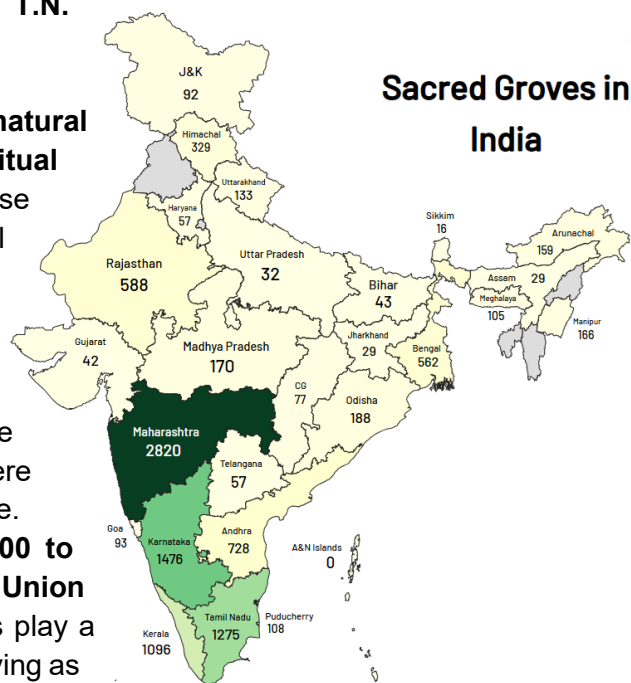
- LLDCs are countries without direct access to the sea.
- There are 32 LLDCs, with a population of about 570 million.
- **Liechtenstein and Uzbekistan are doubly landlocked** (surrounded by other landlocked countries).

SACRED GROVES

Context: The SC has issued directions on an application for the identification of sacred groves, such as Orans, by the Rajasthan Government, in line with the **T.N. Godavarman Judgment (1996)**.

About Sacred Groves:

- Sacred groves are **patches of forests or natural vegetation that hold religious and spiritual significance for indigenous communities**. These groves are seen as sacred spaces where local traditions, rituals, and beliefs are practiced.
- **Protection by Communities:** Local communities have long protected these sacred spaces, maintaining a deep spiritual connection and safeguarding biodiversity in these areas. The protection often stems from religious beliefs, where these groves are considered sanctified and inviolable.
- **Estimation:** India is home to an estimated **100,000 to 150,000 sacred groves, as per the International Union for Conservation of Nature (IUCN)**. These groves play a critical role in preserving indigenous biodiversity, serving as biodiversity hotspots.
- **Significant Sacred Groves in India:** One notable example is the **Living Root Bridges** (Jingkieng Jri) in Meghalaya, which are a unique form of sacred groves. These bridges, made from the roots of trees, have become part of the **tentative list of UNESCO World Heritage Sites** due to their cultural and ecological significance.



BUSINESS4LAND INITIATIVE

Context: The Business4Land Forum, held during COP16 of the UNCCD, has emphasized the private sector's crucial role in sustainable land use and combating desertification.

About Business4Land Forum (2024)

- B4L is the UNCCD's main initiative to engage the private sector in sustainable land and water management. It helps companies and financial institutions manage risks and seize opportunities tied to land degradation and drought.
- B4L aims to **restore 1.5 billion hectares of land by 2030**, contributing to Land Degradation Neutrality (LDN), a global commitment to achieve net zero land degradation by 2030, as well as enhancing drought resilience.

- **B4L's work is built around three key pillars:**
 - **Business operations and value chains:** Promote sustainable practices and set targets for reducing land-related impacts across business operations.
 - **Finance:** Support the creation of sustainable finance solutions for land restoration and drought resilience.
 - **Advocacy:** Advocate for policies that foster a business environment conducive to sustainable land and water management.

About United Nations Convention to Combat Desertification (UNCCD)

- Established in 1994, it is the only **legally binding international agreement** that connects environment, development, and sustainable land management.
- It aims to combat desertification, land degradation, and drought (DLDD) through global cooperation.

CHAMPIONS OF EARTH AWARD, 2024

Context: Madhav Gadgil, the Indian ecologist, was named a 2024 'Champion of the Earth' in the Lifetime Achievement category, by the United Nations Environment Programme (UNEP).

About Madhav Gadgil

- **Award Recognition:** For his lifelong dedication to protecting both people and the planet through research and community-based environmental work.
- **Key Contributions:**
 - Renowned for his extensive research in the Western Ghats, a global biodiversity hotspot in India.
 - Focused on promoting community-based conservation models that balance environmental protection with human well-being.
 - Known for his efforts to protect the ecologically fragile areas of the Western Ghats, an area recognized as a UNESCO World Heritage Site.

About Champions of the Earth Award

- The Champions of Earth Award is UNEP's highest environmental honour, honoring individuals who inspire action through their efforts towards environmental conservation.
- **Established:** In 2005, the award was given annually to individuals and organizations making remarkable contributions to environmental sustainability.
- **Purpose:** Recognizes those involved in innovative and sustainable solutions to restore land, enhance drought resilience, and combat desertification.
- **Award Categories:** Policy Leadership, Inspiration and Action, Entrepreneurial Vision and Science and Innovation, Lifetime Achievement
- It was bestowed upon PM Narendra Modi in 2018 under Policy Leadership category for his bold environmental leadership on the global stage.

INDIA LAUNCHED THE WORLD'S FIRST GREEN STEEL TAXONOMY

Context: The Union Ministry of Steel has launched the Green Steel Taxonomy.

About Green Steel Taxonomy

- Green Steel Taxonomy is a new **initiative aimed at promoting sustainable practices in the steel industry by setting clear standards for green steel production.**
- This taxonomy will encourage the reduction of carbon emissions and help India transition to a more environmentally friendly steel manufacturing process.

Key Features of the Green Steel Taxonomy:

- **Definition of Green Steel:** Green Steel is defined as **steel that has a CO₂ equivalent emission intensity of less than 2.2 tonnes of CO₂e per tonne of finished steel.**

Greenness Rating

- **Five-star:** Emission intensity below **1.6 t-CO₂e/tfs.**
- **Four-star:** Emission intensity between **1.6 and 2.0 t-CO₂e/tfs.**
- **Three-star:** Emission intensity between **2.0 and 2.2 t-CO₂e/tfs.**
- Steel exceeding **2.2 t-CO₂e/tfs** is not eligible for green rating.

- **Periodic Review:** Star rating thresholds will be reviewed **every three years**.
- **Emission Scope:** Covers **Scope 1**, **Scope 2**, and limited **Scope 3 emissions**, excluding upstream mining, downstream emissions, and transportation.
- **Nodal Agency:** The **National Institute of Secondary Steel Technology (NISST)** will oversee measurement, reporting, verification (MRV), and certification.
- **Certification Process:** Issued **annually** (financial year), with an option for more frequent MRV-based certification.

INDIA CONDUCTS FIRST-EVER GANGES RIVER DOLPHIN TAGGING

Context: As part of Project Dolphin, a tagging exercise has been conducted to enhance the understanding of Ganges River Dolphins and their behavior.

About the News

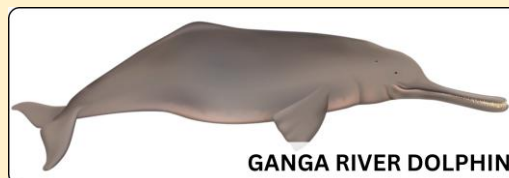
- The first-ever satellite tagging of a **Ganges River Dolphin (Platanista gangetica)** was successfully conducted in **Assam**, marking a significant milestone in wildlife conservation.
- This initiative, **led by the Wildlife Institute of India (WII)** in collaboration with the Assam Forest Department and Aaranyak NGO, was undertaken under the guidance of the **Ministry of Environment, Forest and Climate Change (MoEFCC)**.
- It was **funded by the National CAMPA Authority**.
- This is the first time that a Ganges River Dolphin has been tagged anywhere in the world.

About Project Dolphin:

- **Launch:** Launched by the **MoEFCC in 2020** to conserve both oceanic and riverine dolphin species.
- **Aim:** To protect dolphins and their aquatic habitats using modern technology, particularly for population assessment and anti-poaching measures.

About the Ganges River Dolphin:

- Dolphins are one of the oldest creatures in the world along with some species of turtles, crocodiles and sharks. The Ganges river dolphin was officially discovered in 1801, according to the World Wildlife Fund (WWF).
- They are also called Susu and the Tiger of the Ganga.
- **Endemic Range:** Found exclusively in the Indian subcontinent. Found in Ganges-Brahmaputra-Meghna and Karnaphuli-Sangu river systems across Nepal, India, and Bangladesh. Currently, India hosts approximately 90% of the global population of Ganges River dolphins.
- **Physical Traits:** Characterized by a long, thin snout, rounded belly, stocky body, and large flippers.
- **Respiration:** Has a slit-like blowhole on its head, functioning as a nostril.
- **Size & Reproduction:** Females are larger than males and give birth to one calf every 2–3 years.
- **Coloration:** Calves are born with chocolate brown skin, while adults have smooth, grey-brown, hairless skin.
- **National Status:** The Ganges River dolphin is India's National Aquatic Animal.
- **IUCN Status:** Endangered, **WPA:** Schedule I, **CITES:** Appendix I



MADHAV NATIONAL PARK

Context: The National Tiger Conservation Authority (NTCA) has approved Madhav National Park as the newest Tiger Reserve of Madhya Pradesh.

About Madhav National Park

- **Location:** Situated in the northern **Madhya Pradesh**, in Shivpuri District, within Upper Vindhyan Hills.
- **Historical Background:** Previously served as a hunting ground for Mughal emperors and the Maharaja of Gwalior. Declared a National Park in 1958.
- **Fauna:** Home to diverse wildlife, including: **Antelopes** (Nilgai, Chinkara), **Deer species** (Chital, Sambar, Barking Deer), **Carnivores** (Leopard, Wolf, Jackal, Fox, Wild Dog)

- **Flora:** The park features Northern Tropical Dry Deciduous Mixed Forest along with Dry Thorn Forest.
- **Water bodies:** Lakes- **Sakhya Sagar and Madhav Sagar**. Madikhera Dam is located in the northwestern part of the park. Marsh Crocodiles are in abundance in Sakhya Sagar lake. Due to this, the lake looks like a "Crocodile Safari."

About National Tiger Conservation Authority (NTCA)

- The NTCA is a **statutory body** established under the **Wildlife Protection Act (WPA), 1972**, with amendments in 2006, to **administer the tiger reserves which were set up as a part of Project Tiger**.
- **Composition:** The authority consists of the **Minister in charge of the Ministry of Environment and Forests (as Chairperson)**, the **Minister of State** in the Ministry of Environment and Forests (as Vice-Chairperson), three members of Parliament, Secretary, Ministry of Environment and Forests and other members.

DENALI FAULT

Context: New research indicates that three sites along the Denali Fault were once part of a smaller, unified geological structure.

About Denali Fault

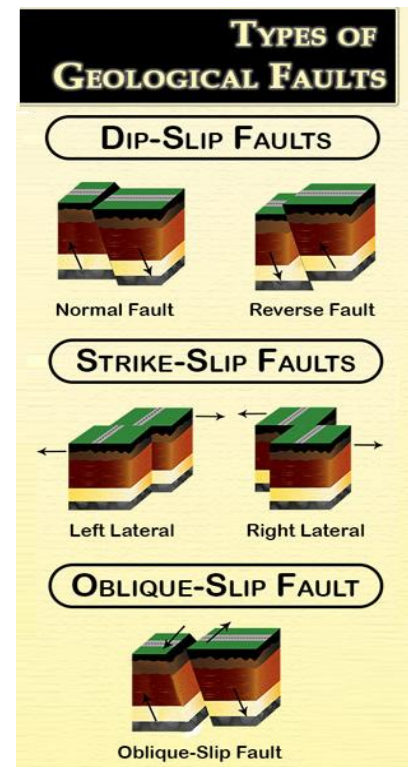
- A major strike-slip fault in Alaska, USA, it is a key component of the Pacific Ring of Fire's broader tectonic activity.
- The Denali Fault is a major fault in Alaska that runs from northwestern British Columbia to central Alaska. It's the fastest moving and most active fault in the Alaska Range.

Understanding Faults and Their Types

- A fault is a fracture or break in the Earth's crust where movement occurs due to tectonic forces.

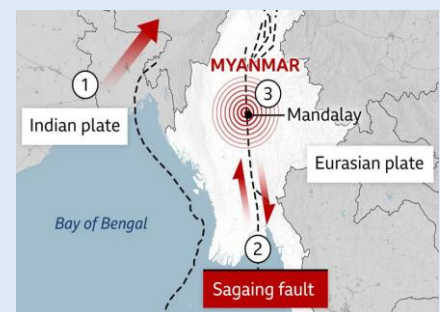
Types of Faults:

- Faults are classified based on their dip angle (angle with respect to the surface) and movement direction.
- **Dip-Slip Faults:** Movement occurs **along the dip plane**.
 - **Normal Fault:** The upper block moves downward, occurring in extensional settings like the Basin and Range Province.
 - **Reverse (Thrust) Fault:** The upper block moves upward, common in compressional regions like subduction zones (e.g., Japan). If the dip angle is shallow, it's called a thrust fault.
- **Strike-Slip Faults:** Movement is **horizontal**.
 - **Right-Lateral Fault:** The far block moves right (e.g., San Andreas Fault).
 - **Left-Lateral Fault:** The far block moves left when viewed from either side.
- **Oblique-Slip Faults:** Show a combination of dip-slip and strike-slip motion.



Sagaing Fault

- It is a significant **active tectonic fault line that runs north to south through Myanmar**, marking the boundary between the Indian Plate and the Eurasian Plate.
- Stretching **~1,500 km from the Andaman Sea in the south to the Eastern Himalayas in the north**, it is **one of the world's longest and most active strike-slip faults**.
- As the Indian Plate continues to move northward, it creates immense stress along the fault line, which periodically releases in the form of major earthquakes.



SPONGE CITY

About: The concept of sponge cities has emerged as an innovative approach to addressing urban flooding, water management, and environmental sustainability.

About Sponge Cities

- A sponge city is an **urban area designed with natural or green infrastructure to absorb and manage rainwater effectively, reducing the risk of flooding**. These features include trees, parks, lakes, green roofs, and permeable surfaces that help retain water.
- The concept was **introduced in 2013** by Professor Kongjian Yu of Peking University, emphasizing working with nature rather than diverting rainwater away.
- Sponge cities act like sponges, absorbing excess water from rainfall, storms, or floods, improving urban resilience and water management.
- Shanghai and Auckland have incorporated this idea into the city planning.

Benefits of Sponge Cities

- **Flood Protection:** Absorbs excess water, reducing infrastructure damage and saving lives.
- **Water Supply Support:** Filters and stores water, helping communities during droughts.
- **Air Quality Improvement:** Green spaces reduce air pollution, benefiting public health.
- **Better Urban Living:** Creates green spaces, promoting mental and physical well-being.

UNFCCC COP29 INITIATIVES AND DECLARATIONS

Context: COP29, held in Baku, Azerbaijan, concluded with the adoption of the Baku Climate Unity Pact and several significant agreements.

About the Conference of the Parties (COP):

- COP is the supreme decision-making body of the United Nations Framework Convention on Climate Change (UNFCCC).
- COP meetings are annual conferences where UNFCCC member countries assess progress, negotiate agreements, and refine commitments to combat climate change.
- A key task is reviewing national communications and emission inventories, including Nationally Determined Contributions (NDCs).
- COP30 will take place in Belém, Brazil, in November 2025.

UNFCCC COP29 Initiatives and Declarations	
Baku Harmoniya Climate Initiative for Farmers	• Launched by COP29 Presidency with FAO • Recognizes farmers as key agents in climate action. • Hosted by FAO as part of the Food and Agriculture for Sustainable Transformation (FAST) Partnership, established at COP27.
Baku Initiative for Climate Finance, Investment and Trade (BICFIT) Dialogue	• Launched by COP29 Presidency, co-facilitated by UNCTAD and UNDP • Advances national ambitions and actions through the combined use of climate finance, investment, and trade, aligned with the UNFCCC and Paris Agreement.
Baku Dialogue on Water for Climate Action	• Launched by COP29 Presidency with UNEP, UNECE, and WMO • Builds collaboration between COPs on water-related issues and its link with climate change, biodiversity loss, pollution, and desertification.
Climate Finance Action Fund (CFAF)	• Launched by Azerbaijan with HQ at Baku, Azerbaijan. • Supports climate projects in developing countries and addresses natural disaster impacts. • Capitalized by contributions from fossil fuel-producing countries and companies. • Operational when \$1 billion is raised and 10 countries commit as shareholders.

Continuity Coalition for Climate and Health	- Launched by COP29 Presidency with UAE, Egypt, UK, Brazil, and WHO - Advances health commitments from previous COPs and strengthens the integration of health in climate action.
Declaration on Green Digital Action	- Launched by COP29 Presidency with the Climate Technology Centre & Network, Technology Mechanism, and ITU - Leverages digital technologies to accelerate climate action, promote sustainable development, and bridge the digital divide.
Global Energy Storage and Grids Pledge	Targets for 2030: 1,500 GW of energy storage globally (6x the 2022 level). - Global grid deployment goal of adding or refurbishing 25 million kilometers of grids. India has not endorsed the pledge.
Green Energy Pledge: Green Energy Zones and Corridors	- Launched by COP29 Presidency with UNIDO, UNECE, and UNESCAP - Promote green energy zones for tackling climate change, boosting economic growth, energy security, and improving local communities' quality of life. - Green energy zones are centralized hubs combining renewable energy resources, infrastructure, and storage.
Global Matchmaking Platform (GMP)	- Launched by UN Industrial Development Organization (UNIDO) and the Climate Club - Accelerates decarbonization of heavy-emitting industries in emerging and developing economies by connecting them with technical and financial solutions. - Serves as a gateway for countries to raise decarbonization requests.
Hydrogen Declaration	- Accelerate clean hydrogen production to decarbonize sectors and meet climate goals. - A non-legally binding document that doesn't require changes in national laws. India has not signed,
Reducing Methane from Organic Waste Declaration	- Launched by UNEP-convened Climate and Clean Air Coalition (CCAC) - Set sectoral targets for methane reduction from organic waste. - Supports the 2021 Global Methane Pledge (GMP) from COP26. Signatories: 35 countries, excluding India, covering 47% of global methane emissions from organic waste.

Other Initiatives

- COP29 Declaration on Enhanced Climate Action in Tourism:** Aims to engage the tourism sector in reducing its carbon footprint, building climate resilience, and promoting sustainable practices.
- Global Energy Efficiency Alliance:** Launched by the **UAE**, this initiative seeks to double global energy efficiency rates by 2030, contributing to significant emission reductions.
- Hydro4NetZero-LAC Initiative:** Focuses on developing and modernizing sustainable hydropower infrastructure to enhance the flexibility and resilience of energy systems.
- Global Alliance for Pumped Storage (GAPS):** Launched with the support of over 30 governments and international agencies to promote the use of pumped storage as a key technology for energy storage and grid stability.

GLOBAL CLIMATE FINANCE INITIATIVES

Context: Developing countries have expressed disappointment with the enhanced New Collective Quantified Goal (NCQG) on Climate Finance.

About New Collective Quantified Goal (NCQG)

- NCQG is a pivotal initiative aimed at **enhancing climate finance for developing countries**, set within the framework of the Paris Agreement.

- NCQG was proposed during COP21 to set the post-2025 climate finance goal. It replaces the previous commitment of mobilizing \$100 billion annually, which was initially pledged by developed nations during the 2009 Copenhagen Climate Summit but was not fully realized.
- The initiative is particularly focused on **empowering developing countries, which are disproportionately affected by climate change** despite contributing less to greenhouse gas emissions.
- The NCQG aims to provide necessary resources for investments in clean energy, adaptation measures, and climate-resilient infrastructure

About Climate Finance

According to the UNFCCC, Climate Finance includes **local, national, or transnational funding** from public, private, and alternative sources **aimed at supporting climate change mitigation and adaptation actions**, particularly in developing countries vulnerable to climate impacts.

Global Financial Mechanisms under UNFCCC		
Adaptation Fund	2001	• Established to finance adaptation projects in developing countries under the Kyoto Protocol. • Receives 5% of proceeds from the new UNFCCC market-based mechanism (Article 6.4 of the Paris Agreement).
Special Climate Change Fund (SCCF)	2001	• Created to finance projects on adaptation, technology transfer, capacity building, energy, and transport. • Administered by the Global Environment Facility (GEF).
Least Developed Countries Fund (LDCF)	2001	• Established to assist Least Developed Country parties in preparing and implementing National Adaptation Programmes of Action (NAPAs). • Administered by GEF.
Green Climate Fund (GCF)	2010	• Established at COP16. Developed countries pledged \$100 billion/year by 2020 to support developing countries in fulfilling their Nationally Determined Contributions (NDCs).
Loss and Damage Fund (LDF)	2022	• Established at COP27 and operationalized at COP28. • Aims to provide financial support to countries most vulnerable to climate change, addressing "loss and damage" that persists despite mitigation and adaptation efforts. • The World Bank will host the fund on an interim basis, and the Philippines will host the fund's board.

Steps Taken to Mobilize Climate Finance in India

- **National Adaptation Fund for Climate Change (NAFCC)**: Established in August 2015, this fund supports climate adaptation projects in India.
- **Priority Sector Lending**: Aimed at financing renewable energy projects to support the country's transition to sustainable energy.
- **Green Deposits and Green Bonds**: India issued its first green bond through Yes Bank in 2015 to raise funds for environmentally friendly projects.
- **Sustainable Finance Group (SFG)**: Set up under the Reserve Bank of India (RBI) to promote sustainable finance practices.
- **Network for Greening of Financial System (NGFS)**: RBI became a member of this global network to integrate environmental sustainability into financial systems.
- **Union Budget 2022-23**: Announced the issuance of **sovereign green bonds** to finance green infrastructure investments.

JUST TRANSITION

Context: India emphasized the need for global climate justice and equitable action during the Second Annual High-Level Ministerial Round Table on Just Transition at COP29.

About Just Transition

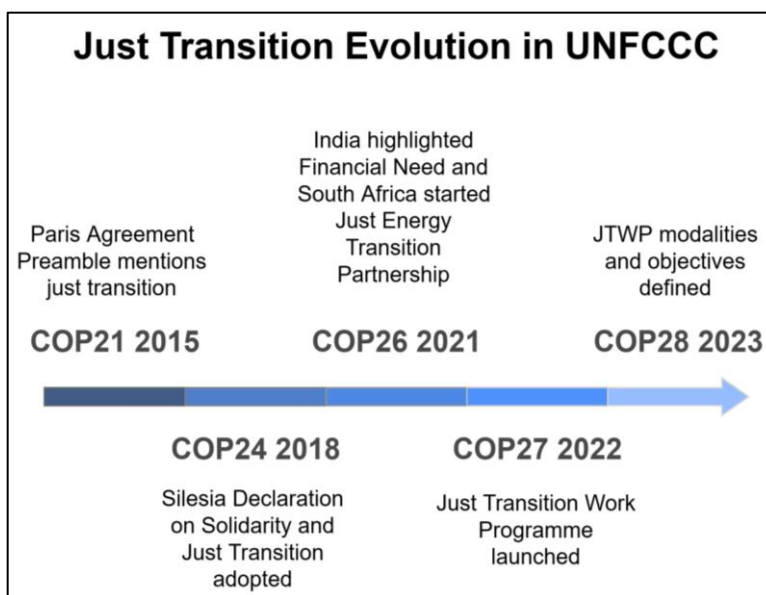
- The International Labour Organization (ILO) defines a just transition as **the process of transitioning from high-carbon, unsustainable systems to low-carbon, sustainable economies in a way that is fair, inclusive, and equitable for all concerned.**

Key Elements of Just Transition:

- Equity:** Protecting the rights and livelihoods of workers and communities, particularly those dependent on high-carbon industries.
- Inclusion:** Ensuring that all stakeholders - workers, governments, industries, and civil society - participate in decision-making.
- Sustainability:** Aligning economic and social systems with the goals of reducing greenhouse gas emissions and conserving natural ecosystems.
- The Just Transition concept was formalized in the **Just Transition Declaration at COP26** and has been further emphasized in subsequent climate discussions.

Initiatives for Just Transition in India

- Pradhan Mantri Khanij Kshetra Kalyan Yojana (PMKKKY):** Aimed at ensuring essential development programs in mining-affected areas, through District Mineral Foundations.
- District Mineral Foundations (DMFs):** Established under the Mines and Minerals (Development and Regulation) Amendment (MMDRA) Act 2015, these non-profit trusts are set up by state governments in mining-affected districts to support local development.
- Production-Linked Incentive (PLI) Scheme – National Programme on High Efficiency Solar PV Modules:** Aimed at fostering an ecosystem for manufacturing high-efficiency solar photovoltaic (PV) modules in India.
- Global Collaboration:** Partnership with the Asian Development Bank to develop a Just Transition Worker Support Facility for coal-dependent districts and states.
- National Clean Energy Fund (NCEF):** A fund raised through a coal cess, used to finance clean energy projects and ventures in India.



COP-16 TO UNCBD

Context: The 16th Conference of Parties (CoP16) to the UN Convention on Biological Diversity (UNCBD) recently concluded in Cali, Colombia.

- This was the first CoP since the adoption of the Kunming-Montreal Global Biodiversity Framework (KMGBF).

About Kunming-Montreal Global Biodiversity Framework (KMGBF)

- The KMGBF is a **non-binding framework adopted at CoP-15 in Montreal, Canada, in 2022. It succeeds the Strategic Plan for Biodiversity 2011-2020 and its Aichi Targets.**

Theme of CoP16:
'Peace with Nature'

- **Aim:** The primary aim of KMGBF is to halt and reverse biodiversity loss by 2030.
- **KMGBF Goals for 2050**
 - **Protect and Restore:** Enhance ecosystem and species health, including halting human-induced species extinction.
 - **Prosper with Nature:** Promote the sustainable use of biodiversity.
 - **Share Benefits Fairly:** Ensure the equitable sharing of benefits derived from the use of **Digital Sequence Information (DSI)** and traditional knowledge related to genetic resources.
 - **Invest and Collaborate:** Close the biodiversity finance gap of \$700 billion per year.
- **KMGBF Targets for 2030**
 - The framework outlines 23 targets focusing on key issues such as addressing biodiversity threats and promoting sustainable use. Some key targets include:
 - **30-by-30 Target:** Conserve 30% of land, sea, and inland waters, and restore 30% of degraded ecosystems by 2030.
 - **Reduce** the introduction of invasive alien species **by 50% by 2030.**
 - Develop **mechanisms for the benefit-sharing from the use of Digital Sequence Information (DSI)** and traditional knowledge associated with genetic resources.

Digital Sequence Information (DSI)

At CoP-16 to the Convention on Biological Diversity (CBD), the **Cali Fund** was established to promote **equitable benefit-sharing from the use of DSI of genetic resources**, aligning with CBD's third objective.

What is Digital Sequence Information (DSI)?

- DSI refers to **genomic and related digital data of organisms**, used in fields like agriculture, pharmaceuticals, and biodiversity conservation.
- **Includes DNA, RNA, protein sequences**, and other biological data. Enables genetic research without physical samples, advancing genetics and conservation.
- DSI lacks a universally agreed definition or scope.

Significance of DSI

- **Genetic Research:** Used in virology (e.g., SARS-CoV-2 diagnostics).
- **Agriculture:** Development of pest-resistant and climate-resilient crops.
- **Biodiversity Conservation:** Supports species protection efforts.
- **Preservation of Traditional Knowledge:** Ensures cultural heritage conservation.

Key Initiatives in India

- **One Day One Genome Initiative:** Launched by DBT and BRIC, India. Aims to release annotated bacterial genomes, fostering innovation and accessibility in microbial genomics.

NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN (NBSAP)

Context: India unveiled its updated National Biodiversity Strategy and Action Plan (NBSAP) for the period 2024-30 at CoP-16 to the UN Convention on Biological Diversity (UNCBD).

About National Biodiversity Strategy and Action Plan (NBSAP)

- NBSAP is a framework developed by countries to promote biodiversity conservation, sustainable use of natural resources, and the fair sharing of benefits arising from genetic resources.
- Article 6 of the UNCBD mandates every signatory country to prepare its own NBSAP.
- The NBSAP serves as the primary tool for mainstreaming biodiversity and implementing the UNCBD at the national level.

Key Highlights of the India's Updated NBSAP (2024-30)

- **Approach:** Adopts a '**Whole of Government**' and '**Whole of Society**' approach, aligned with the Kunming-Montreal Global Biodiversity Framework (KMGBF), to halt and reverse biodiversity loss by 2030, with a longer-term goal of living in harmony with nature by 2050.

- **National Biodiversity Targets (NBTs):** The plan outlines 23 NBTs centered on **three key themes**: Reducing threats to biodiversity; Ensuring the sustainable use of resources; Enhancing tools for effective implementation.
- **Implementation Framework:** The **Ministry of Environment, Forest and Climate Change (MoEFCC)** is the central agency responsible for overseeing the implementation of the NBSAP.
- **Capacity Building:** Emphasizes need-based assessments, target group identification, expert involvement, and skill-building initiatives to strengthen local capacities.
- **Resource Mobilization:** India is recognized as a **leading country in implementing the Biodiversity Finance Initiative (BIOFIN)**, a global partnership by UNDP and European Commission aimed at enhancing financial management for biodiversity and ecosystems.
- **Other Features:**
 - The framework promotes a **collaborative governance model and a bottom-up approach**, engaging local communities and multiple sectors.
 - The **Biological Diversity Act, 2002** established a multi-tier governance structure for biodiversity management.

About Biological Diversity Act, 2002	
Aim	Aligns India with the United Nations Convention on Biological Diversity (UNCBD).
Goals	• Protect and conserve biological diversity. • Promote sustainable use of biological resources. • Ensure fair and equitable benefit-sharing from biological resource utilization.
Institutional Structure	• National Level: National Biodiversity Authority (NBA), HQ at Chennai. • State Level: State Biodiversity Boards (SBBs). (not constituted for UTs). • Local Level: Biodiversity Management Committees (BMCs).
Approvals are Required for	• Foreign Nationals: NBA approval required to access biological resources. • Indian Entities: NBA approval needed to transfer research or materials to foreign parties. • Intellectual Property Rights (IPR): NBA approval needed before filing patents based on research conducted on biological material and/ or associated knowledge obtained from India.
2023 Amendments	• Exemptions: AYUSH practitioners and traditional knowledge holders exempted from ABS. • Penalties: Criminal penalties replaced with fines.
Biological Diversity Rules, 2024	
NBA Chairperson	Appointed by the Central Government for a three-year term.
Functions of NBA	• Administers the National Biodiversity Fund (NBF). • Approves biodiversity-related agreements. • Supports state-level biodiversity bodies. • Maintains databases on biological resources and traditional knowledge.
Penalties	• Range from ₹1 lakh to ₹50 lakh. • Collected fines directed to biodiversity conservation funds.

WORLD COALITION FOR PEACE WITH NATURE

Context: At the UN COP16 on biodiversity, the “World Coalition for Peace with Nature: A Call for Life” was launched.

About the World Coalition for Peace with Nature

- The coalition is voluntary and open to countries that agree to a set of principles focused on reshaping humanity’s relationship with nature.

- **Members:** The coalition includes countries from **four continents, such as Mexico, Sweden, Uganda, and Chile**, though **none from the Asia-Pacific region**. (*India is not a Member as of Dec 2024*)

Objectives:

- Transform human-nature relationship to tackle environmental challenges.
- Uphold rights-based approaches from the Kunming-Montreal Global Biodiversity Framework.
- Mobilize funds for conservation and sustainable development.
- Empower communities and promote collective efforts for peace with nature.

FOREST ECOSYSTEM RESTORATION INITIATIVE

Context: In 2024, the Secretariat of the Convention on Biological Diversity (CBD) marked the 10th anniversary of the launch of the Forest Ecosystem Restoration Initiative (FERI).

About Forest Ecosystem Restoration Initiative (FERI)

- FERI was developed in 2014 as a **collaborative project by the Korea Forest Service** (South Korea), in partnership with the Executive Secretary of the CBD.
- The initiative directly **aids developing countries** in implementing the Kunming-Montreal Global Biodiversity Framework (KMGBF).
- **FERI's Other Initiatives:**
 - **Short-Term Action Plan on Ecosystem Restoration (STAPER)**
 - **WePlan – Forests:** A decision-support platform for tropical forest ecosystem restoration.

About Forest Ecosystem Restoration

Forest ecosystem restoration involves **activities such as:** Replanting trees on former forest lands, Improving the condition of degraded forests, Planting native tree species, conserving wild plants and animals, Protecting soils and water sources that are part of the forest ecosystem.

Major Global Initiatives for Forest Restoration

- **IUCN's Forest Conservation Programme:** Aims for the sustainable management of forests.
- **WWF's Forests for Life Programme:** Focuses on conserving biological diversity.
- **REDD+ Framework:** A UN framework for the sustainable management of forests, with a focus on enhancing forest carbon stocks.
- **Forest and Landscape Restoration Mechanism (FLRM)** by the Food and Agriculture Organization (FAO): Supports forest and landscape restoration efforts globally.

GLACIAL LAKE OUTBURST FLOODS (GLOFS)

Context: A recent report by the Central Water Commission (CWC) has highlighted that glacial lakes and other water bodies in the Himalayas have significantly expanded their surface areas.

Key Findings of the Report

- The surface area of glacial lakes in India has increased by 33.7% between 2011 and 2024.
- Glacial lakes and other water bodies in the Himalayan region (including Bhutan, Nepal, and China) have expanded by 10.81% during the same period, largely due to climate change.
- The regions with the most notable expansions include Ladakh, Himachal Pradesh, Uttarakhand, Sikkim, and Arunachal Pradesh.



About Glacial Lakes and GLOFs

- **Glacial Lakes** are bodies of water formed from the melting of glacial ice, typically in depressions or basins created by glaciers. They can be classified into four types based on their formation process: **Moraine-dammed, Ice-dammed, Erosion and Others**
- **Glacial Lake Outburst Floods (GLOFs)** occur when a moraine or ice dam holding back a glacial lake fails, releasing large volumes of meltwater.

- **Key Features of GLOFs:** Sudden and sometimes cyclic releases of water, Rapid events, lasting from hours to days, Result in large downstream river discharges.
- **Major Causes of GLOFs**
 - **Glacial Surging:** Sudden, rapid glacier movement over a short period (e.g., Gilkey Glacier, Alaska).
 - **Moraine Dam Instability:** Collapse of loose, unstable moraines (e.g., South Lhonak GLOF, Sikkim).
 - **Ice Dam Failure:** Weakened ice structures due to thermal stress, water pressure, or melting.
 - **Seismic Activity:** Tectonic movements destabilize glacial dams, triggering GLOFs.
 - **Human Activity:** Urbanization, mining, deforestation, hydropower projects, and greenhouse gas emissions disrupt natural drainage and slopes, raising GLOF risks.

About Central Water Commission (CWC)

- The CWC is India's premier technical organization in the field of water resources, headquartered at New Delhi. It functions as an attached office of the **Ministry of Jal Shakti**.
- CWC came into existence as Central Waterways, Irrigation and Navigation Commission (CWINC) in **1945** which was established on the advice of Dr. B. R. Ambedkar (Member of Viceroy's Executive Council.)
- **Functions:**
 - Coordinates with state governments on schemes for flood control, irrigation, navigation, drinking water supply, and hydropower development.
 - Conducts investigations, construction, and execution of such projects as needed.
- **Organisation Structure:**
 - **Chairman:** Functions as an Ex-Officio Secretary to the Government of India.
 - **Divided into three wings:** Designs and Research (D&R), River Management (RM), Water Planning and Projects (WP&P)

CO₂ TO METHANOL PLANT

Context: World's First CO₂-to-Methanol Plant was launched by NTPC at Vindhyachal (UP).

About the News

- NTPC has successfully synthesized methanol from CO₂ captured from flue gas and hydrogen produced using a Proton Exchange Membrane (PEM) electrolyzer.
- **Indigenous Catalyst:** NTPC developed its first indigenous methanol synthesis catalyst, marking a significant milestone in sustainable fuel production.

CO₂ to Methanol (CH₃OH) Conversion

- **CO₂ Capture:** Carbon dioxide is extracted from flue gases, which are waste emissions from power plants.
- **Hydrogen Production:** Hydrogen (H₂) is generated using a Proton Exchange Membrane (PEM) electrolyzer that splits water into hydrogen and oxygen using electricity.
- **Methanol Synthesis:** The **captured CO₂ is combined with hydrogen to produce methanol**, a clean fuel with applications across various industries.

EV-AS-A-SERVICE PROGRAMME

Context: Union Minister of Power launched 'EV as a Service' programme of Convergence Energy Services Limited (CESL) at Major Dhyan Chand National Stadium.

About 'EV as a Service' Programme:

- **Objective:** To promote the adoption of electric vehicles (EVs) within government fleets, contributing to India's target of achieving net-zero emissions by 2070.
- **Deployment Target:** Aims to deploy 5,000 E-Cars over the next two years.
- **Nodal Agency:** **Convergence Energy Services Limited (CESL)**, a subsidiary of EESL
- **Flexible Procurement Model:** Enables offices to select EVs tailored to their operational needs.

- **Subscription:** The EV-as-a-Service model provides subscription-based access to electric vehicles within the government sector, removing the burden of high upfront purchase costs.

About Energy Efficiency Services Limited (EESL)

- A government-owned enterprise that champions energy efficiency initiatives in India and globally.
- **Formation:** Established in 2009, registered under the Companies Act, 1956.
- **Ownership:** Operates as a joint venture among four public sector undertakings (PSUs) under the Ministry of Power, Government of India: NTPC Limited, Power Finance Corporation Limited, REC Limited and POWERGRID Corporation of India Limited
- **Convergence Energy Services Limited (CESL):**
 - **CESL** is a new **subsidiary of EESL**, dedicated to promoting electric mobility and renewable energy solutions.
 - It aims to expand battery-powered electric vehicles and infrastructure across India, while also addressing rural energy needs through decentralized solar development.

BOMB CYCLONE

Context: Recently, a bomb cyclone struck the United States and Canada, causing severe weather conditions and triggering road accidents that led to the deaths of more than 30 people.

What is a Bomb Cyclone?

- A bomb cyclone is an **intense midlatitude storm** characterized by: **Low pressure** at its center; **Weather fronts**; Severe weather conditions like **blizzards, thunderstorms, and heavy precipitation**.

Reasons for Formation

- Bomb cyclones form **when a low-pressure air mass** (warm air) **meets a high-pressure air mass** (cold air). The difference in pressure causes air to flow from high to low pressure, creating strong winds.
- A bomb cyclone occurs **when the low-pressure system rapidly intensifies**, causing the pressure to drop by at least 24 millibars within 24 hours. This rapid pressure drops, known as **bombogenesis**, strengthens the pressure gradient and results in even stronger winds.

Aspect	Bomb Cyclone	Hurricane (Cyclone)
Definition	A midlatitude storm with low pressure, fronts, and severe weather like blizzards and thunderstorms.	A powerful tropical storm with high winds and heavy rain.
Formation	Forms when warm and cold air masses meet, causing rapid intensification (pressure drop of 24 millibars in 24 hours).	Forms over warm ocean waters, powered by heat.
Season	Occurs in colder months, rare in summer.	Summer or early fall.
Geographical Formation	Forms in midlatitude regions (e.g., northwestern Atlantic, Mediterranean).	Forms over tropical waters.
Weather Conditions	Brings blizzards, thunderstorms, and heavy precipitation.	Causes high winds, heavy rain, and storm surges.

TSUNAMI READY VILLAGES

Context: Twenty-four coastal villages in **Odisha** have been acknowledged as 'Tsunami Ready' during the 2nd Global Tsunami Symposium in Indonesia.

About Tsunami Ready Recognition Programme (TRRP)

- The TRP Programme by the **Intergovernmental Oceanographic Commission (IOC) of UNESCO** aims **to build resilient coastal communities through awareness and preparedness** to protect lives and property from tsunamis.
- **Objective:** Enhance community preparedness and minimize losses.
- **Indicators:** Communities must fulfill 12 readiness indicators across Assessment, Preparedness, and Response to earn the 'Tsunami Ready' status, **renewable every four years**.

- **Collaborative Effort:** Involves national and local agencies, government, scientists, leaders, and the public.
- **Voluntary Programme:** Focuses on performance-based readiness outcomes.
- Tsunami Ready recognition does not mean that a community is tsunami proof; it is rather the acknowledgement and recognition that a community has adopted mitigation measures to cope with their tsunami risk.
- In India, the Tsunami Ready Programme is overseen by a **National Tsunami Ready Board** established by the Ministry of Earth Sciences.



About Tsunamis

- **Definition:** Tsunamis are a series of **massive waves** caused by underwater disturbances such as **earthquakes, volcanic eruptions, landslides, or rock falls** near the coast.
- The term “tsunami” originates from **Japanese**, with “tsu” meaning harbour & “nami” meaning wave.

Characteristics:

- **Speed:** Travel at speeds exceeding 500 mph in deep waters. Slow to 20–30 mph as they approach shallow waters.
- **Wave Behavior:** The wavelength decreases while the **height increases near the shore**. The wave speed is determined by the ocean’s depth, not the distance from the source.
- **Long Period:** The time between tsunami waves ranges from 10 minutes to 2 hours, much longer than regular ocean waves, which have periods of 5–20 seconds.
- **Series of Waves:** Tsunamis consist of multiple waves arriving at intervals, with the first wave not always being the most destructive. Larger waves may follow, making them unpredictable.

U.S. WITHDRAWAL FROM PARIS AGREEMENT

Context: Among the first executive orders that Donald Trump signed after taking over as President on January 20 was to withdraw the U.S. from the Paris Agreement of 2015.

About the Paris Agreement

- It is an international treaty adopted in 2015, during the **21st Conference of the Parties (COP21) to United Nations Framework Convention on Climate Change (UNFCCC)** in Paris, France.
- It officially came into effect on November 4, 2016, becoming the first legally binding **global accord aimed at addressing climate change and its consequences**.
- India is a member of the Paris Agreement. It ratified the treaty on October 2, 2016.

Key Features

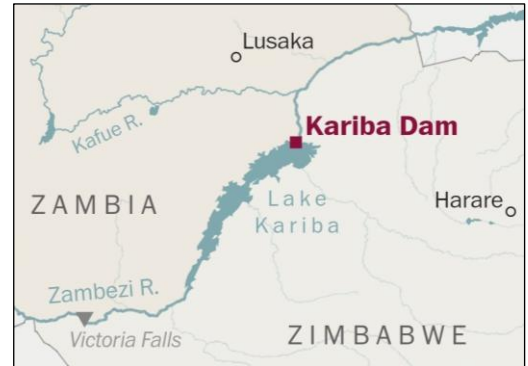
- **Temperature Goals:** The agreement seeks to limit global temperature rise to **“well below” 2°C above pre-industrial levels**, with efforts to cap the increase at 1.5°C to minimize climate risks.
- **Nationally Determined Contributions (NDCs):** Each country establishes its own **emission reduction targets**, which are reviewed and strengthened every five years to enhance climate action.
- **Climate Finance:** At the COP21, nations reaffirmed the commitment made by developed countries to mobilize at least USD 100 billion annually for climate action in developing nations. Originally pledged at COP15 in Copenhagen (2009) and formalized at COP16 in Cancun (2010), this goal was extended at COP21 to remain in effect until 2025.
- **Global Stocktake: Every five years**, countries assess their collective progress toward meeting the agreement’s goals.
- **Legally Binding Framework:** While nations have flexibility in setting their targets, they are obligated to submit climate action plans and transparently report their progress.

LAKE KARIBA

Context: The Kariba Dam, which powers Zambia and Zimbabwe's economies, may have to shut down for the first time in its 65-year history due to a severe drought.

About Lake Kariba

- It is a lake in **central Africa**, along the border between **Zambia and Zimbabwe**. It is positioned 1300 kms upstream from the Indian Ocean.
- It is the **world's largest man-made lake** and covers an area of 5,200 square km.
- It was formed by **damming the Zambezi River** in the Kariba Gorge, where the river narrows between hills of hard rock 250 miles (400 km) below Victoria Falls.
- The Kariba Dam consists of a double-arch wall. It is 128 meters in height, 617 meters in length, 13 meters wide at its top, and 24 meters wide at the base.
- It provides considerable electric power to both Zambia and Zimbabwe and supports a thriving commercial fishing industry.
- The lake includes a total of 102 islands, including well-known ones like **Chete Island and Spurwing Island**. Chete Island boasts the world's largest expanse of protected, undeveloped wetlands and hosts the largest single population of African elephants.



NET-ZERO BANKING ALLIANCE (NZBA)

Context: Wall Street's biggest banks have quit The Net-Zero Banking Alliance.

About Net-Zero Banking Alliance (NZBA)

- The NZBA is a **bank-led initiative, convened by** United Nations Environment Programme Finance Initiative (**UNEP FI**), that brings together global banks committed **to aligning their financing activities with net-zero emissions by 2050**.
- The goal is to support efforts to limit global warming to 1.5°C **by ensuring banks independently align their lending and investment portfolios with science-based decarbonization pathways**.
- NZBA is the flagship climate initiative under the **Principles for Responsible Banking** and a key component of the **Glasgow Financial Alliance for Net Zero (GFANZ)**.
- **Membership:** With 144 banks across 44 countries, it is the largest climate-focused banking coalition, driving systemic change in the financial sector. (No Indian Bank is a member)

About UNEP Finance Initiative (UNEP FI)

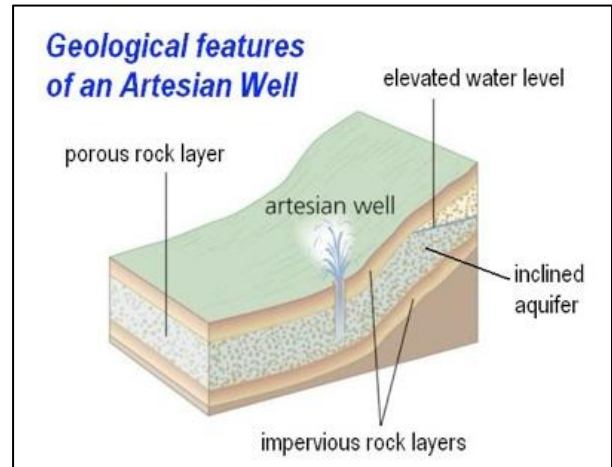
- **Established:** 1992 with the objective to Promote sustainability in banking, insurance, and investment.
- **Headquarters:** Geneva, Switzerland
- **Members:** 500+ banks and insurers managing US\$170+ trillion in assets.
- **Functions:**
 - Connects financial institutions with the UN for sustainable finance.
 - Develops industry frameworks, tools, and guidance.
 - Supports global and regional sustainability initiatives.
- **Key Frameworks:**
 - **Principles for Responsible Banking (PRB):** Aligns banking with sustainable development.
 - **Principles for Sustainable Insurance (PSI):** Integrates sustainability in insurance.
 - **Principles for Responsible Investment (PRI):** Global standard for sustainable investing (incubated by UNEP FI). (Yes Bank is Member of PRI)

ARTESIAN CONDITION

Context: Jaisalmer recently witnessed a unique natural event where artesian water gushed to the surface, providing a striking example of artesian conditions in action.

What is an Artesian Condition?

- An artesian condition occurs when **groundwater is confined under pressure between layers of impermeable rock**, creating what is known as an artesian aquifer.
- **Factors Leading to Artesian Conditions**
 - **Confined Aquifer:** Water is trapped between impermeable rock layers, preventing it from escaping naturally.
 - **Pressure Gradient:** The weight of overlying rock layers exerts pressure on the trapped water, creating internal pressure within the aquifer.
 - **Rupture or Drilling:** When the confining layer is punctured (naturally or through drilling), the built-up pressure is released, pushing water to the surface.
- **How Does It Work?**
 - Once the top impermeable layer is breached, artesian water flows naturally to the surface due to internal pressure. The force of the flow depends on the depth and pressure within the aquifer.
 - In some cases, the water may gush forcefully, forming a free-flowing artesian well.



Global Examples of Artesian Wells

- **Artois, France:** One of the earliest documented artesian wells during the Middle Ages.
- **Australia:** Artesian wells are common in central dry regions, providing water for agriculture and livestock.

ENVIRONMENT RELIEF FUND (AMENDMENT) SCHEME, 2024

Context: The MoEFCC has announced amendments to the Environment Relief Fund Scheme (2008) through the Environment Relief Fund (Amendment) Scheme, 2024.

About Environment Relief Fund Scheme, 2008

- The ERF was **established in 2008 under the Public Liability Insurance Act (PLIA), 1991**.
- It **provides immediate relief to victims of accidents** involving hazardous substances and helps restore environmental damage.

Key Amendments in the 2024 Scheme

- **Fund Ownership:** The ERF is **now explicitly vested in the Central Government**.
- **Fund Sources:** The ERF will now receive funds from:
 - **Compensation** or relief for environmental damage remitted under Section 24 of the National Green Tribunal Act, 2010.
 - **Penalties & additional penalties** under Sections 14, 15, or 17 of the Public Liability Insurance Act.
 - **Interest or returns earned on fund investments.**
- **Fund Management**
 - The **Central Pollution Control Board (CPCB)** has been appointed as the Fund Manager for a five-year period, starting January 1, 2025.
 - Previously, United India Insurance Company Limited managed the fund.
- **Payment & Disbursement Mechanism**
 - **Modernized Transactions:** Payments to the ERF can now be made via Demand Draft or electronic modes, ensuring convenience and efficiency.
 - **Timely Disbursements:** Mandated release of funds within 30 days of receiving orders from the District Collector or Central Government.

- **Increased Allocation for Administration:** Administrative expense allocation raised from 1% to 2%, allowing for better fund management and operational efficiency.

RECALCULATION OF INDIA'S COASTLINE

Context: The recalculation of India's coastline was conducted under the Ministry of Home Affairs (MHA), guided by the National Maritime Security Coordinator.

Overview of Coastline Growth

- **1970 Coastline Length:** 7,516 km
- **2023-24 Coastline Length:** 11,098 km
- **Increase: 47.6%** (Approx. 3,582 km added)
- **Reason for Change:** Adoption of new methodologies for measuring coastal features.

Aspect	Old Methodology (1970)	New Methodology (2023-24)
Basis	Straight-line distances	Included complex coastal formations
Coastal Features Measured	Limited to general shoreline length	Incorporated bays, estuaries, inlets, and other geomorphological features
Technology Used	Basic tools and manual calculations	Advanced geospatial technologies and mapping tools
Accuracy	Less precise	More precise representation of dynamic coastline
Coastline	7,516 km	11,098 km

Coastline Changes by States & UTs

States/UTs with Significant Growth

- **Gujarat:** 1,214 km (1970) → 2,340 km (2023-24). **Largest absolute increase in coastline length.** Retains its position as the state with the longest coastline.
- **West Bengal:** 157 km → 721 km (357% increase, highest percentage growth).
- **Tamil Nadu:** 906 km → 1,068 km (Now longer than Andhra Pradesh's coastline).

States/UTs with Minimal or Negative Changes

- **Kerala:** Smallest increase, 590 km → 620 km (+5%).
- **Puducherry:** 47 km → 42.1 km (-10.4% decrease). Only UT to witness a reduction, attributed to erosion and refined calculations.
- **Tamil Nadu vs. Andhra Pradesh:** Tamil Nadu now has a longer coastline (1,068 km) than Andhra Pradesh (1,053 km).

Coastlines of Emergence & Submergence

- **Coastlines of Emergence:** Formed when land is uplifted or sea level lowers. Example: Tamil Nadu (Coromandel Coast)
- **Coastlines of Submergence:** Created when land sinks or sea level rises. Example: Northern Kerala (Submerged due to faulting)

SOAPSTONE MINING

Context: The Uttarakhand High Court pulled up the authorities for unregulated soapstone mining in Bageshwar, district.

What is Soapstone?

- Soapstone, also known as **steatite**, is a **metamorphic** rock primarily composed of **talc**. It is soft, has a soapy feel, and is highly **heat-resistant**, making it valuable for various applications.

Formation of Soapstone

- Forms at **convergent plate boundaries**, where Earth's crust is exposed to heat and pressure.
- **Metamorphosis of peridotites, dunites, and serpentinites** leads to soapstone formation.
- **Metasomatism** (chemical alteration of siliceous dolostones by hot fluids) can also create soapstone.

Methods of Extraction

- **Open-Pit Mining (Most Common Method):** Involves large quarries to extract soapstone.
- **Underground Mining:** Used for deeper deposits or when open-pit mining is not feasible due to environmental concerns.

Uses of Soapstone

- Construction (countertops, tiles, fireplaces)
- Sculptures and carvings (art and decorative items)
- Cookware (heat-resistant stoves, utensils)
- Industrial applications (insulation, electrical panels, laboratory countertops)

BLUE FLAG BEACH CERTIFICATION

Context: Kappad and Chal beaches in Kerala have earned the Blue Flag certification.

About Blue Flag Beach Certification

- The Blue Flag Certification is a **world-renowned eco-label awarded to beaches, marinas, and sustainable boating tourism operators** that meet stringent environmental, educational, safety, and accessibility standards.
- It is **administered by the Foundation for Environmental Education (FEE)**, headquartered in **Copenhagen, Denmark**.
- This certification **signifies high environmental and safety standards, ensuring clean and well-managed coastal areas**.
- **The Blue Flag Programme started in France in 1985. It has been implemented in Europe since 1987 and in areas outside of Europe since 2001, when South Africa joined.**
- It also **aligns with Sustainable Development Goal (SDG) 14: Life Below Water**.
- **Criteria for Blue Flag Certification** To qualify, beaches, marinas, and tourism boats must meet 33 strict criteria across four key areas:
 - Environmental Education & Information
 - Bathing Water Quality
 - Environmental Management
 - Safety & Services

India's Efforts in Sustainable Beach Management

- **BEAMS Program (Beach Environment & Aesthetic Management Services)**
 - Launched by the Ministry of Environment, Forest, and Climate Change (MoEF&CC).
 - Aims to promote sustainable coastal tourism and beach management.
- **Integrated Coastal Zone Management (ICZM) Project**
 - Implemented by Society of Integrated Coastal Management (SICOM).
 - Focuses on protecting coastal environments and promoting eco-friendly tourism.

BOREAL FORESTS

Context: A new study has revealed that nearly half of the global boreal forests are undergoing major transitions due to climate change, making them increasingly vulnerable to forest fires and altering their role as a key carbon sink.

What is Boreal Forest?

- Boreal forests, also known as **taiga**, are the **largest biome of forests found in the Northern Hemisphere**, covering regions of Canada, Russia, Scandinavia, and Alaska.
- Found exclusively in the Northern Hemisphere between 45° and 70° north latitude, these forests play a crucial role in regulating the global climate and storing carbon.

Global and Indian Soapstone Deposits

- **Major Producing Countries:** China, India, Brazil, USA, and Finland
- **Soapstone Reserves in India (Indian Bureau of Mines Data):** Rajasthan: 57% (largest producer); Uttarakhand: 25%; Andhra Pradesh (minor deposits). India exports soapstone to markets in Europe and the Middle East.

13 Indian beaches in the Blue Flag List

- **Shivrajpur** (Gujarat)
- **Ghoghla** (Diu)
- **Kasarkod and Padubidri** (Karnataka)
- **Rushikonda** (Andhra Pradesh)
- **Golden Beach** (Odisha)
- **Radhanagar** (Andaman and Nicobar)
- **Kovalam** (Tamil Nadu)
- **Eden** (Puducherry)
- **Minicoy Thundi Beach and Kadmat Beach** (Lakshadweep)
- **Kappad and Chal** (Kerala)

- Boreal forests occupy approximately 11% of the earth's surface.

Climate & Precipitation

- **Temperature: Winters:** Long, harsh, freezing (as low as -40°C). **Summers:** Short, mild (10-20°C)
- **Precipitation:** 300–850 mm annually (mostly as snow).
- **Vegetation:** Dominated by coniferous trees: Spruce, fir, pine, larch. Low plant diversity due to extreme climate.
- **Global Importance:** Canada's boreal forest covers 28% of the world's boreal zone. Second only to the Amazon in ecological significance (carbon storage & oxygen production).

Wildlife and Ecosystem

- **Large mammals:** Moose, caribou, bears, wolves.
- **Predators:** Lynx, foxes.
- **Small mammals & birds:** Squirrels, snowshoe hares, owls.
- **Soil:** Acidic & nutrient-poor, limiting plant growth. Thick litter layer due to slow decomposition of organic matter.
- **Ecosystem Traits:** Harsh conditions limit biodiversity. Plays a crucial role in carbon sequestration, helping regulate the global climate.

BIENNIAL UPDATE REPORT (BUR-4)

Context: India has submitted its Biennial Update Report (BUR-4).

What is Biennial Update Report (BUR)?

- The **BUR** is a report submitted by developing countries (non-Annex I Parties) to the United Nations Framework Convention on Climate Change (UNFCCC) every two years.
- It provides updates on greenhouse gas (GHG) emissions, climate actions, and support received for climate mitigation and adaptation.
- It provides a detailed account of national climate action, including:
 - National climate conditions & policies
 - Socio-economic factors
 - Forestry & carbon absorption data
 - GHG emissions inventory & mitigation measures
 - Financial, technological, and capacity-building support received

KASHMIR CHINARS (PLATANUS ORIENTALIS)

Context: The Jammu and Kashmir government has launched a “Digital Tree Aadhaar” program to conserve the Chinar trees (state tree of Jammu & Kashmir).

About Kashmir Chinars (Platanus Orientalis)

- **Common Name:** Oriental Plane Tree
- **Appearance:** Maple-like tree with a huge canopy.
- **Growth Rate:** Takes 30-50 years to mature. 150 years to reach full size.
- **Climate Preference:** Found in cool, water-rich regions.
- **Spread & Native:** Habitat Extensive in Kashmir, particularly in the Eastern Himalayas. **Native to Greece** and Southern Europe.
- **Mughal Connection:** Emperor Akbar and Jahangir planted Chinars in Naseem Bagh, Shalimar Bagh & Nishat Bagh. The reference of the tree can be seen in both Akbar Nama as well as Tuzk-e-Jahangiri.
- **Char Chinar (Dal Lake, Srinagar):** Named after four Chinar trees planted on an island in the lake.
- **Uses & Significance**
 - **Cultural & Historical:** Integral to Kashmiri heritage and Mughal gardens.
 - **Medicinal Uses:** Used in traditional medicine.
 - **Wood & Dye Production:** Wood used for furniture & handicrafts. Leaves/bark used for natural dyes.

WETLAND CITY ACCREDITATION

Context: Indore and Udaipur have become the first two Indian cities to join the global list of accredited wetland cities.

About Wetland City Accreditation (WCA)

- The Wetland City Accreditation Scheme is an initiative under the Ramsar Convention on Wetlands that **recognizes cities for their efforts in conserving, managing, and sustainably using urban and peri-urban wetlands.**
- It **aims to encourage positive relationships between cities and wetlands** by integrating these ecosystems into urban planning, policy-making, and governance.
- Established under **Resolutions XII.10 (2015) and XVI.10 (2022) of the Ramsar Convention.**
- It is a **voluntary scheme** that allows cities to gain international recognition for their wetland conservation efforts.
- **Objectives**
 - Encourage wetland conservation within cities.
 - Promote public awareness about the role of wetlands in urban sustainability.
 - Enhance local governance for wetland protection.
 - Support sustainable urban development while maintaining ecological balance.
- Accreditation is granted to only those cities which satisfy all the six international criteria including adopting measures for conservation of wetlands and their ecosystem services.
- The global list of 74 accredited wetland cities comprises the
- As of January 24, 2025, **74 cities** (including Indore (M.P.) and Udaipur (Rajasthan)) have been accredited under this scheme. Highest cities are from China (22) followed by France (9).

India's Nominated Cities & Their Wetlands

Indore (Madhya Pradesh)	Udaipur (Rajasthan)
• Key Wetland: Sirpur Lake (Ramsar Site) • Why Is It Nominated? ◦ Bird Conservation: 200+ Wetland Mitras actively protect the Sarus Crane. ◦ Wetland Development: Being developed into a Bird Sanctuary.	• Key Wetlands: Pichola, Fateh Sagar, Rang Sagar, Swaroop Sagar, Doodh Talai • Why Is It Nominated? ◦ Microclimate Regulation: Wetlands help stabilize the city's climate. ◦ Natural Disaster Buffer: Protects against extreme weather events.

About Ramsar Convention & Wetland Conservation

- **Adopted:** 1971, Ramsar, Iran.
- **Objective:** Sustainable conservation & use of wetland ecosystems.
- **India's Wetlands:**
 - 89 Ramsar Sites protected under the treaty in India/
 - **Mission Amrit Sarovar:** Rejuvenating 75 wetlands per district.
 - Wetlands (Conservation & Management) Rules, 2017 provide a legal framework for protection.

PANGSAU PASS

Context: The three-day Pangsau Pass International Festival recently concluded in Arunachal Pradesh.

About Pangsau Pass

- Pangsau Pass is a mountain pass (3,727 feet (1,136 m) in altitude) located on the **India-Myanmar border, connecting Arunachal Pradesh with Myanmar.**
- The pass, often referred to as "**Hell's Gate**," holds immense historical value due to its **connection with World War II** and the **Stillwell Road (Ledo Road)**, which was constructed to facilitate military movement between India and China.

Pangsau Pass International Festival (PPIF)

- The PPIF is an **annual cultural event** held in **Nampong, Arunachal Pradesh**, near the India-Myanmar border.
- The festival, **first launched in 2007**, was conceived to **strengthen cross-border relations and celebrate the region's rich ethnic diversity.**

- After a four-year break due to the COVID-19 pandemic and political instability in Myanmar, the festival returned in January 2025.

SOUTHERN CALIFORNIA WILDFIRES 2025

Context: Wildfires in Los Angeles, California, have killed many people, forced over 130,000 evacuations, and destroyed homes, including those of celebrities like Paris Hilton and Billy Crystal.

What is Wildfire?

- Wildfires are **uncontrolled fires that spread rapidly across vegetation-covered landscapes**, including forests, grasslands, and scrublands.
- They are a **natural phenomenon** but have become more frequent and intense due to climate change and human activities.

Causes of Wildfires

- Wildfires are caused by both natural and human activities, but 85% of all wildfires worldwide are triggered by human-induced factors.

Natural Causes		Human-Induced Causes	
● Lightning Strikes: Dry conditions and thunderstorms increase the risk of ignition. ● Spontaneous Combustion: Under extreme heat, dry vegetation can self-ignite. ● Volcanic Eruptions: Lava flows and hot ash can set surrounding vegetation on fire. ● High Temperatures & Drought: Prolonged dry seasons make forests highly flammable. ● Strong Winds: Spread embers over long distances, igniting new fires.		● Agricultural Practices: Slash & burn farming and land clearing. ● Discarded Cigarettes & Campfires: Poorly extinguished fires or cigarettes can ignite dry vegetation. ● Power Lines & Equipment Failures: Sparks from electrical faults or machinery in dry areas can start fires. ● Arson: Intentional setting of fires for land disputes, revenge, or economic gain. ● Deforestation & Land Encroachment: Human expansion into forested areas increases fire risks.	
Impacts of Wildfire			
Environmental	● Deforestation & Habitat Loss: Over 6 million hectares of forests are lost annually to wildfire. ● Biodiversity Loss: 2019-20 Australian bushfires affected 3 billion native vertebrates. ● Soil Erosion & Degradation: Increases landslides and desertification. ● Air Pollution: 91 million metric tons of CO₂ emitted in 2020 California wildfires.		
Economic	● Infrastructure Damage: The 2018 Camp Fire, California caused \$16.5 billion in losses. ● Agriculture Damage: Over USD 1 billion of loss to agricultural production systems. ● Tourism Decline: Wildfires affect national parks and wildlife reserves.		
Human Health	● Respiratory Issues: PM2.5 exposure leads to asthma and heart diseases. ● Deaths: 339,000 premature deaths annually from wildfire pollution. ● Displacement: Thousands evacuated yearly.		

Benefits of Wildfires: Despite the devastation caused by wildfires, there are natural benefits associated with them:

- **Nutrient Cycling:** Wildfires help in the process of nutrient cycling. The fire burns dead plant material, releasing nutrients back into the soil, which enriches it and allows new vegetation to grow.
- **Habitat Creation:** Some plant species depend on fire for regeneration, as their seeds only germinate in the heat of a blaze. Wildfires can thus promote the growth of new plants and restore ecological balance.
- **Control of Pests and Diseases:** Fires help control insect populations and the spread of diseases that could otherwise devastate ecosystems.

INDIGENOUS HYDROGEN TRAIN ENGINE

Context: India has developed the world's most powerful hydrogen-powered train engine under the "Hydrogen for Heritage" project announced by the Ministry of Railways in 2023.

About the Indigenous Hydrogen Train Engine

- It is the **world's most powerful hydrogen-powered train engine, boasting a 1,200-horsepower capacity**—far exceeding the 500-600 horsepower engines produced by the only four other countries (Germany, France, Sweden, China) with similar technology.

Key Features:

- It is designed by **Research, Design, and Standard Organization (RDSO)**, Lucknow and manufactured by **Integral Coach Factory, Chennai**. The pilot is planned for the **Jind-Sonipat route**.
- The technology can be adapted for trucks, tugboats, and other transport applications.
- The Union Budget 2023–24 allocated funds for the development of 35 hydrogen fuel cell trains under the "Hydrogen for Heritage" initiative.
- This project **aims to retrofit existing Diesel-Electric Multiple Unit (DEMU)** rakes with hydrogen fuel cells to promote green transportation and support India's net-zero carbon emission goals by 2030.
- Although hydrogen-powered trains require high initial investment due to green hydrogen production, technology, and infrastructure costs, experts expect prices to fall with large-scale adoption.
- It also eliminates the need for electrified routes, making it ideal for non-electrified sections, avoiding costly and time-consuming overhead cable installation.

INTERNATIONAL YEAR OF GLACIERS' PRESERVATION 2025

Context: In December 2022, the UN General Assembly declared 2025 as the International Year of Glaciers' Preservation and **March 21 as the World Day for Glaciers**.

- UNESCO will host celebrations of the very first World Day for Glaciers at its Paris headquarters on 20-21 March.
- Coordinating Bodies:** UNESCO and the World Meteorological Organization (WMO).
 - UNESCO and WMO are the lead agencies coordinating these international efforts supported by over 75 international organizations and 35 countries.
- Objective:** To raise global awareness about glaciers' critical role in climate regulation, the hydrological cycle, and their economic, social, and environmental significance.
- Similar Efforts:** Five Years of Action for Mountain Development (2023-2027), Water for Sustainable Development Decade (2021-2028), and UN Decade on Ecosystem Restoration (2021-2030).

YALA GLACIER

Context: Yala Glacier, one of Nepal's most extensively studied glaciers, is expected to vanish by the 2040s due to rapid ice loss.

About Yala Glacier

- Yala Glacier is situated in the Langtang Valley, central Nepal. It is the only glacier in the entire Himalayas to be included in the **Global Glacier Casualty List, a project launched in 2024** through a collaboration between Rice University, University of Iceland, Iceland Glaciological Society, World Meteorological Organization (WMO), World Glacier Monitoring Service, and UNESCO.
- Retreat & Shrinkage:** The glacier retreated 680 meters between 1974 and 2021. It lost 36% of its area and significant elevation.
- Scientific Importance:** It is one of the few glaciers in the Hindu Kush Himalayas with over a decade of reliable measurements. Annual data is submitted to the World Glacier Monitoring Service.
- Concerns:** Hindu Kush Himalaya region is warming twice as fast as the global average, affecting 240 million people dependent on glacial water. 2023 recorded highest glacier mass loss in five decades.

CHHATTISGARH ADPTS GREEN GDP

Context: Chhattisgarh has become the first state in India to incorporate its forest ecosystem into Green Gross Domestic Product (Green GDP).

Understanding Green GDP

- **Traditional GDP measures a country's economic output by calculating the annual value of goods and services produced.** However, Simon Kuznets, the economist who developed GDP, cautioned that it **fails to account for environmental and social costs, making it an incomplete measure of a nation's well-being.**
- **Green GDP** is a refined version of GDP that **incorporates environmental costs associated with economic activities.** It accounts for-
 - **Natural Resource Depletion:** The loss of forests, minerals, and water due to overuse.
 - **Ecosystem Degradation:** Damage from pollution, deforestation, and biodiversity loss.

$$\text{Green GDP} = \text{NDP (i.e. Net Domestic Product)} - (\text{Cost of Natural Resource Depletion} + \text{Cost of Ecosystem Degradation})$$

BHARAT CLEANTECH MANUFACTURING PLATFORM

Context: The Bharat Cleantech Manufacturing Platform (BCMP) initiative was launched by the Union Minister of Commerce & Industry at the Bharat Climate Forum 2025 in New Delhi.

About Bharat Cleantech Manufacturing Platform (BCMP)

- It is designed to strengthen India's cleantech value chains in key sectors such as solar, wind, hydrogen, and battery storage.
- **Key Objectives:** Boost domestic manufacturing in the clean energy sector; Reduce reliance on subsidies and make the sector self-sustaining; Encourage collaboration & innovation among Indian firms; Facilitate financing for clean energy businesses; Position India as a global leader in cleantech manufacturing.

About Cleantech (Clean Technology)

- Cleantech refers to technologies, products, and processes that reduce environmental impact by minimizing pollution, conserving energy, and utilizing sustainable resources.
- It includes renewable energy (solar, wind, hydro, biomass), energy efficiency, waste management, water purification, and green transportation.
- Cleantech Manufacturing involves producing clean technologies while ensuring sustainability throughout the supply chain.

FIRST-EVER GLOBAL FRESHWATER FAUNA ASSESSMENT BY IUCN

Context: The International Union for Conservation of Nature (IUCN) has conducted the first-ever multi-taxon global freshwater fauna assessment for the IUCN Red List of Threatened Species.

Study Findings:

- One-quarter of freshwater fauna face extinction risk.
- Covers 23,496 species (decapod crustaceans, fishes, odonates).
- **Hotspots of Threatened Species:** Lake Victoria (Kenya, Tanzania, Uganda), Lake Titicaca (Bolivia, Peru), Sri Lanka's Wet Zone, Western Ghats (India)
- Prevalent threats include pollution, dams and water extraction, agriculture and invasive species, with overharvesting also driving extinctions.
- 35% of wetland area was lost between 1970 and 2015, at a rate three times faster than that of forests.

What are Freshwater Landscapes?

- Freshwater landscapes refer to ecosystems that are primarily composed of **freshwater bodies such as rivers, lakes, wetlands, ponds, streams, and groundwater systems.** They have less than 0.5 parts per thousand (ppt) dissolved salts.
- Freshwater landscapes are home to 10% of all known species on Earth. However, they face multiple threats that endanger their ecological balance.

KAMPALA DECLARATION

Context: Kampala Declaration was recently adopted at the Extraordinary African Union Summit on the Comprehensive Africa Agriculture Development Program (CAADP) in Kampala, Uganda.

About Kampala Declaration (2026–2035)

- The Kampala Declaration is a policy framework for Africa's agricultural transformation from 2026 to 2035. It replaces the **Malabo Declaration (2014–2025)**.
- It moves from an agriculture-led growth model to a broader agri-food systems approach. It focuses on resilient, sustainable food systems to combat climate change, food insecurity, and malnutrition.
- It aligns with Agenda 2063's goal of achieving "The Africa We Want" and the Africa Common Position on Food Systems.

Background & Evolution

- **2003 Maputo Declaration:** Urged 10% national budget allocation to agriculture and 6% annual productivity growth.
- **2014 Malabo Declaration:** Set goals for hunger eradication, intra-African trade expansion, resilience-building, and accountability.
- **2024 AU Review:** Africa is off-track in meeting Malabo targets; hunger remains a major challenge (20.4% of population affected).

MANUFACTURED SAND (M-SAND)

Context: Coal India Ltd (CIL) has implemented an **OB to M-Sand initiative**, repurposing overburden waste into usable sand.

About M-Sand

- M-Sand is a substitute for natural river sand, made by crushing rocks or quarry stones.
- **Sources of M-Sand:**
 - **Crushed Rock Fines (Crusher Dust):** Obtained from stone crushing plants.
 - **Overburden (OB) from Coal Mines:** The fragmented rock waste from opencast mining, particularly where sandstone content is high.
- **Government Initiative:** The **Sand Mining Framework (2018)** by the **Ministry of Mines encourages the use of M-Sand to reduce reliance on river sand.**

Advantages of M- Sand:

- It is **cost-effective**, with lower production costs than river sand, and generates additional revenue for coal companies.
- Environmentally, it **reduces dependency on river sand**, preventing erosion and protecting aquatic ecosystems.
- **Utilizing overburden waste from mining**, M-Sand frees up land occupied by OB dumps for productive use.
- Technically, it **provides consistent quality with uniform grain size, enhances workability** due to its rough texture, and **requires no pre-washing**, reducing water consumption.

GLOBAL ENERGY ALLIANCE FOR PEOPLE AND PLANET (GEAPP)

Context: GEAPP has joined ISA's Multi-Donor Trust Fund to help mobilize \$100 million for high-impact solar projects.

About Global Energy Alliance for People and Planet (GEAPP)

- The GEAPP was launched at COP26 in 2021 **to drive an inclusive global transition to renewable energy** while addressing climate change, energy poverty, and economic growth in developing nations.
- It was launched by **The Rockefeller Foundation**, with support from the **IKEA Foundation** and **Bezos Earth Fund**.
- GEAPP provides country-level support to:

- **7 Foundation Countries:** Congo, Ethiopia, **India**, Indonesia, Nigeria, South Africa, and Viet Nam. These countries were selected based on their potential impact and government commitments to clean energy.
- **13 Additional Countries** where scalable and replicable solutions are being tested.
- A broader network of 80+ countries benefiting from GEAPP's initiatives.

WEF GLOBAL PLASTIC ACTION PARTNERSHIP (GPAP)

Context: The GPAP by the World Economic Forum has expanded to 25 countries.

About Global Plastic Action Partnership (GPAP)

- It is a **platform launched by the World Economic Forum (WEF)** in September 2018 during the Sustainable Development Impact Summit **to combat plastic pollution.**
- **Objectives**
 - Accelerate the global response to plastic pollution by bringing together governments, businesses, and civil society.
 - Advance a circular plastics economy to reduce plastic waste emissions and protect land and ocean ecosystems.
- It brings together **governments, businesses, and civil society to translate commitments into concrete action at global and national levels.**
- GPAP works to scale up plastic waste management efforts by sharing knowledge and best practices across regions.
- It operates globally with a focus on several countries where it has established **National Plastic Action Partnerships (NPAPs).**
- The GPAP currently has 25 members, including State of **Maharashtra (India).**

COMPRESSED AIR ENERGY STORAGE (CAES) SYSTEM

Context: China's 300 MW compressed air energy storage (CAES) facility in Hubei Province, has become the world's largest operational project of its kind.

About Compressed Air Energy Storage (CAES)

- CAES technology **uses electricity to compress and store ambient air under pressure in subterranean reservoirs**, such as caverns and salt mines. **When power is required, compressed air is drawn through the expander to power a generator.**
- During periods of low electricity demand, excess energy (often from renewable sources like wind or solar) is used to compress and store air. When demand rises, the compressed air is released, heated, and expanded through turbines to generate electricity.
- CAES helps stabilize power grids, enhances renewable energy integration, and provides a reliable backup during peak demand periods.

CRYO-BORN BABY CORALS

Context: The world's first cryo-preserved baby corals have been successfully transplanted onto the Great Barrier Reef, marking a significant breakthrough in marine conservation.

What is Coral Cryopreservation?

- It is the **process of freezing coral cells and tissues at extremely low temperatures to preserve them for future use.**
- Since coral cells contain water, freezing them can cause ice crystal formation, which may damage their structure. To prevent this, researchers use **cryoprotectants**—substances that remove water from cells and help maintain their integrity during freezing and thawing.

The Process:

- During coral spawning, corals release bundles of sperm and eggs. Scientists collect these bundles, separate the sperm, and immediately freeze them in liquid nitrogen at -196°C. At this temperature, all biological activity ceases, allowing indefinite storage.

- The frozen samples are transported to biosecure seed banks, where they remain in alarmed liquid nitrogen chambers.
- When needed for reef restoration, the frozen samples are carefully thawed using specialized techniques to revive the coral cells.

About Coral Reefs

- Corals are marine invertebrates belonging to the class Anthozoa in the phylum Cnidaria.
- They form reefs by building colonies of polyps that secrete calcium carbonate (limestone) skeletons and depend on symbiotic algae (zooxanthellae) for nutrition.
- **Distribution:** Primarily found in warm, shallow waters between 30°N and 30°S latitude, thriving in temperatures between 16-32°C.
- **Depth:** Most coral reefs grow at depths of less than 50 meters, where sunlight is sufficient for photosynthesis.

TRANSLOCATION OF TIGERS

Context: Madhya Pradesh will translocate 15 tigers (12 tigresses and 3 tigers) to Rajasthan, Chhattisgarh, and Odisha, pending central approval. The tigers will be relocated from Bandhavgarh, Pench, and Kanha Tiger Reserves.

About Kanha Tiger Reserve (KTR)

- **Location:** Mandla and Balaghat districts (Madhya Pradesh) part of the Maikal range in the Satpuras.
- **History:** Declared a reserve forest in 1879 and revalued as a wildlife sanctuary in 1933. Its position was further upgraded to a National Park in 1955.
- **Significance:** Inspired The Jungle Book & introduced India's first mascot, **Bhoorsingh** Barasingha.
- **Flora & Fauna:** Dominated by sal forests and home to Royal Bengal Tigers, leopards, sloth bears, and Barasingha.

About Bandhavgarh Tiger Reserve

- **Location:** Umaria district (MP), between the Vindhyan and Satpura ranges.
- **History:** Declared a national park in 1968 and a Tiger Reserve in 1993.
- **Cultural Significance:** Home to Bandhavgarh Fort, linked to Lord Rama.
- **Fauna:** High tiger density, along with leopards, wild dogs, jackals, and deer species.

About Pench Tiger Reserve

- **Location:** Spans Seoni and Chhindwara districts (MP) and Nagpur (Maharashtra).
- **Named after:** The Pench River, flowing through the reserve.
- **Inspiration for:** The Jungle Book by Rudyard Kipling
- **Flora & Fauna:** Rich in teak, mahua, and grasslands, with diverse wildlife, including tigers, leopards, Indian bison, and 325 bird species.

HOLLONGAPAR GIBBON WILDLIFE SANCTUARY

Context: The Standing Committee of the National Board for Wildlife has approved oil and gas exploration in the eco-sensitive zone of Hollongapar Gibbon Wildlife Sanctuary in Assam.

About Hollongapar Gibbon Wildlife Sanctuary

- **Location:** Jorhat district, Assam. Extends into Dissoi Valley Reserve Forest, Dissoi Reserve Forest, and Tiru Hill Reserve Forest.
- **Established:** 1997.
- **Significance:** Home to India's only gibbons—the hoolock gibbons.
 - Hosts Northeast India's only nocturnal primate—the Bengal slow loris.
 - Other primates include Capped Langur, Rhesus Macaque, Assamese Macaque, Pigtailed Macaque, and Stump-tailed Macaque.

About Hoolock Gibbons: India's Only Ape

- Hoolock gibbons are the **only apes found in India** and are part of the primate family, which also includes monkeys, langurs, and chimpanzees.

- They are **confined to the seven northeastern states of India**, with the Brahmaputra River serving as their natural distribution boundary.
- These **arboreal** species prefer the dense canopies of evergreen forests, using their long forelimbs to swing from branch to branch. Their **loud "holou" calls**, from which their name is derived, play a key role in territorial marking and social communication.
- **Western Hoolock Gibbon (Hoolock hoolock)** – The predominant species in India. (**IUCN-Endangered**)
- **Eastern Hoolock Gibbon (Hoolock leuconedys)** – Primarily found in Myanmar and southern China, but a few individuals in the Mishmi Hills of Arunachal Pradesh exhibited morphological similarities to this species. (**IUCN- Vulnerable**)
- Both of the species are listed in CITES Appendix I and WPA Schedule 1.

KaWaCHaM

Context: The Kerala government has recently launched KaWaCHaM, one of the world's fastest weather alert systems, aimed at enhancing disaster preparedness and public safety.

About KaWaCHaM

- The KaWaCHaM stands for **Kerala Warnings Crisis and Hazards Management System**.
- KaWaCHaM is an **advanced disaster warning system that integrates alerts, sirens, and global weather models to provide timely warnings**.
- It is developed with funding from the **National Disaster Management Authority (NDMA)** and the **World Bank** under the **National Cyclone Risk Mitigation Project**.
- The project focuses on **early disaster preparedness**, improving rescue operations, and ensuring public safety during emergencies.
- KaWaCHaM **integrates all early warning systems into a single framework**, ensuring hazard assessment, alert issuance, and action planning based on threat levels.
- The ambitious warning network system, headed by the state emergency operation centre, will operate at the **taluk (subdistrict)** level and cover all vulnerable areas.
- KaWaCHaM collects data from various sources, including weather networks such as India Meteorological Department, INCOIS, and CWC, private and public agencies, social media networks, and the Internet.

GARUDAKSHI

Context: Recently, the Karnataka Forest Department has launched the 'Garudakshi' online FIR system to curb wildlife crimes.

About Garudakshi Portal:

- It is software modelled on the online FIR system to curb wildlife and forest crimes.
- It will be implemented on a pilot basis in the Bengaluru Urban, Bhadravathi, Sirsi and Male Mahadeshwara Wildlife Sanctuary divisions of Karnataka.
- Once the software is implemented, registering FIRs using the Garudakshi portal will be made compulsory.
- It will enable the online handling of forest crime cases under the Forest and Wildlife Protection Acts.
- It is developed in collaboration with the Wildlife Trust of India (WTI).

CALAMITY OF SEVERE NATURE

Context: The Centre has reiterated that the Inter-Ministerial Central Team (IMCT) considers the landslides in Wayanad to be a "disaster of severe nature for all practical purposes."

What is the Calamity of Severe Nature?

- A calamity of severe nature refers to a **disaster that causes widespread destruction, severely impacting human life, property, and essential services**.
- This designation is made by the Union government to indicate the scale and intensity of a disaster, requiring additional assistance from the National Disaster Response Fund (NDRF).

Legal Framework and Classification

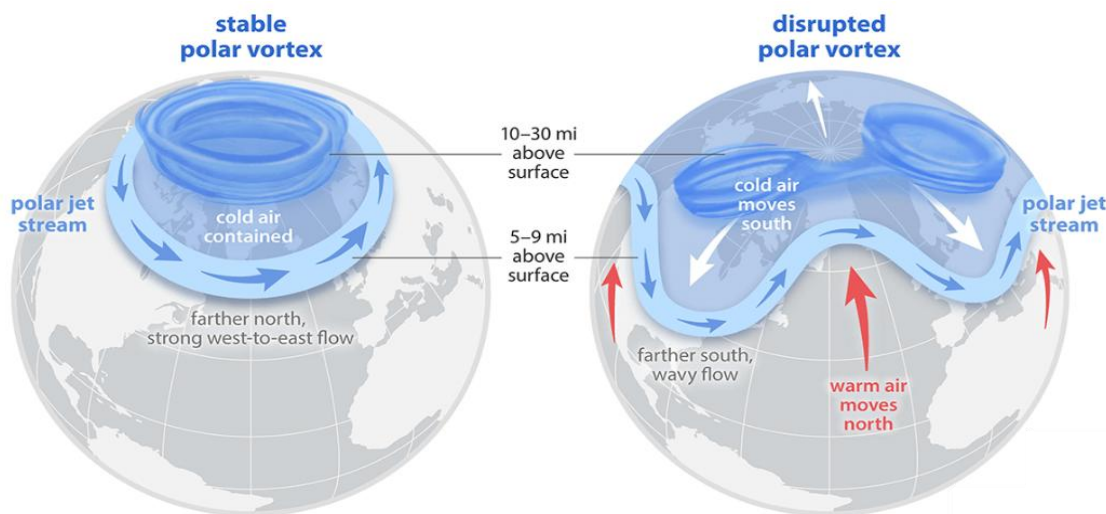
- According to the National Disaster Management Policy, **state governments are primarily responsible for providing disaster relief** using their State Disaster Response Funds (SDRFs).
- However, **when a disaster is classified as a calamity of severe nature, the central government extends** additional financial assistance from the NDRF.
- There is **no legal provision in Indian laws** to designate a disaster as a "national calamity."

Funding Mechanism for Disaster Relief

- The **NDRF** is funded through the **National Calamity Contingent Duty (NCCD)**, levied on products like **pan masala, chewing tobacco, and cigarettes**.
- The State Disaster Response Funds (**SDRFs**), on the other hand, are **funded jointly by the central and state governments** in a 75:25 ratio for general category states and 90:10 for special category states (such as northeastern states and hilly regions).

POLAR VORTEX

- The polar vortex is a **large area of low-pressure** and **cold air** that swirls like a wheel around both of the Earth's polar regions. There are two types of polar vortex: tropospheric and stratospheric.
- The **tropospheric polar vortex occurs at the lowest layer of the atmosphere** — it extends from the surface up to about 10 km to 15 km — where most weather phenomena occur.
- The **stratospheric polar vortex occurs at around 15 km to 50 km high**. Unlike the tropospheric polar vortex, the stratospheric polar vortex disappears during the summer and is the strongest during the autumn.
- It always exists near the poles but **weakens in summer and strengthens in winter**. The term "vortex" refers to the counter clockwise flow of air that helps keep the colder air near the Poles.
- Many times, during winter in the northern hemisphere, the polar vortex will expand, sending cold air southward with the jet stream (see graphic above). This occurs fairly regularly during wintertime and is often associated with large outbreaks of Arctic air in the United States.



HYDROCLIMATIC WHIPLASH

Context: A study by ClimaMeter attributes recent Los Angeles wildfires to hydroclimate whiplash.

What is Hydroclimate Whiplash?

- It refers to a **rare meteorological pattern where an extremely wet season is immediately followed by an extremely dry season**. This abrupt shift in climate conditions can lead to severe environmental consequences.
- Hydroclimate whiplash events have increased 31-66% in short-term periods and 8-31% annually since the mid-20th century.

Impacts

- **More Droughts & Floods:** Extended dry spells fuel wildfires; intense rains cause floods.
- **Health Hazards:** Wildfire smoke worsens respiratory issues; floods spread waterborne diseases like cholera.

MUSI RIVER

Context: The 'Musi River Historic Buildings' in Hyderabad have been included in the 2025 World Monuments Watch, recognizing them as heritage structures at risk.

About Musi River

- The Musi River is a **tributary of the Krishna River, flowing through Telangana.**
- **Origin:** Begins in the Anantagiri Hills near Vikarabad, Rangareddi district, about 90 km west of Hyderabad.
- **Course:** Formed by two streams, Esi (8 km) and Musa (13 km), which merge into the Musi River. It joins the Krishna River near Wazirabad, Nalgonda district.
- **Dams:** Himayat Sagar and Osman Sagar are built on the river.
- Hyderabad is situated on its banks, with the river dividing the city into old and new sections.

What is the World Monuments Watch?

- A biennial heritage preservation program launched in **1996** by the **World Monuments Fund (WMF), New York.**
- World Monuments Fund (WMF) is a non-profit organization that highlights cultural heritage sites worldwide facing threats like neglect, vandalism, conflict, or disaster, aiming to raise international attention and support for their preservation.
- Other Indian Site on the 2025 List: **'Bhuj Historic Water Systems'** (Gujarat), recognized for its vulnerability to climate change and water crises.

MOUNT IBU

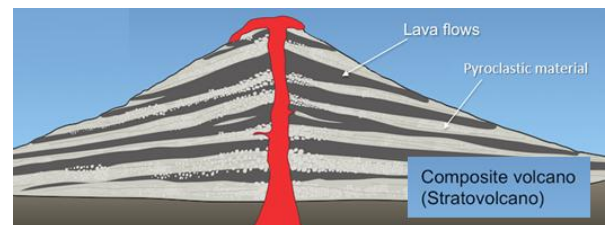
Context: Mount Ibu in eastern Indonesia has erupted at least a thousand times in a month.

About Mount Ibu:

- It is an active volcano located along the North West coast of Halmahera Island, **Indonesia.**
- It is a 1,325-meter (4,347-foot) stratovolcano with a truncated summit and a number of large nested summit craters. **It is part of the Pacific Ring of Fire.**
- Mount Ibu has a history of frequent eruptions, with most activity involving lava flows, ash plumes, and pyroclastic activity.

What are Stratovolcanoes?

- Stratovolcanoes, also known as **composite volcanoes**, are **steep, symmetrical volcanic cones** formed by **alternating layers of lava flows**, volcanic ash, and other eruptive materials.
- Unlike shield volcanoes, which have broad, gentle slopes, stratovolcanoes rise sharply with higher peaks.



Formation & Characteristics

- **Location:** Commonly found in **subduction zones**, they are a key feature of volcanically active regions like the Ring of Fire around the Pacific Ocean.
- **Lava Type:** Formed by **viscous, sticky** lava, causing it to build up near the vent and create steep-sided volcanoes.
- **Explosive Eruptions:** The thick magma traps gas, making stratovolcanoes prone to violent eruptions.
- **Composition:** Typically consist of 50% lava and 50% pyroclastic material (fragmented volcanic debris), giving them their "composite" structure.

- Andesite (named after the Andes Mountains) is perhaps the most common rock type of stratovolcanoes, but stratovolcanoes also erupt a wide range of different rocks in different tectonic settings.

Mount Marapi

- Mount Marapi is an **active stratovolcano in the Padang Highlands of Sumatra, Indonesia** and part of the **Pacific "Ring of Fire."** It recently erupted, sending ash 1.5 km (4,900 ft) in the sky.
- Standing at 2,891 meters (9,485 ft), it is the highest peak in the region. Its summit features the **Bancah caldera** and overlapping craters.
- The **deadliest eruption occurred in 1979**, when a rain-triggered **lahar** killed 60 people.
- Mount Marapi is often mistaken for Mount Merapi which is an active volcano located in central Java.

NEW RAMSAR SITES

Context: The Ministry of Environment, Forest has announced the addition of four new Ramsar sites in India, increasing the total to **89**, ahead of **World Wetlands Day (February 2)**.

Ramsar Site	Location	Key Features
Therthangal Bird Sanctuary	Ramanathapuram district, Tamil Nadu (near the Gulf of Mannar)	• Lies along the Central Asian Flyway, serving as a critical breeding and foraging ground for migratory birds. • Key species include Spot-billed Pelican, Black-headed Ibis, and Oriental Darter. • In 2010, the Site was designated as a bird sanctuary.
Sakkarakottai Bird Sanctuary	Ramanathapuram district, Tamil Nadu (close to the Gulf of Mannar)	• Primarily an irrigation tank that stores water for agriculture. • Recharged by the northeast monsoon (Oct-Jan). • Home to over 40 bird species, including Spot-billed Pelican, Grey Heron, Little Cormorant, and Black Kite. • In 2012, the Site was designated as a bird sanctuary.
Khecheopalri Wetland	West Sikkim district, Sikkim (Himalayan foothills)	• Features Khecheopalri Lake, a sacred site for Buddhists and Hindus, believed to be a wish-fulfilling lake. • Associated with Guru Padmasambhava and Goddess Tara. • The local name for the lake is Sho Dzo Sho, which means "Oh Lady, Sit Here".
Udhwa Lake	Sahibganj district, Jharkhand	• Consists of two large water bodies: Pataura Jheel and Brahma Jamalpur (Berhale) Jheel, which are surrounded by the hillocks of the Rajamahar Hills and linked by a channel to the Ganga River. • Important for local biodiversity and water conservation. • In 2016, the Site was designated as an Important Bird and Biodiversity Area.

INLAND MANGROVES

Context: The 32.78ha of **Guneri village in Lakhtar tehsil of Kutch district**, which is a natural inland mangrove site, has been declared as the first Biodiversity Heritage Site (BHS) of Gujarat.

Inland Mangroves: A Rare Ecosystem

- Unlike coastal mangroves, inland mangroves **exist away from shorelines**, thriving in freshwater ecosystems such as riverbanks, estuaries, and wetlands. Key characteristics include:
 - Growth in non-tidal conditions, often depending on groundwater sources.
 - Extremely rare, with only **eight known locations worldwide**.

- Guneri inland mangrove is India's last remaining site of inland mangrove.

Guneri Mangrove Site

- **Location:** 45 km from the Arabian Sea, 4 km from Kori Creek.
- **Unique Features:** Unlike most mangrove sites, it is free from sludge and is spread across a flat forested landscape.
- **Origin Theories:**
 - It may have formed after marine transgression during the Miocene period.
 - Another theory suggests it grew on the banks of the lost Saraswati River, which is believed to have once flowed through the Great Rann of Kachchh (3000-4000 B.C.).

Biodiversity Heritage Sites (BHS)

- Biodiversity Heritage Sites are **notified by State Governments** in consultation with local communities under **Section 37 of the Biological Diversity Act, 2002**. These sites are designated based on the following criteria:
 - **High endemism** – Species found nowhere else in the world.
 - **Presence of rare, endangered, or threatened species.**
 - **Unique or representative ecosystems.**
 - **Wild ancestors** of domesticated species.
 - Cultural, ethical, or aesthetic values related to biodiversity.
- Management of these sites is overseen by **Biodiversity Management Committees (BMCs)** at the local level, with support from State Biodiversity Boards (SBBs).
- **Notable Examples of BHS in India (Total 47):** Nallur Tamarind Grove, Karnataka, Majuli River Island, Assam (World's largest river island), Ameenpur Lake, Telangana.

MARINE HEAT WAVE (MHWS)

Context: MHWs are linked to the death of more than 30,000 fish off the coastal Western Australia.

What is a Marine Heatwave?

- A marine heatwave (MHW) is a **period of abnormally high ocean temperatures that persists for an extended time**. A marine heatwave (MHW) occurs when the surface temperature of a specific ocean region rises 3-4°C above the average for at least **five consecutive days**.
- These extreme temperature events have increased by 50% over the past decade and are now longer and more intense, as reported by the IUCN (2021).

Causes of Marine Heatwaves

- **Changes in Ocean Currents:** Shifts in currents can transport warm water to regions that are typically cooler.
- **Atmospheric Conditions:** High-pressure systems can reduce wind activity, leading to stagnant, warm ocean waters.
- **Increased Greenhouse Gas Emissions:** Rising carbon dioxide (CO₂) and other greenhouse gases trap heat in the atmosphere, leading to ocean warming.
- **Climate Phenomena:** Events like El Niño and La Niña significantly impact ocean temperatures, with El Niño often leading to warmer-than-usual sea surfaces.

Impacts on Marine Ecosystems

- **Coral Bleaching:** Prolonged heat exposure leads to mass coral bleaching, as seen in the Great Barrier Reef.
- **Seagrass Die-off:** Warmer temperatures weaken seagrass meadows, vital for marine biodiversity and carbon storage.
- **Marine Biodiversity Loss:** Changes in species distribution force marine animals to migrate, altering ecosystems.
- **Harmful Algal Blooms (HABs):** Warm ocean conditions favor the rapid growth of toxic algae, threatening marine food chains and fisheries.
- **Climate Feedback Effects:** Warmer oceans contribute to extreme weather events, including stronger hurricanes, shifting precipitation patterns, and rising sea levels.

Notable Marine Heatwave Events

- The “**Blob**” (2013-2016, North Pacific): One of the most severe MHWs, it led to mass die-offs of seabirds, fish, and marine mammals.
- **2011 MHW (Western Australia)**: Caused significant declines in abalone and rock lobster fisheries, impacting livelihoods. Also known as the Ningaloo Niño.

POTASH RESERVES

Context: The Punjab government is set to explore potash mining in **Fazilka and Sri Muktsar Sahib districts**, where previous Geological Survey of India (GSI) surveys detected large mineral reserves.

Geological Findings:

- GSI surveys have also identified potash reserves in **Rajasthan**, particularly in the northwestern **Nagaur-Ganganagar basin**, which includes Ganganagar and Hanumangarh.
- These findings position **Punjab as the second Indian state, after Rajasthan, to have significant potash reserves.**

Global and National Significance of Potash

- Potash is mined from underground deposits formed by the evaporation of ancient seas.
- **Canada leads in potash reserves (over 33%)**, followed by **Belarus & Russia** as major producers.
- **India lacks domestic potash production, making it heavily reliant on imports.** The country imports about 50 lakh tonnes of potash annually, primarily for fertilizer production and industrial use.
- **National Mineral Inventory (NMI) Data:** As per the 2020 NMI database, India's total potash resources stand at 23,091 million tonnes. Rajasthan alone contributes 89% of the country's total potash resources.

About Potash	
Compo-sition	• Potash primarily refers to potassium compounds, most commonly potassium chloride (KCl). • Other forms include potassium sulfate (K_2SO_4) and potassium carbonate (K_2CO_3).
Importance	• Over 90% of potash is used in fertilizers.
Types of Potash Fertilizers	Sulphate of Potash (SOP): • A premium potash fertilizer, free from chloride (which can be harmful to plants). • Mainly used for high-value crops, such as leafy plants, fruits, and vegetables. Muriate of Potash (MOP): • The most commonly used potash fertilizer, containing some chloride. • Typically applied to carbohydrate-rich crops like wheat, maize, and rice.

PUDUCHERRY-VILLUPURAM-AUROVILLE-CUDDALORE (PVAC) BIOREGION

Context: A citizen science initiative is collecting biodiversity data for the Puducherry-Villupuram-Auroville-Cuddalore (PVAC) bioregion, covering parts of Tamil Nadu and Puducherry.

What is a Bioregion?

- A bioregion is a **geographical area defined by its unique combination of ecosystems, landforms, climate, and living organisms.** Unlike political boundaries, bioregions are shaped by natural factors such as watersheds, soil types, and vegetation zones.
- Many bioregions are home to indigenous communities, whose traditional knowledge plays a crucial role in sustainable conservation practices.
- **Examples of Bioregions:** The Amazon Rainforest (South America), The Great Plains (North America), The Arctic Tundra, The Sahara Desert
- **International & National Conservation Efforts:** UNESCO Biosphere Reserves (under the Man and Biosphere Programme), National Mission for Sustaining the Himalayan Ecosystem (NMSHE), Green India Mission.

About the Puducherry-Villupuram-Auroville-Cuddalore (PVAC) Bioregion

- **Geographical Extent:** Spans 2,500 sq km across **Tamil Nadu and Puducherry.**

- **Lagoon Ecosystems:** The **Nallavadu Lagoon** serves as a vital habitat for migratory birds, including redshank, common greenshank, gulls, and terns.
- **Fauna:** Vulnerable species like Smooth-coated otter, Intertidal species like Mudskippers, Fish species like Mangrove red snapper, Indian glassy fish, grey mullets, mud crabs
- **Flora:** The region is part of the **East Deccan Dry Evergreen Forests**, a rare and unique tropical dry evergreen ecosystem.

- The **Know Your Bioregion** project was launched by Svarnim Puducherry, a unit of Sri Aurobindo Society, which collated pictures contributed by students and citizens and sightings of various species, including reptiles, mammals and more.

TRAILGUARD AI SYSTEM TO DETECT POACHERS

- TrailGuard AI is an **advanced AI-enabled surveillance system** deployed in **Kanha Tiger Reserve, Dudhwa National Park, and Similipal Tiger Reserve**. It uses **100-150 smart cameras** to detect poachers and enhance wildlife protection.
- **Developed by:** Nightjar Technologies (social benefit company) with RESOLVE (a non-profit).
- **How It Works:**
 - **Movement Detection:** Cameras remain in low-power state & activate upon detecting movement.
 - **AI-Based Analysis:** An onboard AI chip processes images, classifying objects as “animal,” “human,” or “vehicle.”
 - **Real-Time Alerts:** If a potential threat (e.g., a poacher) is identified, the system instantly sends an alert with images to a control center. Authorities can quickly deploy rangers to prevent illegal activities.
- TrailGuard AI is successfully used in Serengeti (Tanzania) and Maasai Mara National Parks (Kenya) to combat elephant and rhino poaching.

COMPENSATORY AFFORESTATION

Context: The Comptroller and Auditor General of India (CAG) has raised concerns over the misuse of compensatory afforestation funds in Uttarakhand.

What is Compensatory Afforestation (CA)?

- Compensatory afforestation is a **key environmental measure to offset deforestation caused by development projects** such as infrastructure, mining, and industrial expansion.
- When forest land is diverted, the user agency (the project proponent) must undertake afforestation on non-forest or degraded forest land of an equal or greater area.
- CA is one of the most important requirement/ condition for prior approval of the Central Government for diversion of forest land for non-forest purposes and the purpose of CA is to compensate for the loss of 'land by land' and loss of 'trees by trees'.

Compensatory Afforestation Fund Management and Planning Authority (CAMPA)

- The CAMPA was established to ensure the proper collection, management, and utilization of funds meant for compensatory afforestation.
- CAMPA operates under the **Compensatory Afforestation Fund Act, 2016**, which provides a structured mechanism for fund collection and utilization.
- The **Forest (Conservation) Act, 1980** mandates that entities diverting forest land must compensate by funding afforestation.
- The **Compensatory Afforestation Fund Rules, 2018** lay down procedures for implementation, monitoring, and evaluation of activities.

Structure of CAMPA

- **National CAMPA:** Functions at the central level under the Ministry of Environment, Forest & Climate Change (MoEF&CC). Consists of a Governing Body, Executive Committee, and Monitoring Group to oversee fund management and policy implementation.

- **State CAMPA:** Established in each State and Union Territory to manage funds and projects at the local level. Ensures implementation of afforestation, conservation, and wildlife protection measures in respective states.

Funding Mechanism

- **Collection of Funds:** Entities diverting forest land must deposit compensatory levies, including: Compensatory Afforestation Charges, Net Present Value (NPV) of forest land, Catchment Area Treatment Plan funds, Integrated Wildlife Management Plan charges
- **Utilization of Funds:** The collected funds are distributed in a 10:90 ratio between the National and State CAMPA funds, which are non-lapsable and interest-bearing.
- **Funds are used for:** Afforestation and reforestation, Forest protection and management, Wildlife habitat improvement, Soil and water conservation, Forest fire control and prevention

BLACK PLASTIC

Context: A recent study has raised concerns about black plastic, revealing that it contains toxic flame retardants, which pose risks of food contamination and health hazards.

What is Black Plastic?

- Black plastic is made from **polypropylene (PP)**, **polystyrene (PS)**, and **polyethylene (PE)** and is commonly used in: Packaging materials, Electronics and automotive parts, Household goods.

Health and Environmental Concerns

- **Toxic Contaminants:** Black plastic often contains recycled materials, including electronic waste, which can introduce harmful substances like flame retardants and heavy metals.
- **Recyclability Issues:** Optical sorting systems fail to detect black pigments, causing black plastic to be rejected from recycling streams and sent to landfills instead.

RECLASSIFICATION OF MAJOR MINERALS

Context: The Ministry of Mines, through a gazette notification, has reclassified **Barytes, Felspar, Mica, and Quartz from minor minerals to major minerals.**

- The Inter-Ministerial Committee on Mines & Minerals Sector, chaired by Dr. V. K. Saraswat (Member, NITI Aayog), recommended this reclassification to ensure better resource utilization.
- In India, minerals are categorized into two main groups: Major Minerals and Minor Minerals, primarily governed by the **Mines and Minerals (Development and Regulation) Act, 1957 (MMDR Act).**

Category	Major Minerals	Minor Minerals
Definition	Minerals specified in the First Schedule of the MMDR Act, 1957. Includes fuel minerals, metallic minerals, and non-metallic minerals.	Minerals not specified in the First Schedule of the MMDR Act, 1957. Includes minerals notified as minor by the Central Government.
Regulation	Regulated by the Central Government , which oversees their extraction, usage, and policies.	Regulated by State Governments , which have the authority to frame rules under Section 15 of the MMDR Act, 1957.
Examples	Coal, lignite, iron ore, gold, uranium, copper, bauxite, petroleum, natural gas, precious stones.	Building stones, gravel, ordinary clay, ordinary sand, marble, limestone, slate, quartzite.

Significance of the Reclassified Minerals

- As major minerals, these resources will now be regulated by the Indian Bureau of Mines and will be eligible for extended lease periods of up to 50 years under the MMDR Act, 1957.

1. Quartz, Felspar, and Mica

- Found in **pegmatite rocks**, which also contain critical minerals such as **Beryl, Lithium, Niobium, Tantalum, Molybdenum, Tin, Titanium, and Tungsten.**
- These minerals are vital for **advanced technologies used in energy, defense, and space exploration.**

2. Barytes

- Often found with ores of **Antimony, Cobalt, Copper, Lead, Manganese, and Silver**.
- Has diverse **industrial applications, including oil and gas drilling**, electronics, rubber, ceramics, paint, radiation shielding, and medical uses.
- Used in **high-density concrete to block X-ray emissions** in hospitals, power plants, and laboratories.

CHAMPIONS OF ANIMAL PROTECTION AND AWBI

Context: The Animal Welfare Board of India (AWBI) honoured outstanding individuals and organizations for their contributions to animal welfare and protection at the Prani Mitra and Jeev Daya Award Ceremony. The awards are categorized as follows:

1. **Prani Mitra Award** with five sub-categories: Advocacy (Individual), Innovative Idea (Individual), Lifetime Animal Service (Individual), Animal Welfare Organizations (Two awards), Corporate, PSUs, Government Bodies, or Co-operatives (Two awards)
2. **Jeev Daya Award** in three sub-categories: Individual, Animal Welfare Organization, and Schools, Institutions, Teachers, or Children

About Animal Welfare Board of India (AWBI)

- The AWBI is a **statutory body** and **advises State and Central Government on the issues related to animal welfare** including cruelty meted out to animals, Headquartered at **Ballabgarh, Haryana**.
- **AWBI was started under the stewardship of Late Smt. Rukmini Devi Arundale, well known humanitarian.**
- It was created under **Prevention of Cruelty to Animals Act 1960**.
- **Functions:** Board ensures that animal welfare laws in the country are diligently followed, provides grants to Animal Welfare Organizations and advises the GoI on animal welfare issues.
- **Ministry:** Ministry of Fisheries, Animal Husbandry & Dairying
- **Composition:** The Board consists of 28 Members including 6 Members of Parliament (2 from Rajya Sabha and 4 from Lok Sabha). The term of office of Members is 3 years.

C40 AND UN-HABITAT

Context: C40 Cities and UN-Habitat have announced a landmark partnership to transform urban planning.

- The partnership will create a new Urban Planning Accelerator to help cities cut emissions by 25% by 2050 while creating safer, fairer, and more inclusive urban environments.

About C40

- C40 is a **coalition of nearly 100 mayors from major cities worldwide**, working together to tackle the climate crisis. These mayors **commit to halving emissions by 2030**, aligning with the **global goal of limiting temperature rise to 1.5°C**, and ensuring sustainable urban development.
- **Key Focus Areas of C40:** Climate Action & Innovation, Equitable & Sustainable Communities, Global Advocacy, Scaling Best Practices, Financial Support
- **Members in India:** Ahmedabad (Joined 2022), Bengaluru (Joined 2015), Chennai (Joined 2016), Delhi NCT (Joined 2007), Mumbai (Joined 2007) .

The United Nations has designated the first Monday of October every year as



UN-Habitat: United Nations Human Settlements Programme

- The United Nations Human Settlements Programme (UN-Habitat) is the **UN's program for sustainable urban development and housing**. It is a member of the United Nations Sustainable Development Group.
- Established in **1977** after the **Habitat I Conference (1976, Vancouver)**, it is headquartered in **Nairobi, Kenya**.

- It is **mandated by the United Nations General Assembly to promote socially and environmentally sustainable towns and cities** with the goal of providing adequate shelter for all.
- This mandate is derived **from the Habitat Agenda**, adopted by the United Nations Conference on Human Settlements (**Habitat II**) in **Istanbul, Turkey**, in 1996. **Habitat III** took place in **Quito, Ecuador**, in 2016.
- **Governance:**
 - **UN-Habitat Assembly** (all 193 UN member states, meets every 4 years),
 - **Executive Board** (36 elected members, meets 3 times annually)
 - **Committee of Permanent Representatives** (UN delegates convene every two years in Nairobi)

STUBBLE BURNING

Context: A parliamentary standing committee has recommended introducing a minimum support price (MSP) for paddy residue to discourage stubble burning.

About Stubble Burning

- Also known as **parali burning**, it is the **practice of setting fire to crop residues left in the field after harvesting**. It is primarily done to clear the land for the next crop cycle, especially for sowing wheat after the paddy harvest.
- Farmers in Punjab, Haryana, and Uttar Pradesh burn crop stubble mainly **due to the short time available between harvesting paddy** (September–October) and **sowing wheat** (November–December). If wheat sowing is delayed, it can affect crop yield.
- Since alternative residue management methods require additional labor and machinery, stubble burning is often seen as a quick and cost-effective solution.

Impact of Stubble Burning

- **Air Pollution:** Stubble burning releases harmful pollutants like **carbon monoxide (CO)**, **methane (CH₄)**, **volatile organic compounds (VOC)**, and **carcinogenic polycyclic aromatic hydrocarbons (PAHs)**. These contribute to severe air pollution, particularly in Delhi and the NCR region, leading to smog formation and poor Air Quality Index (AQI).
- **Soil Degradation:** The burning process **destroys essential nutrients and organic matter**, reducing soil fertility over time.
- **Heat Damage:** The intense heat from burning can penetrate the soil, leading to **increased erosion**, **loss of beneficial microbes**, and depletion of moisture content, further impacting soil health.

Technologies for Managing Stubble

Large-Scale Technologies	Small-Scale Technologies
• Direct Combustion: Burns rice straw under controlled conditions to generate heat for cooking and other uses. • Pyrolysis: Pyrolysis of stubble involves heating it in the absence of oxygen to produce biochar, bio-oil etc. • Gasification: Stubble gasification involves converting crop residue (stubble) into a fuel gas (syngas) through partial combustion in a controlled environment. • Biochar Production: Incinerates rice straw at low temperatures to create biochar, to improve fertility, retains moisture, and reduces greenhouse gas emissions. • Power Generation: Biomass power plants use 15-30 tonnes of rice straw daily to generate electricity for rural areas or the government grid.	• Composting: Converts rice straw into nutrient-rich compost for agriculture. Vermicomposting is also gaining traction. • Mushroom Cultivation: Uses rice straw as a low-cost substrate to grow high-nutrition mushrooms, particularly <i>Volvariella volvacea</i> in tropical regions. • Silica Extraction: Rice straw contains 70-80% silica, which can be extracted for industrial use through controlled heating and chemical treatments. • Animal Feed: Rice straw, when pre-treated (grinding, heating, chemical or

- **Pellet Production:** Compresses rice straw into dense pellets for easier transport and combustion, which could replace 25% of coal in power plants.
- **Biofuels:** Extracts ethanol, biogas, and other biofuels from rice straw, reducing reliance on fossil fuels.
- **Paper Production:** High cellulose, low lignin content makes rice straw ideal for eco-friendly paper production, reducing wood dependency and toxic chemical use.

microbial processing), becomes a viable feedstock for livestock.

- **Adsorbent:** Research suggests rice straw can remove heavy metals and pollutants from contaminated water.
- **Soil Incorporation:** Mixing rice straw into soil post-harvest enhances fertility, aeration, and crop yield while reducing waste.

F11 BACTERIA

Context: A recent study shows that the bacterial strain *Labrys portucalensis* F11 can break down the strong carbon-fluorine bonds in polyfluoroalkyl substances (PFAS) or forever chemicals.

About F11 Bacteria

- F11 bacteria (*Labrys portucalensis*) are a **strain of aerobic bacterium from the Xanthobacteraceae family**. These have adapted to survive in harsh, polluted environments by using **contaminants as energy sources**.
- These bacteria were **originally isolated from contaminated industrial soil in Portugal**.
- It can break down and transform at least three types of per- and polyfluoroalkyl substances (PFAS), and some of the toxic byproducts,

What are Forever Chemicals?

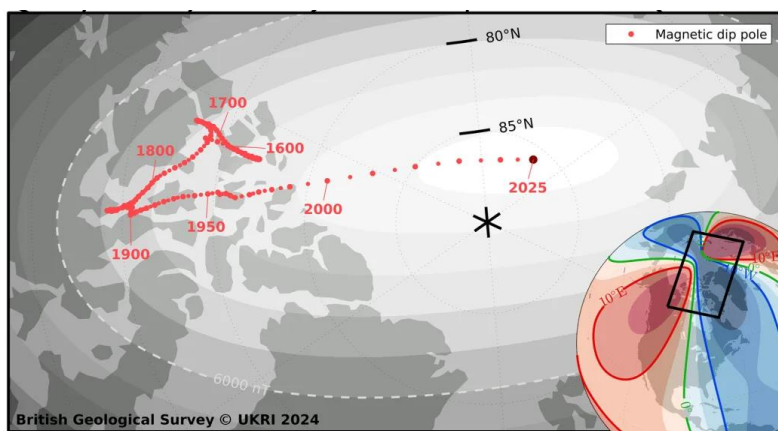
- **Per- and polyfluoroalkyl substances (PFAS)**, commonly known as "forever chemicals," are synthetic compounds that have been linked to various environmental and health risks. Studies indicate that exposure to certain PFAS may lead to adverse health outcomes, including liver damage and immune system effects.
- PFAS are termed "forever chemicals" due to their persistence in the environment. They can remain in rainwater, soil, and other environmental mediums for extended periods.
- Certain PFAS compounds, such as **perfluorooctanoic acid (PFOA)** and its related substances, have been **listed in the Stockholm Convention on POPs**.

SHIFT IN EARTH'S MAGNETIC NORTH

Context: A newly released model by scientists indicates that the magnetic north pole has continued its drift toward Russia, now positioned closer to Siberia than it was five years ago.

Magnetic North vs. Geographic North

- Unlike the **geographic North Pole**, which represents a fixed point where all longitudinal lines converge, the **magnetic north pole is dictated by Earth's magnetic field**, which is in continuous motion.
- The magnetic north pole serves as the **northernmost convergence point of Earth's magnetosphere**, a protective field **generated by the movement of molten metals in Earth's core**.
- This dynamic nature of the planet's internal structure results in the **continuous displacement of the magnetic north pole**.
- The position of magnetic north was **first documented in 1831 by British explorer Sir James Clark Ross** in northern Canada, approximately



1,609 km south of the geographic North Pole. Since then, it has undergone a continuous drift, moving north-westward.

- Scientific projections indicate that while the magnetic north pole's drift is currently decelerating, its future trajectory remains uncertain.

Pole Reversal: Magnetic Flip

- Earth's magnetic field has historically undergone geomagnetic reversals, where the **north and south poles swap positions**.
- **In the last 10 million years, there have been, on average, 4 or 5 reversals per million years, with the last recorded event occurring 750,000–780,000 years ago.**
- The reversals take thousands of years to complete. Paleomagnetic data reveals 183 reversals in the last 83 million years.

About the World Magnetic Model (WMM)

- The World Magnetic Model (WMM) is the standard model for navigation, attitude, and heading referencing systems that use the geomagnetic field. The WMM is also used for civilian applications, including navigation and heading systems.
- A new version of the model is updated every five years to address changes in Earth's magnetic field. The current version (WMM2025) was released in 2024 and will remain valid until late 2029.
- The WMM is a joint product of **NGA** (U.S. National Geospatial-Intelligence Agency) and **DGC** (U.K. Defense Geographic Centre).

SHALLOW-DEPTH EARTHQUAKE

Context: A shallow depth earthquake of magnitude 4 struck New Delhi recently. Experts confirmed that this was an intra-plate event caused by "**in situ material heterogeneity**"—local geological stress rather than large-scale plate movements.

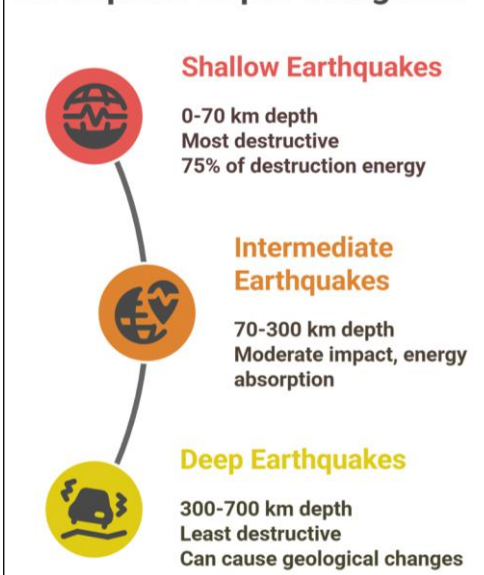
What is an Earthquake?

- An earthquake occurs when stored stress in the Earth's crust is suddenly released, causing seismic waves to propagate through the ground.
- This is usually **due to the movement of tectonic plates**, although **local geological factors can also contribute**.

Why is Delhi Prone to Earthquakes?

- Delhi is located in **Seismic Zone IV**, indicating a high probability of moderate-to-strong earthquakes. Multiple factors contribute to its vulnerability:
- **Tectonic Plate Movements:** The Indian Plate moves northward at 5 cm per year, colliding with the Eurasian Plate, generating immense stress along fault lines. Delhi is situated near this fault line.
- **Local Fault Systems:** Delhi is affected by several fault lines: **Himalayan Seismic Belt**, **Delhi-Haridwar Ridge** (Affects intra-plate seismicity), **Aravalli-Delhi Fault System** (Deep-seated faults triggering local tremors)
- **Soil Amplification:** Much of Delhi sits on soft alluvial soil, which intensifies seismic waves, making even small earthquakes feel stronger.

Earthquake Depth Categories



About Aravalli-Delhi Fold Belt

- **Geographical Extent:** Spans southern and eastern Rajasthan, Haryana, and Delhi, forming a significant part of the Aravalli Range.

- **Geological Formation:** Comprises the Aravalli and Delhi Supergroups, shaped by mountain-building (orogenic) processes, multiple phases of folding, faulting, and sedimentation.
- **Mineral Deposits:** Includes the **Khetri Copper Belt** (Rajasthan), a major copper mining region due to ancient mineralization.
- **Tectonic Activity:** The belt has a complex tectonic history involving craton collisions (Bundelkhand & Marwar Cratons) and localized seismic stress.
- **Seismic Risk:** While relatively stable compared to the Himalayas, the region experiences mild earthquakes due to stress release along ancient faults.

MISHTI SCHEME

Context: Gujarat has emerged as the national leader in mangrove afforestation, covering 19,020 hectares in just two years under the Centre's 'MISHTI' scheme.

- Gujarat has India's longest coastline (~1,600 km), making it highly vulnerable to coastal erosion, cyclones, and sea-level rise.

About MISHTI (Mangrove Initiative for Shoreline Habitats & Tangible Incomes) Scheme

- MISHTI was announced in Union Budget FY 2023-24 **to promote and conserve mangroves as a unique, natural ecosystem** having very high biological productivity and carbon sequestration potential, besides working as a bio-shield.
- It was launched on **World Environment Day 2023** with implementation from 2023 to 2028.
- MISHTI comes after India joined the '**Mangrove Alliance for Climate**' launched during the COP27 to the United Nations Framework Convention on Climate Change, Egypt 2022.
- **Key Objectives**
 - Restore and expand mangrove forests through reforestation and afforestation
 - Cover about 540 sq km in 9 coastal States and 4 Union Territories over five years
 - Create jobs—about 22.8 million man-days of employment for local communities.
 - Boost climate action by storing an estimated 4.5 million tons of carbon.
 - Support eco-tourism and local livelihoods by improving biodiversity and natural landscapes.
- **Funding:** Utilizes funds from various sources, including the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) and the Compensatory Afforestation Fund Management and Planning Authority (CAMPA) Fund and other sources.
- **Core Activities**
 - **Gap plantation:** Filling in spaces where mangroves are missing.
 - **Afforestation:** Planting mangroves in new suitable coastal areas.
 - **Enrichment plantation:** Improving existing mangrove forests.
 - State CAMPA will mainly fund these core activities, while National CAMPA and MGNREGA will support other parts of the programme if needed.
- **Support Activities:** Livelihood diversification; Awareness and training; Research and development; Public outreach; Monitoring and evaluation; Involving SHGs (Self Help Groups) for local engagement in eco-tourism and conservation efforts.

NATIONAL BOARD FOR WILDLIFE (NBWL)

Context: Prime Minister Modi chaired his first-ever meeting of the National Board for Wildlife (NBWL) on World Wildlife Day on March 3.

About National Board for Wildlife (NBWL)

- NBWL was **established in 2003 under the Wildlife (Protection) Act, 1972**. It replaced the earlier Indian Board for Wildlife (formed in 1952), based on a provision introduced through the Wildlife (Protection) Amendment Act, 2002.
- The NBWL serves as the **highest decision-making body in India for matters related to wildlife conservation and development**. It mainly acts as an **advisory body to the Central Government**.

Structure and Composition

- **Chairperson:** The Prime Minister of India is the ex-officio Chairperson
- **Vice-Chairperson:** Minister of Environment, Forest and Climate Change (MoEFCC)
- **Members:** MPs, Government officials (including Chief of the Army Staff), Environmental experts and scientists, Representatives from wildlife NGOs with term of three years
- **Standing Committee:** Consist of the Vice-Chairperson, the Member-Secretary, 10 nominated members. Empowered to review and approve specific projects, making the decision-making process faster while maintaining checks and balances.

Functions of NBWL (as per Section 5C of the Act)

- Advising the central and state governments on policies for wildlife protection and control of poaching and illegal wildlife trade.
- Recommending the creation and management of protected areas like national parks and sanctuaries.
- Assessing the impact of development projects on wildlife and habitats.
- Monitoring conservation efforts and suggesting improvements.
- Publishing a status report on wildlife in India every two years

WORLD AIR QUALITY REPORT 2024

Context: The World Air Quality Report 2024, **published by IQAir**, sheds light on the severe air pollution affecting many regions across the globe, particularly India.

- It uses PM_{2.5} (fine particulate matter) levels to assess air quality, with the World Health Organization (WHO) recommending a safe limit of 5 µg/m³ annually.
- IQAir, a Swiss technology company, works alongside individuals, organizations, and governments to improve air quality through data sharing and collaboration.

Key Highlights:

1. Pollution in India:

- **India's average PM_{2.5} concentration in 2024** decreased **by 7%** compared to 2023, moving from 54.4 µg/m³ to 50.6 µg/m³. However, pollution levels remain dangerously high.
- **Byrnihat is ranked as the most polluted city globally**, with an alarming PM_{2.5} concentration of 128.2 µg/m³.
- With an average PM_{2.5} concentration of 91.8 µg/m³, **Delhi continues to be the most polluted capital city in the world.**
- **India is the fifth most polluted country in the world**, with an average PM_{2.5} concentration of 50.6 µg/m³ – 10 times higher than the WHO recommended limit.
- Six of the world's ten most polluted cities are in India. Air pollution remains a significant health burden in India, reducing life expectancy by an estimated 5.2 years.
- **Major Pollution Sources:** The primary sources of pollution in India include:
 - **Crop Stubble Burning:** 60% of PM_{2.5} pollution during peak periods.
 - **Vehicular Emissions:** Contribute significantly to the air pollution in urban areas.
 - **Industrial Discharges & Construction Dust:** Both are key contributors to the deteriorating air quality.

2. Air Pollution: A Global Crisis:

- **Seven countries met the WHO annual average PM_{2.5} guideline of 5 µg/m³:** Australia, Bahamas, Barbados, Estonia, Grenada, Iceland, and New Zealand.
- **Cleanest Regions:** Oceania is the cleanest region in terms of air quality, with 57% of its cities meeting the WHO PM_{2.5} guideline.

BIODIVERSITY LEAK

Context: The *Science* journal highlights that local efforts to restore agricultural landscapes for biodiversity can cause “net harm” due to biodiversity leak.

About Biodiversity Leak:

- Biodiversity Leak refers to the phenomenon where conservation and restoration efforts in one region lead to the displacement of harmful human activities, such as agriculture or industrial operations, to other regions that are often more biodiverse and less protected.
- This displacement can result in a net loss of biodiversity globally, even if local biodiversity improves.
- For example, in wealthier nations, conservation efforts that reduce food or fibre production may increase production in less biodiverse regions, exacerbating environmental harm elsewhere.

AVALANCHE

Context: An avalanche struck a Border Roads Organisation (BRO) project at Mana in Uttarakhand's Chamoli district.

About Avalanches:

- An avalanche is a gravity-driven phenomenon where a mass of snow, often mixed with ice, air, and debris, accelerates downhill.

Types of Avalanches

- **Ice Avalanche:** Ice avalanches occur on glacier-covered slopes when ice weakens due to atmospheric changes. These avalanches can travel long distances on flat ground because ice has low friction. They are rare in India but have been observed on the Siachen Glacier.
- **Snow Avalanche:** Snow avalanches involve snow, which is a mixture of ice, air, water, and impurities. Snow avalanches move slower (10-30 m/s) and generally come to a halt on slopes less than 12 degrees. They can be dry (fresh, powdery snow) or wet (when melting snow mixes with water). Snow avalanches can be further classified into three types:
 - **Loose Snow Avalanche:** These occur when weak snow crystals on steep slopes slide down due to lack of cohesion. They are triggered by disturbances like falling rocks or skiers.
 - **Speed and Density:** Slow (1-10 m/s), low density (100 kg/m³ for dry snow, 500 kg/m³ for wet snow).
 - **Slab Avalanche:** A large slab of snow breaks free and slides with high momentum. It forms a zigzag rupture line on the slope.
 - **Dry slab avalanches** typically travel at speeds of 10–20 m/s, with a density of 100–250 kg/m³
 - **Wet slab avalanches** move at speeds of 10–30 m/s and have a density of 200–500 kg/m³.
 - **Airborne/Powder Avalanche:** These avalanches occur when snow particles are lifted into the air due to high speeds, forming a cloud of snow that moves ahead of the ground mass.
 - **Speed and Density:** Very fast (50-75 m/s), low density (2-10 kg/m³). Less destructive to structures but damaging to forests.

Factors Responsible for Avalanches:

- **Slope:** Avalanches typically occur on slopes between 25 and 60 degrees, with the highest risk around 30-45 degrees.

	Avalanches	Landslides
Composition	Snow, ice, and debris.	Rock, soil, and earth.
Location	Occurs mainly in snowy, mountainous regions.	Can occur in various terrains, including mountains, hills, and even gentle slopes.
Triggering Factors	Heavy snowfall, rapid temperature changes, wind, unstable snowpack, and human activities like skiing.	Heavy rainfall, earthquakes, volcanic activity, erosion, deforestation, and human activities like construction.
Speed	Rapid, high-velocity movement.	Can range from slow, gradual movement to rapid, sudden flows.

CALI FUND

Context: The Cali Fund was launched to protect biodiversity at the resumed 16th Conference of Parties (COP16) to the United Nations Convention on Biological Diversity (UN-CBD) in Rome.

About Cali Fund

- It aims to protect biodiversity by ensuring fair and equitable benefit-sharing from the use of digital sequence information (DSI) related to genetic resources.
- The fund is hosted by the Multi-Partner Trust Fund Office (MPTFO) and managed in partnership with the United Nations Development Programme (UNDP) and the United Nations Environment Programme (UNEP).

Key Features

- **Private Sector Contributions:** Companies that use DSI commercially, including in fields like pharmaceuticals, cosmetics, and biotechnology, will contribute to the fund.
- **Support for Indigenous Communities:** 50% of the fund's resources will be dedicated to supporting indigenous peoples and local communities.
- **Global Biodiversity Framework:** The Cali Fund will play a vital role in implementing the Kunming-Montreal Global Biodiversity Framework (KMGBF).
- **Scientific Research and Data Sharing:** The fund will also aim to enhance scientific research on biodiversity and improve how countries collect, use, and analyze DSI.
- **Private Sector's Role:** For the first time, the CBD has created a global fund that involves contributions from the private sector.

WALLACE LINE

Context: Researchers have called for the boundary line (Wallace Line) to be redrawn

What is the Wallace Line?

- The Wallace Line is an **invisible boundary in Southeast Asia** that separates the animals of Asia from those of Australia.
- Alfred Russel Wallace noticed that even though some islands were very close to each other, they had very different types of animals.
- This **line runs between the islands of Bali and Lombok**, and then moves northward between **Borneo and Sulawesi**, finally curving south of the Philippines.
- Even though the distance between some islands on either side of the line is as little as 20 km, the difference in species is dramatic.



Key Features

- On one side of the line (towards Asia), animals like tigers, monkeys, and elephants are common. On the other side (towards Australia), we find marsupials like kangaroos and cuscuses. This sudden change in animal types over a small distance is rare and unique.
- Sulawesi, an island near the Wallace Line, has animals from both Asian and Australian origins. For example: Tarsiers (small primates) from Asia; Dwarf cuscus, a marsupial from Australia; Anoa (small buffaloes) found only on Sulawesi.
- Scientists believe this unusual pattern happened because millions of years ago, islands like Sulawesi were parts of different continents. As the continents drifted apart (continental drift), animals on the islands evolved separately, creating unique species.

Line	Drawn By	Location	Purpose
Weber Line	Max Carl Wilhelm Weber	East of Wallace Line	Shows a gradual shift from mixed species to mostly Australian species (e.g., Timor).
Lydekker Line	Richard Lydekker	East of Weber Line	Marks the start of true Australian fauna (e.g., New Guinea, Australia).
Wallacea	—	Between Wallace & Weber Lines	A transition zone between the Wallace and Weber Lines
Huxley Line	Thomas Henry Huxley	Northward Extension of Wallace Line	A variation of Wallace Line into Philippines; also separates Asian from Australian species.

ANTARCTIC CIRCUMPOLAR CURRENT (ACC)

Context: A study predicts that the Antarctic Circumpolar Current (ACC) will slow down by 20% by 2050 due to global warming, with far-reaching consequences for life on Earth.

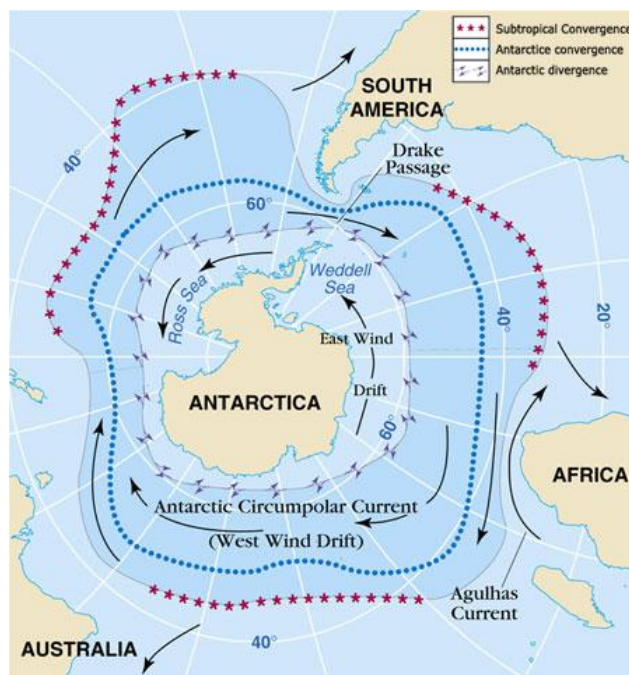
- A slower ACC could contribute to the disintegration of Antarctic ice shelves, leading to higher sea levels worldwide.

Antarctic Circumpolar Current (ACC)

- The ACC is the **only ocean current that completely encircles the globe, flowing eastward around Antarctica**. It is primarily driven by strong westerly winds, famously called the “Roaring Forties” and “Furious Fifties.” It is the largest ocean current in terms of water volume transport.
- It is the only ocean current linking all major oceans: the Atlantic, Indian, and Pacific Oceans.
- The ACC helps transport carbon dioxide (CO₂) into deep ocean waters, playing a crucial role in carbon sequestration.
- It acts as a barrier, isolating Antarctic waters and contributing to its unique climate.
- India operates the Bharati and Maitri research stations in Antarctica to study ACC dynamics.

Reasons for ACC Slowdown

- **Antarctic Ice Melt:** Freshwater inflow from melting ice lowers ocean salinity, which reduces water density and hinders sinking.
- **Weakening of AABW:** Global warming has weakened the Antarctic Bottom Water (AABW), dense water mass that plays role in global ocean circulation and is closely linked with ACC.
- **Shifting Winds:** Westerly winds are weakening and shifting south due to climate change, reducing the force driving the ACC.
- **Ocean Stratification:** Warmer surface waters prevent deeper mixing, leading to heat trapping and faster regional warming.



WORLD SUSTAINABLE DEVELOPMENT SUMMIT (WSDS)

Context: Union Minister for Environment, Forest, and Climate Change inaugurated the World Sustainable Development Summit (WSDS) 2025 in New Delhi.

About WSDS [Event Organized annually by The Energy and Resources Institute (TERI)]

- Started in 2001 as the Delhi Sustainable Development Summit (DSDS), it was rebranded as WSDS to reflect its broader international scope.

- **2025 Theme:** 'Partnerships for Accelerating Sustainable Development and Climate Solutions'
- **Key Components:** Sustainable Development Leadership Award (SDLA); Ministerial and High-Level Sessions; Thematic Tracks; CEO Forum; Youth Connect

MYCELIUM BRICKS

Context: Mycelium bricks are emerging as a viable and sustainable alternative to conventional clay bricks.

About Mycelium Bricks

- **Composition:** Mycelium (the root structure of fungi) grown on a substrate of agricultural byproducts like sawdust, straw, or corn stalks. It functions as a natural biopolymer, which is similar to synthetic resins used in conventional bricks but is entirely organic and biodegradable.
- **Production Process:** The mycelium is allowed to grow and bind the agricultural waste together, forming a solid structure. Once this is complete, the material is dried to halt the mycelium's growth, resulting in a sturdy, brick-like substance.
- **MycoHAB Project (2023, UK):** The world's first structural mycelium building was constructed using these bricks.

Advantages	Limitations	Applications
• Eco-Friendly: Biodegradable with low energy use and carbon footprint. • Lightweight: Weighs 43 kg/m³, much lighter than concrete (2400 kg/m³). • Insulation: Great thermal, acoustic, and fire resistance. • Versatility: Can be molded for various uses without harmful chemicals.	• Strength: Low compressive strength (30 psi), unsuitable for load-bearing. • Durability: Long-term performance in harsh conditions still under study.	• Construction Material. • Space: NASA explores mycelium for habitats on Mars and the Moon.

BEDMAP3

Context: Scientists from the **British Antarctic Survey (BAS)** have introduced the Bedmap3.

About Bedmap3

- Bedmap3 is the **most detailed map of Antarctica's subglacial topography**.
- This latest dataset, **combining over six decades of survey data**, offers a comprehensive view of the continent's surface elevation, ice thickness, and subglacial landscape, as if the ice were removed.
- It combines data from satellites, aircraft, ships, and sleds drawn by dogs. It incorporates 52 million data points on a 500-meter grid spacing, providing unprecedented detail.
- Using radar, seismic reflection, and gravity measurements, Bedmap3 reveals deep valleys, towering mountains, and the intricate boundaries where ice meets the ocean.

Antarctica is Earth's fifth-largest continent, almost entirely covered by ice, and the coldest on the planet. It surrounds the South Pole and has no trees or shrubs. The only plants able to survive the extreme cold are lichens (a combination of algae and fungi), mosses, and algae.

Notable Findings

- **Ice Coverage:** Antarctica's ice sheet covers approximately 13.63 million sq km, with an average thickness of 1,948 meters.
- **Thickest Ice:** The thickest ice in Antarctica has been found in an unnamed canyon in Wilkes Land, measuring an astonishing 4,757 meters.

GREEN GRABBING

Context: Tribal communities have accused the Assam government of green grabbing by ignoring their right to consent for the 1000 MW solar park funded by ADB loans and private investment.

- Green Grabbing refers to a **form of land grabbing where land and resources are taken from local communities for environmental goals**, often under the pretext of conservation, biodiversity protection, climate change mitigation, or promoting ecosystem services.
- The term Green Grabbing was probably first used by the Guardian journalist John Vidal to refer to the appropriation of land and resources for environmental ends.
- However, this process **can lead to the displacement or marginalization of the very communities that rely on these lands for their livelihoods**.
- This practice often overlooks legal protections like the Forest Rights Act, 2006, which gives land rights to forest dwellers.

KASAMPATTY SACRED GROVE

- Kasampatty Sacred Grove in Dindigul district has been officially notified as Tamil Nadu's second Biodiversity Heritage Site (BHS) under the Biological Diversity Act, 2002 after the Arittapatti village in Madurai district as the first declared in 2022.
- Also known as Veera Kovil Sacred Grove, it Spans 4.97 hectares near the Alagarmalai Reserve Forest. This grove is enveloped by lush mango plantations, enhancing its natural beauty and fertility.

DHANSIRI RIVER

Context: Recently, environmentalists have raised concerns over alleged hazardous effluent discharge from Numaligarh Refinery Limited (NRL) into Dhansiri river.

- The Dhansiri River, a **key tributary of the Brahmaputra**, flows through Golaghat district in Assam and Dimapur district in Nagaland.
- It **originates from Laisang Peak in Nagaland** and travels about 352 km before **joining the Brahmaputra at Dhansirimukh**. The river's catchment area is around 1,220 sq. km.
- Flowing **along the Nagaland–Assam border**, it supports rich biodiversity.
- On one side of the river is the Dhansiri Reserved Forest and on the other Intanki National Park (Nagaland).

ASOLA-BHATTI WILDLIFE SANCTUARY (WLS)

Context: Delhi's forest department will install motion-sensor cameras at Asola Bhatti WLS.

- Located in the South Delhi Ridge of the Aravalli hill range on the Delhi-Haryana border, located in southern Delhi and northern parts of Faridabad & Gurugram districts of Haryana.
- Spread over 32 sq km, it is the **only protected area in India that represents the northeastern outliers of the ancient Aravalli hill ranges**.
- It is part of the Northern Aravalli leopard wildlife corridor, which extends from the Sariska National Park in Rajasthan to Delhi Ridge.
- Due to low rainfall and high temperature variations, the area supports dry, scrubby vegetation.
- **Flora: Thorny scrubland** with native plants adapted to dry conditions (xerophytes). local species like Dhau, Palash, Jharber, etc. Local species like Dhau, Palash, Jharber, etc.
- **Fauna:** Leopard, Hyena, Nilgai, Jackal, Fruit Bat, Red-headed Vulture, Egyptian Vulture, Steppe Eagle, etc.

MUKUNDRA HILL TIGER RESERVE

Context: A massive fire, triggered by stone-crushing sparks, erupted in Mukundra Tiger Reserve.

About Mukandara Hills Tiger Reserve (MHTR)

- The MHTR, notified in 2013, is located in **Rajasthan** and includes the **Mukandara National Park, Darrah Wildlife Sanctuary, Jawahar Sagar Wildlife Sanctuary, and a part of the Chambal Gharial Sanctuary**. It spans across four districts—Kota, Bundi, Chittorgarh, and Jhalawar.
- It is named after two continuous flat-topped, almost parallel hills with narrow central ridges, forming part of the Vindhyan range. It **extends from the Chambal River to Kalisindh**, with a length of almost 80 km. and the width ranging from 2 to 5 km.

- **Fauna:** Chital, Sambar, Nilgai, Chinkara, Hyena, Jackal, Fox, Jungle Cat, Leopard, Tiger, Sloth Bear, Ratel, Langur, Indian Hare, Porcupine, Civet, and Mongoose
- **Flora:** Kala Dhok (Kaladhi), Khair, Ber, Kakan, Raunj, Tendu, Gurjan, Karaya, Jhinjha, Kalam, and Gutha Bor. On higher slopes, Kaladhi is replaced by Broad-leaved Kala Dhok, along with Bel, Salar, Uum, and Shisham.

STAR-RATING SYSTEM FOR ENVIRONMENTAL CLEARANCES

Context: The Union Ministry has discontinued the star-rating system it had launched in 2022.

- The Ministry of Environment, Forest and Climate Change (MoEF&CC) had introduced a **star-rating system to evaluate State Environmental Impact Assessment Authorities (SEIAAs)**.
- The purpose was **to assess their efficiency in granting clearances** for industrial and infrastructure projects.
- The star ratings **ranged from 0 to 7**, with higher ratings reflecting: Faster approval times and Stricter adherence to timelines set out in the 2006 Environment Impact Assessment (EIA) Notification.

SPECIES IN NEWS

Rusty-Spotted Cat 	• Recently discovered for first time in West Bengal's Purulia district. • World's smallest and lightest known cat. • Habitat: Dry deciduous and semi-deciduous forests of northern and central India, Western Ghats, Kachchh, Rajasthan, and peninsular India, as well as Nepal and Sri Lanka. • India hosts 80% of its total population. • IUCN Red List Status: Near Threatened.
Gambusia Affinis (Mosquitofish) 	• National Green Tribunal (NGT) has sought a response from the Centre on its use as a biological agent for mosquito control due to its invasive nature. • Native Range: Southeastern U.S. and Northeastern Mexico. • Highly adaptable, tolerates a wide range of water conditions, including high salinity and pollution. • Diet: Primarily zooplankton, small insects, and mosquito larvae (making it a larvivorous fish).
Poecilia Reticulata (Guppy) 	• Native to Northeastern South America and the Caribbean. • Widely distributed in tropical and subtropical freshwater bodies globally. • Males are smaller than females but have ornamental fins. • Diet: Omnivorous, consuming mosquito larvae, small insects, algae, and organic detritus.
Pallas's Catmanul 	• The first photographic proof of Pallas's cat, in Himachal Pradesh has been found. • It is a small, long-haired cat. They have dense, silvery-grey fur, flat faces, and rounded ears. • Habitat: Primarily found in Central Asia, with their range extending to western Iran, Mongolia, China, Russia (on the border of Mongolia and China), Kazakhstan, and Kyrgyzstan. • They inhabit rocky steppes and cold deserts at elevations up to 5,000 meters. • IUCN Red List: Least Concern

Mucuna bracteata 	- The Tamil Nadu Forest Department, along with an NGO from Kanniyakumari, is engaged in a pilot project to remove Mucuna bracteata from rubber plantations and forest areas in the district. - It is an invasive cover crop. It is a leguminous vine which was introduced to rubber plantations as a weed protectant and nitrogen regulator valued for its drought tolerance.
Utricularia 	- A rare and unique carnivorous plant 'Utricularia' has been found in Rajasthan's Keoladeo National Park in large numbers this season. - It is typically found in regions like Meghalaya and Darjeeling. - The plant entraps creatures such as protozoa, insects, larvae, mosquitoes, and tadpoles in its bladder-like traps. Once trapped, the organism dies inside the bladder. - Terrestrial species of Utricularia thrive in soil filled with water, where they capture small swimming creatures.
Kaalinga Sarpa (King cobra) 	- Locally known as 'Kaalinga Sarpa' is officially named Ophiophagus Kaalinga. - Endemic to Western Ghats of south-western India. - They are diurnal (active during the day), feeding primarily on snakes like rat snakes, dhamans, and other cobras. - IUCN Red List status: Vulnerable
Indian Star Tortoise 	- As per the recent study, releasing confiscated Indian Star Tortoise back into the wild without proper scientific planning can be detrimental - It is herbivorous and solitary; does not hibernate but becomes inactive in extreme weather - Endemic to India & Sri Lanka, found in arid regions of northwest India, southern India, and Sri Lanka. - IUCN Red list status: Vulnerable.
Olive Ridley turtles 	- Carcasses of Olive Ridley turtles, which are currently in their breeding season, continue to wash ashore along the Visakhapatnam coast. Habitat: They inhabit warm and tropical waters of the Pacific, Atlantic, and Indian Oceans - These are carnivores, feeding mainly on jellyfish, shrimp, snails, crabs, mollusks, and various fish and their eggs. They are best known for their unique mass nesting behavior called arribada. - IUCN Red List: Vulnerable
Wroughton's free-tailed bat 	- It has been spotted at the Yamuna Biodiversity Park. - It is a highly rare species of molossus bat. - It is characterised by its large size, huge ears extending beyond the muzzle, and bicoloured velvet fur. It is known to be a powerful flier. - Primarily found in the Western Ghats, India, with a single known breeding colony. - IUCN Status: Data Deficient

Ruellia Elegans 	- Also known as Brazilian petunia or Christmas pride, It is a flowering plant native to wet tropical biomes, posing a threat to the native biodiversity of Assam. It has bright red, trumpet-shaped flowers. - India has six native species of Ruellia. - It was introduced in the Andaman Islands, in Jamaica and Puerto Rico. - It is one of four invasive species of Acanthoideae sub-family in India.
Iguana Iguana 	- Iguanas have been found in Fiji and Tonga areas, where they are not native but are originally from the Americas. - Iguanas are large lizards that are primarily herbivorous. They are active during the day. - Distinctive features: a row of spines along their back, a dewlap (a flap of skin under their throat), and long tails that they use for balance and defense - Habitat: Native to tropical areas of Mexico, Central America, South America, and the Caribbean. - IUCN: Least Concerned; CITES Listing: Appendix II.
Caracal 	- The first photographic record of a caracal has been taken in the Mukundra Hills Tiger Reserve (Rajasthan). - It is a primarily nocturnal cat species known for its distinct and pointy ears, which give the animal its name. - Distribution: Africa, Middle East, Central Asia, and South Asia. - In India, it is found in parts of Rajasthan and Gujarat. - IUCN Status: Least Concern (LC); WPA: Schedule I.
Euphaea Wayanadensis 	- This new species of damselfly has been discovered in Kerala's Wayanad region of the Western Ghats. - This marks Kerala's 191st odonate species. - Found near fast-flowing streams, Thrives in evergreen and semi-evergreen forest regions along stream banks. - Active through the year, except in the dry seasons of March and April. - Shows highly restricted distribution, making it vulnerable
Binturong 	- Also known as the bearcat, is the largest civet species in India. - It is a catlike omnivore found in dense forests across South and Southeast Asia, including Nepal, India, Bhutan, Sumatra, Java, and Borneo. - It has shaggy black fur, tufted ears, and a long, bushy prehensile tail that helps it climb trees. It is mainly active at night and during twilight hours. It uses scent glands under its tail to mark territory. IUCN: Vulnerable; WPA 1972: Schedule I; CITES: Appendix III
Pale-Chinned Flycatcher 	- Rare Pale-chinned Flycatcher (Cyornis poliogenys) was recently spotted in the Nong Loung (Bor Beel) forest of Arunachal Pradesh's Namsai district. - Known for its quiet nature and preference for dense, shady forests, this sparrow-sized bird is found across Northeast India, the Eastern Ghats, Sundarbans, and parts of Southeast Asia. - It occurs at altitudes from sea level up to 1,600 metres. Males have dull blue upperparts and a pale grey chin, while females appear browner.

	• IUCN Status: Least Concern
Flowerpot Snake 	• Also known as Brahminy Blind Snake, it is one of the world's smallest snakes (a length of 10-20 cm) and the only known snake species with three sets of chromosomes (trisomy). • Native to Southeast Asia, it is non-venomous, blind, and often mistaken for an earthworm. • Remarkably, it reproduces asexually, without a mate. • Found commonly in potted plants, it offers unique insights into genetics, including human conditions like Down Syndrome.

SCIENCE AND TECHNOLOGY

13TH NATIONAL SEED CONGRESS (NSC) 2024

Context: The 13th NSC 2024, organized by the Ministry of Agriculture & Farmers' Welfare, was held at the International Rice Research Institute South Asia Regional Centre (ISARC) in Varanasi.

About National Seed Congress (NSC)

- It is an **annual** event that **unites researchers, policymakers, farmers, and stakeholders from both the public and private sectors**.
- It serves as a key platform for discussing innovations in seed production, crop improvement, and delivery systems, aiming to enhance agricultural practices in India and worldwide.
- This event is jointly **organized by the Union Ministry of Agriculture and the International Rice Research Institute (IRRI)**.

About International Rice Research Institute South Asia Regional Centre (ISARC), Varanasi

- ISARC is a key hub for rice research and training in South Asia. Established through a collaboration between the Indian government and IRRI, it was inaugurated in 2018.
- **Key Functions of ISARC**
 - Develops climate-resilient, nutrition-rich rice varieties and improves seed systems.
 - Trains scientists, farmers, and stakeholders to promote advanced rice-based agriculture.
 - Focuses on low-methane rice varieties and eco-friendly techniques like Dry Seeded Rice (DSR) and Alternate Wetting & Drying (AWD).
 - Enhances South-South cooperation to boost rice production and seed quality across South Asia and Africa.

- The **International Rice Research Institute (IRRI)** is a premier global research organization dedicated to reducing poverty, hunger, and malnutrition through rice science.
- Founded in 1960 by the Ford and Rockefeller foundations with support from the Philippine government, IRRI is headquartered in Los Baños, Philippines, and has offices in 17 rice-growing countries across Asia and Africa.

HYPERLOOP

Context: India's first hyperloop test track, a collaboration between Indian Railways, IIT-Madras, and TuTr Hyperloop, was inaugurated recently.

About Hyperloop (popularized by Elon Musk in 2013)

- Hyperloop is a proposed **high-speed transportation system (more than 1200 kmph)** that uses **magnetic levitation** to move passengers and freight **through low-pressure tubes**.

Concept and Working

- **Low-Pressure Tubes:**
 - It involves propelling passenger or cargo-carrying pods through sealed tubes with significantly reduced air pressure. This near-vacuum environment **minimizes air resistance**, allowing for a highly energy-efficient mode of transportation.
 - Hyperloop systems are designed for often **utilizing solar panels along the tube to generate electricity**. (zero-emission transport mode if powered by renewable energy sources)
- **Pod Design:**
 - Passengers or cargo are transported in a pod that levitates using magnetic or air-based levitation technology.
 - Pods are designed to accommodate passengers in a comfortable and safe environment, with seating and safety systems similar to modern aircraft.

- **Magnetic Levitation:**

- The pods would levitate above the track using magnetic levitation, further reducing friction with the track.
- Maglev systems rely on the principles of **electromagnetism** to create both lift and propulsion.
- Magnets are used to repel or attract the train from the guideway (track), lifting it off the surface. Once levitated, the train is propelled forward using linear motors.

EXTRACHROMOSOMAL DNA (ECDNA)

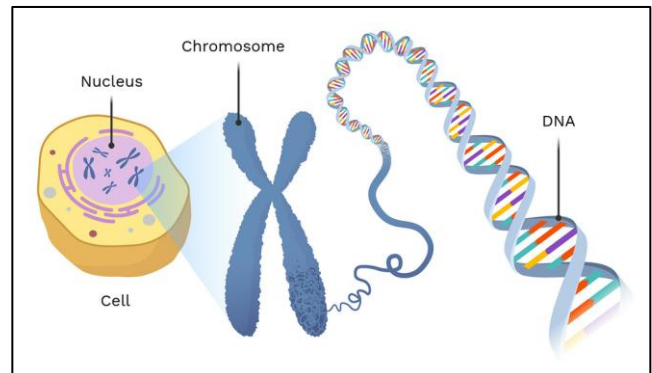
Context: Understanding the role of ecDNA in cancer has significant implications for cancer treatment and research.

Basics of Cell and DNA

- **Cell** is the smallest unit of life that can function independently. Everything living is made of cells, whether it's a single-celled bacterium or a complex organism.
- **Chromosomes:** Found in the nucleus of each cell, humans have 23 pairs of chromosomes (46 total). These are thread-like structures made of DNA and proteins.
- **DNA (Deoxyribonucleic Acid):** DNA contains genetic information in the form of genes.
 - Genes encode instructions for building and maintaining organisms.
 - While **most DNA is in chromosomes (nuclear DNA)**, DNA also exists as: Extrachromosomal DNA (ecDNA), Mitochondrial DNA (mtDNA) and Cell-free DNA (cfDNA)

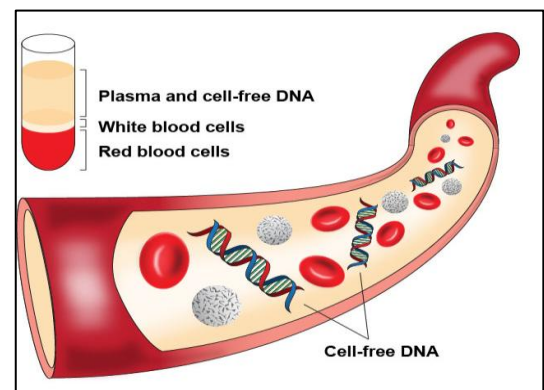
Extrachromosomal DNA (ecDNA)

- **Definition:** DNA located outside chromosomes but still inside the nucleus.
- **Formation of ecDNA:** DNA damage from natural processes (e.g., chromothripsis in cancer) or errors during replication can cause fragments of DNA to break away from chromosomes. These fragments form circular structures called ecDNA, floating freely in the nucleus.
- **Role in Cancer Growth**
 - **Oncogene Amplification:** ecDNA often contains multiple copies of oncogenes (mutated genes causing cancer). During transcription, ecDNA amplifies oncogene expression, making them four times more abundant than chromosomal DNA.
 - **ecDNA Mobility:** Unlike fixed chromosomal DNA, ecDNA moves freely, forming hubs that highly express oncogenes.
 - **Impact on Tumours:** Rapid tumour evolution and spread. Drug resistance and relapse, especially after chemotherapy.
- **New Research on ecDNA**
 - Initially discovered in cancer cells 50 years ago, ecDNA was thought to exist in only 1.4% of tumours.
 - Advanced genomic techniques reveal ecDNA presence in 40% of cancer cell lines and up to 90% of brain tumour samples, emphasizing its role in cancer biology.



Cell-free DNA (cfDNA)

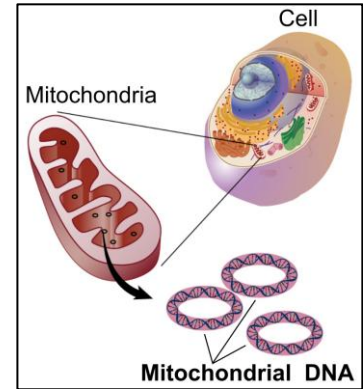
- **Definition:** cfDNA are DNA fragments **found in bodily fluids like blood, urine, saliva, and cerebrospinal fluid**. They are released when cells undergo programmed cell death or unplanned cell death (due to injury or disease).



- **Characteristics**
 - Non-functional fragments incapable of replication.
 - Contain genetic information from the cells they originated from.
- **Applications**
 - **Non-invasive prenatal testing:** Detect chromosomal abnormalities (e.g., Down syndrome).
 - **Early cancer detection:** Reveal genetic mutations and tumour alterations.
 - **Diagnosis of infectious diseases** and forensic investigations.
 - **Neurological biomarkers:** Help diagnose disorders like Alzheimer's disease.
 - **Organ transplant monitoring:** Provide early signs of graft rejection.

Mitochondrial DNA (mtDNA)

- **Definition:** Mitochondrial DNA (mtDNA) is the DNA found in mitochondria, which are organelles that produce energy for cells.
- **Characteristics**
 - Circular and smaller than nuclear DNA (~16,500 base pairs).
 - Encodes a few genes essential for mitochondrial function.
 - **Maternal Inheritance** i.e. passed almost exclusively from the mother.
 - Prone to mutations due to exposure to free radicals generated during energy production.
 - Impaired mitochondria lead to conditions like muscle weakness, blindness, and brain disorders.



Mitochondrial Donation Treatment

Three-Parent Baby: Faulty mitochondria in the mother are replaced with healthy mitochondria from a donor via in-vitro fertilization (IVF). Prevents the transmission of mitochondrial diseases to the child.

WILLOW CHIP

Context: Google has unveiled its next-generation quantum computing chip called 'Willow'.

About Willow Chip

- Willow Chip is **Google's latest quantum computing chip**, designed for **high-performance computing**. It integrates single and two-qubit gates, qubit reset, and readout mechanisms seamlessly to prevent system lag, ensuring optimal performance.
- This technology is inspired by advances in artificial intelligence (AI), particularly in neural networks.
- **Key Features of Willow Chip**
 - Completed a benchmark computation in under five minutes, which would take a supercomputer 10 septillion (10^{25}) years.
 - Uses superconducting transmon qubits, which are tiny electrical circuits that exhibit quantum behavior at extremely low temperatures. These qubits function like artificial atoms in a quantum state.
 - Willow incorporates sophisticated error correction techniques, a crucial hurdle in building large-scale, reliable quantum computers

What is a Quantum Chip?

- A quantum chip is a specialized processor that operates using quantum mechanics, the science of subatomic particles.
- Unlike traditional chips that process information in bits (0 or 1), quantum chips use qubits, which can be 0, 1, or both at the same time (superposition).
- This unique property allows quantum chips to perform complex calculations exponentially faster than classical computers.

DIAMOND COOLING TECHNOLOGY

Context: Akash Systems, renowned for its revolutionary Diamond Cooling technology for AI, has entered into a \$27 million partnership with NxtGen Datacenter and Cloud Technologies, India's largest sovereign cloud provider.

About Diamond Cooling Technology

- The Technology utilizes the **exceptional thermal conductivity of diamond to efficiently dissipate heat in high-power electronic devices**, including laser diodes, electric vehicles, high-power transistors, amplifiers, CPUs, and GPUs.
- By **integrating diamonds with semiconductors**, these systems can keep devices cooler, **enhance their efficiency and performance**, extend their lifespan, and reduce costs.

How Diamond Cooling Technology Works

- **Synthetic diamond is combined with materials like Gallium Nitride (GaN)** to create high-performance heat dissipation systems. This allows devices to function efficiently while maintaining optimal thermal management.
- **Unlike traditional materials, diamond efficiently transfers heat through phonons** (vibrations of atoms in a crystal lattice).
- **Single-crystal diamond boasts a thermal conductivity of over 2000 W/m-K**, significantly more than materials like copper and silicon carbide (SiC), ensuring rapid heat dissipation and preventing overheating.

Applications of Diamond Cooling

- **AI & Data Centers:** Keeps chips 50-75% cooler, enhancing AI and signal processing.
- **Aerospace:** Enables 5-10× faster satellite communication with 50% smaller devices.
- **Automotive:** Extends EV range by 30-50% through better heat management.

FERMENTED BAMBOO SHOOT (MELYE-AMILEY)

Context: A recent study highlighted that extract from a traditional fermented bamboo shoot variety of Tripura, popularly called 'Melye-amiley' has anti-obesity effects.

About Melye-amiley:

- It is a traditional fermented bamboo shoot variety of **Tripura**.
- It has anti-obesity effects and offers a solution to weight management and metabolic health,
- It **reduces lipid accumulation and increases fatty acid β -oxidation**.
- Based on in vitro cell culture studies the team has observed that 'Melye-amiley' can **reduce intracellular lipid accumulation**.

CARBON-14 DIAMOND BATTERY

Context: Scientists from the University of Bristol and the UK Atomic Energy Authority (UKAEA) have created the world's first carbon-14 diamond battery.

What is Carbon-14 Diamond Battery?

- A Carbon-14 diamond battery is an experimental type of **nuclear battery that generates electricity using radioactive carbon-14 enclosed in a diamond structure**.
- This technology leverages the unique properties of diamonds, which can **convert radiation into electric current without the need for moving parts or chemical reactions**.

How It Works

- **Radioactive Decay Utilization:** The carbon-14 diamond battery works by using the radioactive decay of carbon-14, which has a half-life of 5,700 years, to generate low levels of power. It functions similarly to solar panels, which convert light into electricity, but instead of using light particles (photons), they capture fast-moving electrons from within the diamond structure.
- **Diamond Encapsulation:** The radioactive carbon-14 is encased within an artificial diamond structure, which: acts as a radiation shield, preventing external leakage and functions as a semiconductor, efficiently converting radiation into electricity.

- **Utilization of Nuclear Waste:** Carbon-14 is extracted from graphite blocks in nuclear reactors. This provides a sustainable way to repurpose radioactive waste into a valuable energy source, reducing environmental concerns.
- **Safety & Durability:** The diamond casing ensures radiation containment, making the battery safe for various applications. Its solid-state structure provides extreme durability, allowing it to function in harsh environments without degradation.

Advantages	Limitations
• Extremely long lifespan (thousands of years). • No moving parts, reducing maintenance needs. • Safe and non-toxic if properly contained. • Useful for space missions, pacemakers, and remote sensors where battery replacement is difficult.	• Low power output, not suitable for high-energy applications like smartphones or electric cars. • High production cost due to diamond fabrication. • Limited commercial availability—still in research and development.

Potential Applications

- **Space Exploration:** Powering deep-space probes and satellites.
- **Medical Devices:** Pacemakers and ocular implants with lifetime power.
- **Military & Defense:** Long-term surveillance and unmanned devices.
- **Remote Sensors:** Arctic, oceanic, and underground monitoring.

EXPANSION OF UNIVERSE

Context: NASA's James Webb Space Telescope has confirmed that the universe is expanding faster than expected, corroborating observations made by the Hubble Telescope.

Key Concepts in Cosmic Expansion

- **Hubble Constant (H_0):**
 - The Hubble Constant refers to the **rate at which the universe is expanding**. It is estimated to be around **70 km/s per megaparsec (km/s/Mpc)**.
- **Hubble's Law:**
 - This law states that the **velocity (v) at which a galaxy moves away from us is directly proportional to its distance (d) from Earth**. It is mathematically expressed as: **$v = H_0 \cdot d$ (H_0 is Hubble Constant)**
 - This relationship indicates that the **farther a galaxy is, the faster it moves away from us, suggesting that space itself is expanding**.
- **Hubble Tension:**
 - The Hubble tension refers to the discrepancy in the value of the Hubble constant inferred from the cosmic microwave background observations and that from the distance ladder and other direct measurements
 - Recent data, including from the James Webb Space Telescope, suggests that the **observed expansion rate is approximately 8% faster than what Big Bang models predicted**, deepening the mystery surrounding this discrepancy, known as **Hubble Tension**.

About James Webb Space Telescope (JWST)

The James Webb Space Telescope (JWST) is the most advanced space observatory of the decade, designed to explore the universe in unprecedented detail.

- **Objective:** To study universe's evolution, including first light after the Big Bang, the formation of galaxies, stars, and planets, and the development of solar systems that may support life.
- **Launch Date:** December 25, 2021.
- **Orbit:** Unlike the Hubble Space Telescope, JWST does not orbit Earth. Instead, it orbits the Sun at the second Lagrange point (L2), about 1.5 million kilometers (1 million miles) from Earth.

- **Capabilities:** Equipped with highly sensitive infrared instruments, JWST can observe distant celestial objects, penetrate cosmic dust, and provide insights into exoplanets and their atmospheres.

Contributions of the James Webb Space Telescope (JWST)

- Providing precise measurements of standard candles like Cepheid variables and Type Ia supernovae, helping refine the understanding of cosmic distances and expansion.
- Confirming the accuracy of over 30 years of observations made by the Hubble Space Telescope, while also adding to the ongoing puzzle of Hubble Tension.

Evidence of Expansion

- **Redshift:** Light from distant galaxies shifts toward the red end of the spectrum, indicating they are moving away due to cosmic expansion.
- **Gravitational Lensing:** Light from distant objects is bent and distorted by massive objects between them and the observer, providing evidence for the universe's expanding fabric. Observed extensively by the Hubble Space Telescope.
- **Cosmic Microwave Background Radiation (CMBR):** Residual radiation from the Big Bang supports the theory of an expanding universe.

India's Contributions to Cosmic Research

- **ASTROSAT:** India's ASTROSAT is the **country's first multi-wavelength space observatory**. By analyzing the universe at different wavelengths, ASTROSAT helps to deepen our understanding of the universe's evolution. It was launched in 2015 by ISRO.
- **International Collaborations:** India is also involved in global space research efforts, such as the Thirty Meter Telescope (TMT) project. These collaborations with leading space agencies and observatories worldwide, including NASA and the European Space Agency (ESA), help pool resources and knowledge, accelerating the discovery process.

MIRROR BACTERIA

Context: A group of scientists working globally has sounded an alarm about the potential creation of mirror bacteria.

What are Mirror Bacteria?

- Mirror bacteria are hypothetical microorganisms with a reversed molecular handedness compared to natural life forms.
- All known life is homochiral, meaning DNA and RNA are composed of right-handed nucleotides, while proteins are built from left-handed amino acids. In contrast, mirror organisms would have these chiral structures in reverse.

Key Characteristics of Mirror Bacteria:

- **Immune Evasion:** Mirror bacteria would be resistant to natural pathogens because the immune system relies on recognizing specific molecular shapes, which mirror bacteria would not possess.
- **Predation Resistance:** Natural predators like bacteriophages and protists that target regular bacteria may be ineffective against mirror bacteria due to differences in molecular interactions.
- **Antibiotic Resistance:** Standard antibiotics and immune responses may not work on mirror bacteria, as they are tailored for normal biomolecular structures.
- **Environmental Spread:** Mirror bacteria could colonize different environments and spread between ecosystems without competition from natural microorganisms.
- **Health Risks:** If mirror bacteria adapted to infect humans, animals, or plants, they could cause severe infections due to the lack of natural immune defenses against them.

IRIS² PROJECT

- The IRIS² (Infrastructure for Resilience, Interconnectivity and Security by Satellite) Programme is the **European Union's flagship initiative aimed at providing secure connectivity and high-speed broadband** for governmental users, private companies, and individuals.

Key Features

- Operates using **Medium Earth Orbit (MEO)** and **Low Earth Orbit (LEO)** satellites.
- Comprises **264 LEO satellites and 18 MEO satellites**, offering **high-speed internet** without requiring thousands of satellites.
- **Developed in collaboration with SpaceRISE**, a consortium of leading European satellite operators and space companies.

Applications

- **Government:** Border/maritime surveillance, crisis management, and defense.
- **Transport:** Supports maritime, railway, aviation, and automotive sectors.
- **Connectivity:** Expands rural internet access and remote healthcare.
- **Industry:** Enables smart grids, banking, and global industrial operations.
- **Broadband:** Delivers satellite internet and cloud connectivity in low-network areas.

STRATEGY FOR INFRARED REGULATION

Context: Scientists from the Centre for Nano and Soft Matter Sciences (CeNS), Bengaluru, have come up with a novel strategy to control and regulate IR radiation.

More About News:

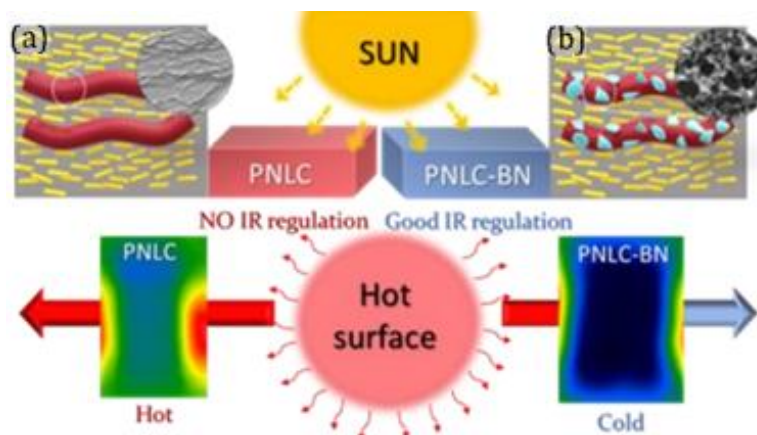
- The strategy uses **2-dimensional nanosheets of a chemical called hexagonal boron nitride**. It has potential for deployment as a radiative heat barrier, thermal camouflage and in thermal management applications.

What is Infrared Radiation (IR)?

- Infrared Radiation (IR) is a type of electromagnetic radiation, similar to visible light but with a longer wavelength. Infrared radiation is **invisible to the human eye**, but it can be detected as heat.

Key Characteristics of Infrared Radiation:

- **Wavelength:** IR radiation has a wavelength ranging from 780 nanometers (nm) to 1 millimeter (mm). This places it between visible light and microwaves on the electromagnetic spectrum.
- **Travel:** Infrared radiation travels in **straight lines at the speed of light in a vacuum**. It **does not require a medium** to travel through and can move through space.
- **Absorption and Emission:** IR radiation is easily absorbed and emitted by various materials, especially water and carbon-based substances. This makes it crucial for processes like warming food or heating the atmosphere.



Sources of Infrared Radiation:

- **Natural Sources:** Sun (primary natural source of infrared radiation), Earth and Other Celestial Bodies
- **Artificial Sources:** Heat Lamps, Electric Heaters, Infrared Saunas, Industrial Equipment

Role of Infrared Radiation:

- Infrared Radiation is present in solar radiation and it plays a role in sustaining life on earth. However, excess exposure to IR radiation (about 50% of the sun's radiation), can be undesirable from the viewpoints of both discomforting ambient temperature and possible health disorders.

PARKER SOLAR PROBE

Context: NASA announced that the Parker Solar Probe survived the closest-ever approach to the Sun.

About Parker Solar Probe

- Launched in 2018 as part of **NASA's Living With A Star (LWS) program**, the Parker Solar Probe is on a mission to explore the **Sun's outer atmosphere, known as the corona**, and investigate key phenomena:
 - **Coronal Heating Problem:** Scientists aim to understand why the corona is significantly hotter than the Sun's surface.
 - **Acceleration of Solar Wind:** The probe will study the streams of charged particles flowing outward from the Sun, known as the solar wind.

Key Features of the Parker Solar Probe:

- **Unprecedented Proximity:** The Parker Solar Probe is designed to travel closer to the Sun than any spacecraft before it, entering the outer layers of the Sun's corona. On a mission to "touch the Sun," NASA's Parker Solar Probe became the **first spacecraft to fly through the** in 2021. Parker will fly more than seven times closer to the Sun than any spacecraft. Over seven years, the spacecraft will complete 24 orbits around the Sun.
- **Heat Shield:** Equipped with an innovative 4.5-inch-thick (11.43 cm) carbon-composite heat shield, the probe can withstand the extreme temperatures of over 1,377°C near the Sun, protecting its sensitive instruments from intense heat.
- **Scientific Instruments:** The probe carries a variety of advanced scientific instruments to study the Sun in detail, including:
 - **FIELDS:** Measures the Sun's magnetic fields.
 - **ISIS** (Integrated Science Investigation of the Sun): Investigates particles in the Sun's atmosphere.
 - **WISPR** (Wide Field Imager for Solar Probe): Captures images of the solar corona.
 - **SWEAP** (Solar Wind Electrons Alphas and Protons): Studies the solar wind particles.

ORAL REHYDRATION THERAPY (ORT)

Context: Renowned physician and global health scholar Richard Cash, who played a key role in developing Oral Rehydration Therapy (ORT), a life-saving intervention, has passed away.

About Oral Rehydration Therapy (ORT)

- ORT is a life-saving intervention that **involves administering a solution containing glucose, sodium chloride, sodium bicarbonate, and potassium chloride or citrate to treat or prevent dehydration.**
- The therapy includes two main components: **rehydration**, which replaces lost water and electrolytes, and **maintenance therapy**, which manages ongoing fluid loss and ensures proper nutrition.
- The solution helps absorb sugar, which enhances sodium, water, and chloride ion uptake in gut lining cells, promoting hydration.

Pioneers in ORT Development

- **Richard Cash:** Conducted the first clinical trials of ORT in cholera patients in Bangladesh during 1960s, proving its efficacy and safety as a low-cost alternative to intravenous fluids.
- **Dilip Mahalanabis:** An Indian pediatrician and public health expert, he pioneered the widespread use of **oral rehydration solutions (ORS)** to combat diarrheal diseases.

Impact of ORT in Treating Diarrhea and Cholera

- **Diarrhea:** ORT has significantly reduced child deaths from diarrheal diseases, contributing to a two-thirds decrease in child mortality since 1990. It helps mitigate nutritional deficits caused by diarrhea, aiding in children's growth and development.
- **Cholera:** ORT has drastically reduced cholera mortality from over 50% to less than 0.2%.

Global Initiatives

- **Global Task Force on Cholera Control (GTFCC):** Launched the Roadmap 2030 to eliminate cholera as a public health threat.
- **GAVI, the Vaccine Alliance:** Supports measures for diarrheal disease prevention and treatment, including ORT promotion.

- **Efficacy in Adults:** Clinical trials show that ORT requires 80% less intravenous fluid than traditional methods.

SATYENDRA NATH BOSE (S. N. BOSE)

Context: The Ministry of Science and Technology recently inaugurated the centenary celebrations of the iconic Bose-Einstein (B-E) Statistics.

About Satyendra Nath Bose (1894–1974)

- **Early Life and Education:** Born in the Nadia (West Bengal), Bose pursued his studies at Presidency College, Kolkata, under renowned mentors like Prafulla Chandra Ray and Jagadish Chandra Bose.
- **Scientific Legacy:** Bose is celebrated for developing the **Bose-Einstein Statistics** and predicting the **Bose-Einstein Condensate**. Particles that follow these statistical rules are called **Bosons**, named in his honour.

Scientific Contributions of S. N. Bose

1. Bose-Einstein Statistics:

- Bose-Einstein statistics is a fundamental concept in quantum mechanics that describes the **statistical distribution of indistinguishable particles known as bosons (e.g., photons, gluons)**.
- Introduced by Satyendra Nath Bose and later extended by Albert Einstein in the early 1920s, this framework applies to **systems where particles do not adhere to the Pauli exclusion principle**, allowing **multiple particles to occupy the same quantum state**.

Applications of Bose-Einstein Statistics		Examples
Bose-Einstein Condensates (BECs)	Particles occupy the same quantum state at extremely low temperatures.	Quantum computing, atomic clocks, interferometry
Superfluidity	Frictionless flow of liquid helium-4 near absolute zero.	Cryogenics, neutron star modeling
Lasers	Coherent light production through photons obeying Bose-Einstein statistics.	Laser surgery, fiber-optic communication
Blackbody Radiation	Explains energy distribution in blackbody radiation.	Cosmic microwave background studies, thermal imaging
Super-conductivity	Cooper pairs (bosons) enable resistance-free current flow in superconductors.	Magnetic levitation, lossless power transmission
Quantum Gases	Describes ultracold atomic gas behavior.	Quantum simulations in condensed matter physics

2. Other Contributions

- **Organic Chemistry:** Used X-ray diffraction and thermal analysis to study the atomic structure of clay minerals.
- **Thermoluminescence:** Designed a high-sensitivity spectrophotometer for experimental research.
- **Discovery of the Higgs Boson (God Particle):** The Higgs Boson discovery was rooted in principles of Bose-Einstein statistics and BEC. The Higgs Field, an invisible field permeating space, gives particles their mass, even in seemingly empty space.

HERITABLE HUMAN GENOME EDITING (HHGE)

Context: South Africa has become the first country to explicitly permit Heritable Human Genome Editing (HHGE) through its new guidelines on ethics in health research.

What is Heritable Human Genome Editing (HHGE)?

- Heritable human genome editing (HHGE) means **modifications made to germline cells** (DNA in human embryos, sperm, eggs, or fertilized eggs) **in a way that these changes can be passed down to future generations**.
- In simpler terms, it's like editing the genetic instructions that not only affect the person whose DNA is being modified but also their children, grandchildren, and so on.

- This **differs from somatic cell editing, which affects only the treated individual.**
- HHGE uses advanced gene-editing tools such as: Zinc-Finger Nucleases (ZFNs), Transcription Activator-Like Effector Nucleases (TALENs), CRISPR/Cas9 and Meganucleases

Potential Applications of HHGE

- **Disease Prevention:** Can prevent genetic disorders like cystic fibrosis, Huntington's disease, and sickle cell anemia.
- **Genetic Research:** Provides deeper insights into human biology and disease mechanisms.
- **Enhanced ART:** Improves IVF success rates and reduces genetic risks.

SPACE BIOTECHNOLOGY

Context: ISRO and DBT have joined to advance space biotechnology research, addressing challenges like nutrient availability, waste management, food preservation, microgravity effects, etc.

What is Space Biotechnology?

Space biotechnology focuses on understanding how living organisms adapt, function, and evolve in microgravity conditions to support space exploration and ensure human survival during long-duration missions.

Applications and Significance of Space Biotechnology

- **Microgravity Research:** Microgravity helps grow high-quality protein crystals, aiding in drug development.
- **Radiation Research:** NASA's BioSentinel (2022) studies how cells repair the damages caused from space radiation.
- **Environmental Monitoring:** Microbe research aids in bioremediation, such as turning Martian or lunar soil into fertile ground.
- **Disease Modelling:** To improve astronaut health and medical advancements.
- **Bioregenerative Life Support Systems:** These systems recycle waste to support long missions and improve Earth's resource management.

Global Initiatives

- **Space Biology Program (NASA):** Focused on understanding biological processes in space.
- **Biolab (European Space Agency):** A platform for studying biological organisms in microgravity.
- **Space Breeding Programs (CNSA):** Research on enhancing crop yields and developing resilient plant varieties in space conditions.

RNA EDITING

Context: The first successful clinical demonstration of RNA editing in humans was recently achieved by Wave Life Sciences, a U.S. company, to treat alpha-1 antitrypsin deficiency (AATD).

About Alpha-1 Antitrypsin Deficiency (AATD):

- AATD is an **inherited disorder** where abnormal levels of the protein Alpha-1 antitrypsin build up, causing **damage to the liver and lungs.**
- It can lead to conditions such as liver disease or chronic obstructive pulmonary disease (COPD).

What is RNA Editing?

- RNA editing is a process **where the genetic information in RNA** (the molecule that carries instructions from DNA to make proteins) **is changed after it is made.** Think of RNA as a message copied from DNA. During editing, certain letters in this message are altered, like correcting or rewriting parts of a text.
- This process can change how proteins are made, allowing the cell to adapt to different needs or environments.

- Guide RNA molecules are small RNA sequences that direct the editing machinery to specific regions of the target mRNA.

- **Technique Used: Adenosine Deaminase Acting on RNA (ADAR),** which works with guide RNA (gRNA).

- **Process of RNA Editing:** RNA consists of four bases: Adenine (A), Guanine (G), Uracil (U), and Cytosine (C). **ADAR modifies adenosine (A) in mRNA to Inosine (I).** Inosine functions like guanosine (G) in the genetic code.
- **Cellular Response:** The cell recognizes inosine as guanosine, **restoring the mRNA's intended function and allowing the production of normal proteins.** This editing mechanism contributes to protein diversity and fine-tunes gene expression.

Comparing RNA vs DNA editing

Feature	RNA Editing	DNA Editing
Form of Change	Temporary, reversible changes	Permanent, irreversible changes
Safety	Lower risk of immune reactions due to ADAR enzymes	Higher risk due to bacterial proteins (e.g., CRISPR-Cas9)
Flexibility	Changes can be adapted and undone	Permanent changes are inflexible
Applications	Ideal for short-term therapeutic interventions	Suited for long-term genetic corrections

Challenges in RNA Editing

- **Lack of Specificity:** Ensuring precise targeting of RNA sequences remains a challenge.
- **Transient Effects:** Edited RNA may lose its effect over time, requiring repeated treatments.
- **Early Development:** RNA editing is still in its infancy, with limited clinical uses.

DIRECT-TO-DEVICE(D2D) SATELLITE CONNECTIVITY

Context: BSNL Launched India's First Direct-to-Device (D2D) Satellite Connectivity using Viasat's Geostationary L-band satellites, positioned 36,000 kilometers above Earth.

Direct-to-Device (D2D) Satellite Technology

- D2D satellite connectivity is a **technology that enables devices such as smartphones, IoT sensors, and industrial machinery to connect directly to satellites** without the need for **intermediary ground-based cellular infrastructure.**
- This technology is particularly beneficial in areas with limited or no cellular coverage, including remote locations, oceans, and during emergencies.
- **Principle:** Satellites in space function as cell towers, bypassing the need for traditional terrestrial cell towers. This allows signals to be directly transmitted from satellites to devices on the ground.
- **Non-Terrestrial Network (NTN) Technology:** NTN refers to wireless communication systems of networks that include various platforms such as satellites [in Low Earth Orbit (LEO), Medium Earth Orbit (MEO), and Geostationary Orbit (GEO)], high-altitude platforms, and drones to connect devices in the sky, at sea, and on land.
- **Global Initiatives:** Companies like SpaceX with **Starlink** and AST SpaceMobile are also exploring D2D technologies.

FIRST INDIGENOUS ANTIBIOTIC

Context: The Union Minister of Science and Technology has introduced the first indigenous antibiotic, Nafithromycin, for treating resistant infections.

About Nafithromycin

- India's first indigenous antibiotic has been created to tackle critical health challenges, particularly antimicrobial resistance (AMR).
- **Development:** It was developed by the **Biotechnology Industry Research Assistance Council (BIRAC)**, a division of the Department of Biotechnology, Ministry of Science and Technology.
- **Purpose:** It is specifically designed to treat **Community-Acquired Bacterial Pneumonia (CABP)**, a severe condition caused by drug-resistant bacteria. It is particularly effective in combating both typical and atypical pathogens associated with this illness.
- **Efficacy:** It has proven to be 10x more effective than azithromycin, with minimal side effects and no food interactions.

- **Regulatory and Approval Status:** Currently, it is awaiting final approval from the Central Drugs Standard Control Organization (CDSCO) for manufacturing and public distribution.

ADOPTION OF JEDDAH COMMITMENTS

Context: The 4th Global High-Level Ministerial Conference on antimicrobial resistance (AMR) recently concluded in Jeddah, Saudi Arabia.

Key Initiatives in the Jeddah Commitments:

- **Establishment of New Hubs:**
 - **AMR ‘One Health’ Learning Hub:** Focused on fostering understanding and action against AMR.
 - **Regional Antimicrobial Access and Logistics Hub:** Enhances access to essential antimicrobials and diagnostics in Saudi Arabia.
- **Biotech Bridge Initiative:** Advocates for a new “biotech bridge” to accelerate research, innovation, and solutions to combat AMR.

Theme: “From Declaration to Implementation – Accelerating Actions Through Multisectoral Partnerships for the Containment of AMR.”

Other Key Actions:

- Emphasized the role of Quadripartite Joint Secretariat (QJS) in coordinating global efforts to prevent and mitigate AMR.
- Promotion of global data sharing via platforms such as **GLASS AMR/AMC, ANIMUSE, and INFARM.**

About the Quadripartite Joint Secretariat (QJS) on AMR

- It is a collaborative initiative by four major international organizations—FAO, UNEP, WHO, and the World Organization for Animal Health (WOAH)—**to address the global challenge of antimicrobial resistance.**
- **Purpose and Role:** Provides global advocacy, technical guidance, and political engagement. Promotes a shared vision and collective action to tackle AMR. Serves as the Secretariat for global AMR governance structures.
- **Hosting and Operations:** Hosted by the World Health Organization (WHO). Tasked with implementing recommendations from the Inter Agency Coordinating Group on AMR (IACG).

System	Organization	Purpose
GLASS (Global Antimicrobial Resistance and Use Surveillance System)	World Health Organization (WHO)	Monitors global antimicrobial resistance (AMR) and consumption (AMC) to track resistant pathogens and antimicrobial use.
ANIMUSE (ANimal antiMicrobial USE Global Database)	World Organisation for Animal Health (WOAH)	Collects data on antimicrobial use in animals to address resistance from veterinary practices.
InFARM (International FAO Antimicrobial Resistance Monitoring System)	Food and Agriculture Organization (FAO)	Monitors AMR in livestock, fisheries, aquaculture, and food products to guide informed decision-making in agriculture.

GLOBAL HEALTH EMERGENCY CORPS

Context: WHO activated Global Health Emergency Corps (GHEC) for Mpox Outbreak.

About Global Health Emergency Corps (GHEC)

- The GHEC was established by WHO in **2023** following lessons learned from the COVID-19 pandemic. It was created **to address the need for better-coordinated support during health emergencies.**
- GHEC aims to enhance global responses to health emergencies by providing a platform for collaboration among countries and health emergency networks.

Role of GHEC:

- Strengthens national health emergency workforces.
- Facilitates the rapid deployment of experts during health crises.
- Establishes networks of technical leaders to ensure coordinated and effective responses.

METHYLCOBALAMIN

Context: The FSSAI recently provided clarity on the use of methylcobalamin, a naturally occurring form of vitamin B12 found in supplements and dietary sources.

What is Methylcobalamin?

- Methylcobalamin is a **water-soluble form of vitamin B12 (cobalamin)**, an essential nutrient that the human body cannot produce on its own. It plays a **crucial role in cell growth, blood formation, and protein synthesis**.
- Additionally, it **supports neurotransmitter production**, including **serotonin** and **dopamine**, which are important for mood regulation and mental well-being.
- Methylcobalamin is **one of the two coenzyme forms of vitamin B12** that the body **can directly use without requiring conversion**.
- It occurs naturally in animal-based foods such as meat, fish, eggs, and milk.

Functions and Biological Significance

- **Nerve Function:** Supports the development and maintenance of the myelin sheath, which protects nerve fibers. Deficiency can lead to neurological disorders like peripheral and diabetic neuropathy.
- **Red Blood Cell Formation:** Essential for producing healthy red blood cells that transport oxygen. Deficiency may result in anemia, fatigue, weakness, and numbness in hands and feet.
- **DNA Synthesis:** Plays a key role in the formation and repair of DNA, the genetic material in cells.
- **Methylation Reactions:** Acts as a cofactor in converting homocysteine to methionine, helping to reduce cardiovascular risks.

CUBIC KILOMETRE NEUTRINO TELESCOPE (KM3NET)

Context: Two telescopes are being deployed underwater in the Mediterranean Sea to detect high-energy neutrinos, also known as ghost particles.

What is KM3NeT?

- KM3NeT (Cubic Kilometer Neutrino Telescope) is a **large-scale European research facility consisting of two underwater neutrino telescopes (ARCA and ORCA) in the Mediterranean Sea**.
- KM3NeT relies on seawater as both a detection medium and a shield against background noise.
- It aims to **instrument at least one cubic kilometer of seawater to detect and study high-energy neutrinos**, which are tiny, chargeless fundamental particles that are among the most abundant in the universe after photons.
- KM3NeT uses **advanced water Cherenkov detectors** to observe high-energy neutrinos. It is **similar in purpose to the IceCube Neutrino Observatory**, which is located under Antarctic ice, but instead, KM3NeT is deployed deep underwater to enhance detection efficiency.

Neutrinos are subatomic particles with no charge, very little mass, and half-unit spin. They are the most abundant particles with mass in the universe.

- Neutrinos **interact with matter** only through extremely weak interactive forces.
- They can **pass through an enormous number of atoms** without causing any reaction.

Two Neutrino Telescopes

Telescope	Location	Purpose
ARCA (Astroparticle Research with Cosmic in the Abyss)	Offshore Sicily, Italy	Detects high-energy cosmic neutrinos from distant astrophysical sources.
ORCA (Oscillation Research with Cosmic in the Abyss)	Offshore Toulon, France	Studies neutrino properties, including mass and oscillation behavior.

INDIGENOUS PARACETAMOL DRUG

Context: Council of Scientific and Industrial Research (CSIR) has developed an indigenous paracetamol.

About Paracetamol

- Also known as N-acetyl-para-aminophenol, paracetamol is a widely used **medication for pain relief (analgesic) and fever reduction (antipyretic)**.
- It is rapidly absorbed in the gastrointestinal tract and provides quick relief. Overdose can cause severe liver damage (hepatotoxicity).
- Recognized globally, most countries (including India) use the term paracetamol, while **in the United States and Japan, it is called acetaminophen**.
- It is included in the **WHO Model List of Essential Medicines**.
- **How It Works:** Paracetamol functions by **inhibiting prostaglandins, compounds that amplify pain**. It also **targets the hypothalamus**, the part of the brain responsible for regulating body temperature, thereby reducing fever.
- **Paracetamol vs. Aspirin:** Unlike aspirin, which has anticoagulant (blood-thinning) properties, paracetamol is safer for a broader population, including individuals at risk of bleeding disorders.

TIDAL TAIL

Context: A study has revealed the formation of an ultra-diffuse galaxy at the end of the longest tidal tail ever discovered.

What is a Tidal Tail?

- A tidal tail is a **long, thin stream of stars, gas (mainly hydrogen), and dust** that is pulled away from a galaxy due to gravitational interactions.
- These structures **form during galaxy collisions** or mergers when the differential gravitational forces stretch and distort galaxies, creating elongated trails that extend for millions of light-years.

Formation and Gravitational Influence

- Tidal tails **arise due to tidal forces**, which are stronger on the near side of a galaxy facing another galaxy and weaker on the far side.
- This **difference in gravitational pull stretches the galaxy**, forming curved or arched tails due to orbital motion.
- Some galaxies have one tidal tail, while others may have two, depending on the nature of the interaction.
- Instruments like the Hubble Space Telescope, James Webb Space Telescope, and Gaia (ESA) help observe and study these structures.



Characteristics of Tidal Tails

- Tidal tails are generally faint and diffuse, making them difficult to observe directly.
- However, high-resolution telescopes and missions like AstroSat (ISRO) enhance the study of galactic structures.
- Some of the most well-known galaxies with tidal tails include The Antennae Galaxies, The Mice Galaxies, and The Tadpole Galaxy.

Significance of Tidal Tails

- **Evidence of Interactions:** Tidal tails indicate past or ongoing galactic interactions, influencing their evolution and mergers.
- **Star Formation:** Dense gas clouds in tidal tails can collapse to form new stars (e.g., Antennae Galaxies, Mice Galaxies, Tadpole Galaxy).
- **Scientific Insights:** Observations using ALMA help study gas content, supporting theories like the Big Bang and hierarchical galaxy formation.

SSI MANTRA

Context: Using the SSI Mantra 3 Surgical Robotic System, India achieved the successful completion of robotic cardiac surgeries via telesurgery.

About SSI Mantra (developed by SS Innovations)

- It is India's first surgical robotic system designed for advanced robotic and telesurgery.
- It has **Ultra-low latency (35-40 milisecond)** allowing seamless real-time remote surgical procedures.
- Capacity to handle with precision the complex surgeries such as **Totally Endoscopic Coronary Artery Bypass (TECAB)**.
- The **first robotic system globally to receive regulatory approval for telesurgery by Central Drugs Standard Control Organization (CDSCO)**.

GUILLAIN-BARRÉ SYNDROME

Context: Pune City has emerged as the epicentre of the Guillain-Barre Syndrome (GBS) outbreak..

About Guillain-Barre Syndrome (GBS)

- GBS is a **neurological disorder** in which the body's immune system **attacks the peripheral nervous system**.
 - This is the part of the nervous system outside the brain and spinal cord.
 - It controls muscle movement, pain signals, and temperature and touch sensations.
- GBS is also called **acute inflammatory demyelinating polyradiculoneuropathy (AIDP)**.
- It can occur at any age, but it most commonly affects people between 30 and 50. GBS is not contagious or inherited and the exact cause is unknown.

Causes

- It is often observed following a viral or bacterial infection, vaccination, or major surgery.
- At such times, the immune system becomes hyperactive, leading to this rare condition.

Symptoms

- Patients often begin with an unknown fever, followed by weakness and other nervous system-related symptoms.
- It can increase in intensity over a period of hours, days, or weeks until certain muscles cannot be used at all.
- Some cases of GBS are very mild and only marked by brief weakness. Others cause nearly devastating paralysis, leaving the person unable to breathe on their own.

Treatment

- There is no known cure for GBS. The most commonly used treatment is **intravenous immunoglobulin (IVIG)**, which is made from donated blood that contains healthy antibodies. This helps calm down the immune system's attack on the nerves.

SILVER NANOWIRE-BASED CONDUCTIVE INK TECHNOLOGY

Context: India has successfully developed and transferred indigenous silver nanowire-based conductive ink technology to two Indian startups under a project funded by the Ministry of Electronics and Information Technology (MeitY).

About Silver Nanowire-Based Conductive Ink Technology

- Silver nanowire-based conductive ink is an **advanced material that enables the printing of electrically conductive patterns on various surfaces**. It is a **specialized material** that, when applied to a surface, **creates an electrically conductive path**.
- It plays a **critical role in next-generation electronics**, including flexible and transparent applications.
- The key ingredient is **silver nanowires** – incredibly tiny, thread-like structures of silver. These wires are dispersed within a liquid carrier, forming the ink.
- When the ink dries, the silver nanowires create a network that conducts electricity effectively.
- **Applications**
 - **Flexible Electronics & Solar Cells:** Used in foldable smartphones, wearables, and e-textiles.

Properties of Silver Nanowire

- **Flexibility:** Can be applied to plastic, fabric, and curved surfaces.
- **Transparency:** Used in thin layers, making it ideal for touchscreens.
- **High Conductivity & Versatility:** Supports diverse applications.

- **Semiconductors, Solar Photovoltaics**, and RFID industries.
- **Revolutionizing Manufacturing:** Enables printing of electronic circuits onto various surfaces.
- India imports ~\$15,72,000 worth of conductive ink annually from major exporters like the USA, China, the Netherlands, the UK, and Taiwan.

INDIA'S FIRST PRIVATE SATELLITE CONSTELLATION

Context: India's first private satellite constellation named Firefly was launched by Pixxel.

About Firefly

- Firefly consists of **six hyperspectral imaging satellites** launched by **Pixxel**, a **Bengaluru-based space tech startup**. (backed by Google with collaboration from SpaceX, which facilitated the launch).
 - Pixxel aims to create a constellation to monitor the Earth.
 - It was launched from Vandenberg Space Force Base, California, USA.
- **Aim:** To provide high-resolution hyperspectral imaging to improve insights in agriculture, mining, environmental monitoring, defense, and resource management.
- It is part of a plan to launch 18 additional satellites by 2029 to expand capabilities and meet growing demand.

BACTERIAL ENZYMES DEGRADING PLASTICIZER

Context: IIT Roorkee has successfully demonstrated the degradation of plasticizers using bacterial enzymes, offering a sustainable solution to plastic pollution.

What are Plasticizers?

- Plasticizers are **chemical additives that enhance the flexibility and durability of plastics**.
- Common plasticizers include **phthalates** [e.g., diethyl hexyl phthalate (DEHP)] and **adipates**.
- Despite their industrial importance, plasticizers pose serious environmental and health risks. Plasticizers can be absorbed through the skin, making them a direct threat to human health.
 - **Health Hazards:** Endocrine disruption, reproductive toxicity, and potential carcinogenic effects.
 - **Environmental Persistence:** Slow degradation leads to bioaccumulation in soil and water bodies, impacting ecosystems.

Key Findings of the IIT Roorkee Study

- The bacterium ***Sulfobacillus acidophilus***, found in soil, **produces an esterase enzyme capable of breaking down DEHP**.
- DEHP is enzymatically converted into mono-(2-ethylhexyl) phthalate (MEHP) and 2-ethyl hexanol.
- There is a possibility of complete mineralization of DEHP into water and carbon dioxide, making it an environmentally sustainable solution.

Applications of Research

- **Waste Management:** Eco-friendly plastic disposal.
- **Bioremediation:** Cleanup of contaminated soil and water.
- **Industrial Use:** Large-scale plastic degradation for sustainability.

PLANET PARADE

Context: **Venus, Saturn, Jupiter, and Mars** have aligned in the night sky, creating a rare celestial phenomenon known as a “planet parade.”

About Planet Parade

- A Planet Parade is an astronomical phenomenon where **several planets appear to align or gather closely in the sky from the perspective of Earth**.
- This alignment is **not exact but close enough to be visually striking**, creating a celestial spectacle.
- **Types of Alignments:** Mini Parade (3 planets align); Medium Parade (4-5 planets align); Grand Parade (6 or more planets align, which is rare)

MISSION SCOT

Context: The PM Modi lauded the Indian space startup Digantara at the success of Mission SCOT, a significant milestone in the realm of space situational awareness (SSA)

What is Mission SCOT?

- Mission SCOT (**Space Camera for Object Tracking**) is the **world's first commercial SSA satellite**, designed to enhance space debris tracking. Developed by **Digantara**, an Indian space startup.
- Launched aboard SpaceX's Transporter-12 mission as part of a rideshare program.
- Capable of tracking Resident Space Objects (RSOs), which include defunct satellites, rocket parts, and other debris orbiting Earth. They can be as small as 5 cm in LEO, significantly improving existing tracking capabilities.
- Backed by Aditya Birla Ventures and the Small Industries Development Bank of India (SIDBI).

Why is Space Situational Awareness (SSA) Important?

- Prevents satellite collisions by tracking and predicting the movement of space objects.
- Mitigates space debris risks, ensuring sustainable space operations.
- Improves global SSA infrastructure, addressing the increasing congestion in Earth's orbit.

Technological Advancements of Mission SCOT

- **Enhanced Tracking Capabilities:** Offers higher revisit rates and greater tracking accuracy than existing ground-based and space-based SSA sensors.
- **Sun-Synchronous Orbit (SSO) Advantage:** SCOT will be deployed in a sun-synchronous orbit, allowing it to track objects in Low Earth Orbit (LEO) with more efficiency than existing sensors.

India's SSA Efforts and Initiatives

1. ISRO's SSA Programs

- ISRO conducts proximity analyses and **Collision Avoidance Manoeuvres (CAM)** to prevent satellite crashes.
- ISRO operates a **Multi-Object Tracking Radar** at Sriharikota, though with limited range.
- The **ISRO System for Safe and Sustainable Operations Management (IS4OM)** provides annual space environment reports to improve orbital safety.

2. The NETRA Project (Network for Space Objects Tracking and Analysis)

- Aims to build an advanced Space Surveillance and Tracking (SST) network.
- Utilizes high-precision radars and optical telescopes to enhance threat detection and analysis.

LID 568

Context: NASA's James Webb Space Telescope and Chandra X-ray Observatory has discovered LID-568, a low-mass supermassive black hole from 1.5 billion years after the Big Bang.

About LID 568

- LID-568 is a supermassive black hole with a mass of about 10 million times that of the Sun.
- For comparison, **Sagittarius A*** (the black hole at the center of the Milky Way) has a **mass of about 4 million solar masses**, making LID-568 larger but still on the lower end of the mass spectrum for such objects.
- One of the most intriguing aspects of LID-568 is its **extremely rapid accretion rate**. It **consumes matter at a pace more than 40 times the Eddington limit**.
- Under normal circumstances, exceeding the Eddington limit causes radiation pressure to push away infalling material, limiting further growth.
- However, LID-568 appears to defy this principle, continuing to accumulate mass despite surpassing the expected threshold.
- This suggests the presence of an alternative accretion mechanism that allows it to grow at an exceptionally high rate.

- **Eddington Limit for Mass Accretion:** This limit determines the maximum rate at which a black hole or neutron star can gain mass through accretion.
- **Eddington Limit for Luminosity:** This refers to the maximum brightness a celestial object, such as a star or an accreting black hole, can achieve before radiation pressure overcomes gravitational attraction.

Possible Explanations for Rapid Growth

- **Direct Collapse Theory:** A massive gas cloud may have collapsed directly into a black hole, bypassing the usual star formation stage.
- **Merging of Seed Black Holes:** Multiple smaller black holes could have merged, rapidly increasing LID-568's mass.

RHODAMINE B (RHB)

Context: RhB is banned in food by the FDA in the U.S. and under India's Food Safety and Standards Act, 2006 due to health risks. Despite this, its widespread use in India raises serious health concerns.

What is Rhodamine B?

- Rhodamine B is a **water-soluble fluorescent xanthene dye** widely used in various industries like textile and paper industries.
- However, it is classified as unsafe under India's Food Safety and Standards Act, 2006 due to its health risks.

Applications of Rhodamine B

- **Textiles, cosmetics, paper, paints, and leather:** Provides a vibrant pink hue.
- **Food dye:** Previously used in cotton candy, sweets, and Chinese sauces despite health concerns.
- **Tracer dye:** Tracks water flow in rivers, pollutants in water systems, and pipeline leaks due to its high visibility.
- **Fluorescent applications:** Used in fluorescence microscopy, correlation spectroscopy, and ELISA for detecting molecules.
- **Laser dyes:** Utilized in scientific and medical lasers.

Impacts of Rhodamine B on Human Health

- **Toxic and carcinogenic:** Can cause DNA damage, leading to mutations and cancerous growths.
- **Animal studies:** Shown to cause tumors in the liver and bladder with prolonged exposure.
- **Skin and allergic reactions:** May lead to itching, redness, skin thickening, and chronic pigmentation changes.
- **Long-term exposure:** Can result in oxidative stress, affecting cells and tissues.

FSSAI Regulations

- FSSAI regulations under Food Safety and Standards (Food Products Standards and Food Additives) Regulations, 2011, allow only approved food colors that are pure & free from harmful impurities.
- **Natural colors permitted** include Carotenoids (Beta-carotene, Canthaxanthin, etc.), Chlorophyll, Riboflavin, Caramel, Annatto (in permitted edible oil), Saffron, and Curcumin (Turmeric).
- **Synthetic colors allowed** are Ponceau 4R, Carmoisine, Erythrosine (Red); Tartrazine, Sunset Yellow FCF (Yellow); Indigo Carmine, Brilliant Blue FCF (Blue); and Fast Green FCF (Green). The acceptable level is 100 ppm in fresh food or 200 ppm in microgram/gram colour canned food.
- Adding unapproved colors is prohibited.

NVS-02 SATELLITE

Context: On January 29, the Indian Space Research Organization will launch the NVS-02, its 100th satellite, aboard the GSLV-F15 from Sriharikota.

About NVS-02 Satellite

- The NVS-02 satellite is a **second-generation navigation satellite** developed by the ISRO as part of the **Navigation with Indian Constellation (NavIC)** system.
- It is designed to enhance India's regional navigation capabilities by **replacing older satellites in the Indian Regional Navigation Satellite System (IRNSS)**.
- This satellite will play a vital role in **providing accurate positioning and timing services for both civilian and military applications**.
- The NVS-02 satellite was launched onboard the GSLV-F15 rocket from Satish Dhawan Space Centre (SDSC), Sriharikota on January 29, 2024.

- The NVS-02 will **replace the IRNSS-1E satellite**, which experienced malfunctioning atomic clocks before completing its intended lifespan.
- NVS-02 has a **12-year lifespan**, surpassing the 10-year duration of previous IRNSS satellites.
- It enhances navigation accuracy by **operating on L1, L5, and S frequency bands**.
- The **addition of the L1 frequency** improves compatibility with smartphones, fitness trackers, and wearable navigation systems, making NavIC more accessible.
- Equipped with an **indigenous Rubidium Atomic Clock**, it marks India's progress in self-reliant space technology.

About Navigation with Indian Constellation (NavIC) System

- NavIC is India's regional satellite navigation system, developed by ISRO. It was **formerly known as the Indian Regional Navigation Satellite System (IRNSS)**.
- NavIC provides accurate positioning, navigation, and timing (PNT) **services over India and 1,500 km beyond its borders**.
- The NavIC system consists of **seven operational satellites**, positioned in two types of orbits:
 - **Three satellites in Geostationary Orbit (GEO)**, providing fixed coverage over India.
 - **Four satellites in Inclined Geosynchronous Orbit (IGSO)**, covering wider regional areas with periodic shifts.
 - The **first NavIC satellite (IRNSS-1A) was launched in 2013**, with a mission life of 10 years.
- **NavIC provides two types of services:**
 - **Standard Positioning Service (SPS)**: Available for civilian users, Used in navigation, transportation, disaster response, and agriculture.
 - **Restricted Service (RS)**: Encrypted signals exclusively for military and strategic users. Ensures secure navigation for defense applications.
- **High Accuracy**: Position accuracy of 20 meters and timing accuracy within 50 nanoseconds.
- **Frequency Bands: L5 and S bands**. A new civilian signal is being introduced in the L1 band.
- **Interoperability**: NavIC signals are interoperable with other global navigation satellite systems such as: GPS (USA), GLONASS (Russia), Galileo (European Union) and BeiDou (China)

Advantages of NavIC Over GPS

- Unlike GPS, which uses satellites in Medium Earth Orbit (MEO), NavIC places its satellites in higher geostationary and geosynchronous orbits.
- This ensures: Constant coverage over the Indian subcontinent, and More accurate navigation for users in India, as satellites always remain visible over the region.

WASP-127B

Context: Scientists recently detected 'supersonic winds' travelling at a speed of 33,000 km per hour on a giant gaseous planet named WASP-127b.

About WASP-127b

- WASP-127b is an **exoplanet**, located **approximately 520 light-years** from Earth, **in the Milky Way galaxy**.
- It is classified as a **"hot Jupiter"**, a type of gas giant that orbits extremely close to its host star.
- This planet is notable for its **large size, low density, extreme temperatures**, and record-breaking wind speeds.

Size & Mass	30% larger than Jupiter, but only 16% of its mass
Density	Extremely low, suggesting a highly inflated atmosphere
Composition	Hydrogen, helium, with traces of carbon monoxide (CO) and water (H ₂ O)
Orbit	5% of Earth-Sun distance, completes an orbit in 4 Earth days
Tidal Locking	One side always faces the star, the other remains in dark (like our Moon)
Temperature	Day side: ~2,060°F (1,127°C); night side cooler but still warm
Atmosphere	Patchy clouds of silicates and metal oxides

Wind Speeds	Up to 33,000 km/h (20,500 mph)—fastest ever recorded
Interior Structure	No solid surface; may have a small or diffuse core

GENOME INDIA PROJECT

Context: The Genome India Project has reached a significant milestone by making the genomic data of 10,000 individuals publicly accessible.

What is Genome India?

- Genome India is a pioneering genomic research initiative **funded by the Department of Biotechnology (DBT)**, Government of India. It involves collaboration among 20 leading academic and research institutions to drive a genomics-based health revolution in India.
- The primary objective of Genome India is **to build a comprehensive catalogue of genetic variations that reflect the unique diversity of the Indian population.**

Achievements:

- Mapping India's Genetic Diversity:**
 - 20,000 samples collected from 83 diverse populations** across India, leading to the creation of a biobank for future research.
 - Whole genome sequencing completed for **10,000 individuals**, contributing to a comprehensive genetic catalog.
 - Data archived at IBDC, accessible through the FeED protocol, governed by Biotech-PRIDE guidelines.
- Applications of Genome India Data:**
 - Precision Medicine & Diagnostics tailored to India's population.
 - Advancements in Public Health, contributing to affordable genomics-based healthcare solutions.
 - A critical step toward enhancing national health infrastructure.

What is Genome Sequencing?

- Genome sequencing is the **process of determining the complete sequence of DNA (or RNA in some cases) in an organism's genome.**
- It involves identifying the precise order of nucleotide bases—**Adenine (A), Thymine (T), Cytosine (C), and Guanine (G)**—that make up the genetic material of an organism.
 - A genome is the entire set of genetic instructions that an organism carries in its DNA or RNA. It contains all the information needed for the growth, development, and functioning of an organism.

Applications of Genome Sequencing

- Healthcare & Medicine**
 - Genetic Disease Research:** Helps identify genetic disorders and their causes.
 - Precision Medicine:** Enables personalized treatment based on genetic makeup.
 - Cancer Research:** Aids in detecting genetic mutations associated with cancer.
- Public Health & Epidemic Control**
 - Epidemiology:** Tracks pathogens during outbreaks, improving disease surveillance.
 - Vaccine Development:** Helps in designing vaccines for infectious diseases.
- Agriculture & Biodiversity Conservation**
 - Agriculture:** Enhances crop varieties and livestock breeding through genetic insights.
 - Biodiversity Conservation:** Helps in cataloging species and understanding evolutionary relationships.

Genome Sequencing Initiatives	
Human Genome Project	- A global scientific initiative (1990-2003) aimed at sequencing the entire human genome and identifying all human genes. - It sought to develop research tools for understanding genetic diseases and addressing ethical concerns in genetics.

ENCODE Project	• The ENCODE Project by the US National Human Genome Research Institute (NHGRI), launched in 2003, began with a pilot phase analyzing 1% of the human genome. • It later expanded to whole-genome studies in ENCODE 2 and ENCODE 3 for both human and mouse genomes. • ENCODE 4, initiated in 2017, aims to further catalog regulatory elements by studying a wider range of biological samples.
Earth BioGenome Project (EBP)	• A 10-year global initiative launched in 2018 to sequence, catalogue, and analyze the genomes of all eukaryotic life on Earth, aiding in biodiversity conservation and ecosystem management.
IndiGen Programme	• Launched in 2019 by CSIR, this program aims to sequence the genomes of 1,008 individuals from diverse ethnic groups in India.
Indian Initiative on Earth Bio-Genome Sequencing (IIEBS)	• Planned in 2020 as part of the Earth BioGenome Project, this initiative focuses on sequencing 1,000 plant and animal species in five years to conserve biodiversity and prevent biopiracy.

THIRD LAUNCH PAD

Context: The Union Cabinet approved the establishment of the Third Launch Pad (TLP) at Satish Dhawan Space Centre of ISRO at Sriharikota, Andhra Pradesh.

About TLP

- Designed to support the launch of Next Generation Launch Vehicles (NGLV) and Launch Vehicle Mark-3 (LVM3) with a semi-cryogenic stage, along with advanced configurations of NGLV.
- **Timeline:** Expected to be completed within four years.

ISRO currently operates two launch pads at Sriharikota:

- **First Launch Pad:** Supports the launch of Polar Satellite Launch Vehicle (PSLV) and Small Satellite Launch Vehicle (SSLV). FLP was realized 30 years ago.
- **Second Launch Pad:** Primarily designed for Geosynchronous Satellite Launch Vehicle (GSLV) and Launch Vehicle Mark-3 (LVM3); also serves as a backup for PSLV launches. SLP has been operational for almost 20 years.

Locational Factors for a Satellite Launch Pad

- **Proximity to the Equator:** Launch sites closer to the equator benefit from the Earth's rotational speed, reducing fuel consumption and increasing payload capacity. Example: French Guiana Space Centre (Kourou), near the equator,
- **Coastal Location:** Ensures rockets launch over open water, minimizing risks to human settlements in case of failures. Example: Sriharikota
- **Low Population Density:** Reduces risks to human life in case of launch failures or debris fallout. Ideal locations are remote islands, deserts, or uninhabited regions.
- **Favorable Weather Conditions:** Clear skies, minimal storms, and low wind speeds improve launch success rates. Example: Sriharikota's stable climate supports frequent launches.
- **Infrastructure and Logistics:** Availability of roads, ports, and airstrips for transporting heavy launch vehicle components. Access to skilled workforce and research institutions.

What is the Next Generation Launch Vehicle (NGLV)?

- The NGLV is an advanced rocket being developed by ISRO to enhance India's satellite launch capabilities. Also known as the **Soorya Rocket**, it is designed to be cost-effective, reusable, and environmentally friendly for future space missions.
- It has a three-stage design with Reusable First Stage and Semi-cryogenic Booster stages.
 - Capable of carrying three times the payload of LVM3 (formerly GSLV Mk III).
 - Cost is 1.5 times higher than LVM3 but offers greater efficiency.
 - Incorporates green propulsion systems to minimize environmental impact.

- Modular design for flexibility in launching different payloads, including satellites and interplanetary missions.
- NGLV will be a significant step towards the vision of establishing & operating the Bharatiya Antariksh Station and towards developing capability for Indian Crewed Landing on the Moon by 2040.

ORGANOPHOSPHATES (OPS)

Context: Recently, doctors treating patients from J&K's Baddal village said that organophosphate could be behind the 17 deaths that had spread panic in the village.

What is Organophosphate?

- It is a chemical compound primarily used in pesticides and insecticides.
- Formed through the **esterification of phosphoric acid with alcohol**.
- Efficiently absorbed through inhalation and ingestion.

Applications of Organophosphate

- Used extensively in **agriculture** to protect crops from pests.
- Plays a role in controlling the **spread of diseases transmitted by insects**.
- Also used in **manufacturing plastics and solvents**.

Impact on Human Health

- **Disrupts nerve signal transmission**, leading to potentially fatal consequences.
- Certain organophosphates cause **neurotoxicity**, damaging peripheral and central nerve fibers.
- Linked to **neuropathy target esterase (NTE) inhibition**, resulting in severe neurological disorders.
- The **toxicity of organophosphates** is primarily due to their **ability to inhibit acetylcholinesterase (AChE)**, an enzyme that breaks down the neurotransmitter acetylcholine.
- Acetylcholine is essential for nerve impulse transmission, and when AChE is inhibited, acetylcholine accumulates in the nervous system, leading to overstimulation of muscles and organs.

Pesticides – Regulations in India & World

National Initiatives

- **Insecticides Act, 1968:** Regulates the manufacture, sale, and use of pesticides in India.
- **Draft Pesticides Management Bill, 2020:** Proposes stricter regulations and encourages safer pesticide alternatives.
- **Promotion of Organic Farming:** Initiatives like Paramparagat Krishi Vikas Yojana (PKVY) aim to reduce dependence on chemical pesticides.

International Frameworks

- **WHO Guidelines:** Provide recommendations on safe pesticide usage and promote alternatives to chemical pesticides.
- **Stockholm Convention:** Addresses persistent organic pollutants (POPs), including some organophosphate derivatives.
- **Rotterdam Convention:** Regulates the international trade of hazardous pesticides and chemicals.

SCRAMJET ENGINE

Context: The Defence Research and Development Organisation (DRDO) has successfully conducted a 120-second ground test of an Active Cooled Scramjet Combustor for the first time.

About Scramjet (Supersonic Combustion Ramjet) Engine:

- A Scramjet engine is an **advanced air-breathing jet propulsion system that operates efficiently at hypersonic speeds** (above Mach 5).
- Unlike conventional rocket engines, a **scramjet does not carry its own oxidizer**; instead, it **uses atmospheric oxygen for combustion**, making it more efficient for high-speed flight.
- **Developed By:** The Defence Research & Development Laboratory (DRDL), a Hyderabad-based lab under DRDO

Feature	Scramjet Engine	Ramjet Engine	Rocket Engine
Working Speed	Mach 5+ (Hypersonic)	Mach 2-4 (Supersonic)	Any Speed (Subsonic to Hypersonic)
Oxidizer Source	Takes oxygen from the atmosphere		Carries its own oxidizer (e.g., liquid oxygen)
Combustion Type	Supersonic combustion (air enters and burns at supersonic speed)	Subsonic combustion (air slows down before burning)	Internal combustion (completely self-contained fuel & oxidizer)
Use Case	Hypersonic missiles, spaceplanes, ultra-fast air travel	Supersonic cruise missiles, fighter jets	Satellites, space missions, deep-space travel

- The United States first successfully tested scramjet engines in July 2002. It was followed by Russia, the European Agency, Japan and then China.

QUANTUM TELEPORTATION

Context: Scientists at Northwestern University teleported a quantum state of light over 30 km of fiber optic cable.

What is Quantum Teleportation?

- Quantum teleportation is a **process that allows the transfer of quantum information from one location to another using quantum entanglement**.
- Quantum teleportation does not involve the physical transportation of particles themselves. In fact, it does not involve the instantaneous or physical transportation of objects in any way. Instead, the process only involves the transfer of quantum information, and this process relies on entanglement and classical communication.
- Quantum entanglement creates a link between two particles, ensuring that any change in one instantly affects the other, regardless of distance.

Why Is It Important?

- **Quantum Internet:** Enables seamless quantum computing communication.
- **Unbreakable Encryption:** Secure data transfer, as interception disturbs the quantum state.
- **Advanced Computing & Sensing:** Could revolutionize cryptography, sensing, and computing.

ATOMIC CLOCK

Context: A "groundbreaking" atomic clock built at a UK lab will make military operations more secure through experimental quantum technology over the years.

About Atomic Clock:

- An atomic clock is a **highly precise timekeeping device that measures time based on the natural vibrations of atoms** when they transition between specific energy states. It is the most accurate type of clock, with some modern versions **losing only a fraction of a second over millions of years**.
- Atomic clocks use the hyperfine transition of atoms, **most commonly cesium-133**, to keep time. Other elements like **rubidium, hydrogen, and strontium** are also used in advanced atomic clocks.
- The modern **definition of one second** is based on 9,192,631,770 cycles of microwave radiation required for the hyperfine transition of a cesium-133 atom.
- These advanced clocks are essential for **GPS satellites, space exploration, and fundamental physics research**.
- It is claimed that **quantum-based atomic clocks will lose less than one second over billions of years**, allowing scientists to measure time at an unprecedented scale.

NANOPORE TECHNOLOGY

Context: Scientists developed a nanopore tool for faster, more precise disease diagnosis by analyzing individual molecules.

- Nanopore technology is an advanced **biotechnology-based sensing method** that uses **nano-scale pores embedded in a thin membrane** to analyze biological molecules such as DNA, RNA, and proteins at the single-molecule level.
- This technology works by **detecting changes in electrical potential as charged molecules pass through the nanopore**, allowing **real-time** and highly sensitive molecular **analysis**.

Applications in Gene Sequencing

- **Real-time Sequencing:** Monitors DNA/RNA without amplification.
- **Single-Molecule Analysis:** Direct sequencing without fragmentation.
- **Portability:** Enables on-site sequencing for diagnostics and research.
- **Efficiency:** Faster, cost-effective, and minimal sample preparation.

NANO BUBBLE TECHNOLOGY

Context: The Nano Bubble Technology was recently launched at the National Zoological Park, Delhi, to improve water quality and support aquatic life.

What Are Nanobubbles?

- Nanobubbles are **extremely small gas-filled bubbles**, typically **70-120 nanometers** in size—about 2,500 times smaller than a grain of salt.
- They can be created using any gas and infused into a liquid, offering unique physical and chemical properties superior to conventional aeration methods.
- Brownian motion keeps them suspended in water, ensuring uniform oxygen distribution.
- Nanobubbles remain suspended in water, unlike regular bubbles that rise and pop.
- Due to their **small size and strong negative surface charge**, nanobubbles **resist coalescence (merging)** and stay in suspension, evenly distributing gases in water
- Their high surface-area-to-volume ratio improves gas exchange, making them **highly efficient in oxygenating water**.

Possible Applications

- **Water Treatment:** Removes pollutants and bacteria, improving water quality.
- **Industry:** Reaches deep surfaces to eliminate dirt and biofilms in industries.
- **Agriculture & Aquaculture:** Boosts plant & aquatic health, increasing yields with less pesticide use.
- **Oil & Gas Industry:** Enhances fluid flow, reduces chemicals, and improves oil recovery.
- **Personal Care:** Improves skincare absorption and enhances skin and hair hydration.

KODAIKANAL SOLAR OBSERVATORY

Context: KSO celebrated its 125th anniversary with an international conference on solar physics.

- The Kodaikanal Solar Observatory (KSO), established in **1899**, is a pioneering astronomical facility operated by the **Indian Institute of Astrophysics (IIA)**.
- Situated in the Palani range of hills in Tamil Nadu, KSO has played a crucial role in advancing solar physics research in the country.
- One of India's oldest observatories, KSO has been instrumental in studying the Sun's activity and its impact on Earth.
- It has contributed significantly to the understanding of sunspots, solar flares, coronal mass ejections (CMEs), and solar cycles through its extensive photographic records.

HUMAN METAPNEUMOVIRUS (HMPV)

Context: China is witnessing a surge in respiratory infections, with human metapneumovirus (HMPV) emerging as a key concern.

What is HMPV?

- HMPV is a **respiratory virus** that typically causes mild infections similar to the common cold. The virus is most **active during winter** and early spring and can infect both the upper and lower respiratory tract.
- It was first identified in **2001** and belongs to the ***Pneumoviridae*** family, which includes respiratory syncytial virus (RSV), measles, and mumps.
- While most healthy individuals recover without complications, **children, the elderly, and immunocompromised individuals are at higher risk**.
- HMPV symptoms resemble a common cold and include: Cough, runny or blocked nose, sore throat, fever, and wheezing with Incubation period of 3 to 6 days
- HMPV spreads through direct or indirect contact with an infected person.
- **No vaccine or specific antiviral drug is available** for HMPV. Antibiotics are ineffective as HMPV is a virus, not a bacterial infection.

NOROVIRUS

Context: The US Centers for Disease Control and Prevention (CDC) has reported a significant surge in norovirus infections.

About Norovirus

- Norovirus is a **group of viruses that cause severe vomiting and diarrhea** and is **highly contagious**. It spreads rapidly and is the leading cause of foodborne illness in the United States.
- Norovirus outbreaks occur most often between November and April in countries above the equator and between April and September in countries below the equator. There's usually no specific season for outbreaks in areas on the equator.
- The first known norovirus outbreak occurred in **Norwalk**, USA, in 1968. As a result, the first identified strain was named the **Norwalk virus**.
- Norovirus causes **gastroenteritis**, commonly referred to as the "**stomach flu**" (though it is not related to influenza).
- The infection leads to inflammation of the stomach and intestines, resulting in vomiting, diarrhea, nausea, and stomach cramps.
- It spreads primarily through the fecal-oral route, via contaminated food, water, or direct person-to-person contact.
- There is no specific treatment available; management focuses on hydration and symptom relief.

CAR T-CELL THERAPY

Context: The second CAR-T cell therapy, Qartemi –a living drug, has been approved by India's drug regulator CDSCO.

What is a Living Drug?

- A "living drug" refers to a type of cell-based therapy where a **patient's own cells are extracted, genetically modified or engineered in a lab**, and then reintroduced into the body to treat diseases.

About CAR-T (Chimeric Antigen Receptor T-Cell) Therapy

- CAR-T therapy is a revolutionary form of **immunotherapy** that **genetically modifies a patient's own T cells to recognize and destroy cancer cells**.
- **Process:**
 - T-cells are extracted from the patient's blood and genetically engineered in a lab to produce Chimeric Antigen Receptors (CARs).
 - CARs help the T-cells recognize and attach to specific proteins on cancer cells.
 - The modified CAR-T cells are then infused back into the patient, where they target and destroy cancer cells.
- This personalized approach ensures a **long-lasting immune response against cancers**.
- In India, Qartemi, developed by Immuneel Therapeutics, is the second CAR-T cell therapy approved after NexCAR19 (developed by ImmunoACT).

BODY MASS INDEX (BMI)

Context: After nearly 15 years, India has revised its obesity classification system, moving away from traditional BMI-based definitions to a more comprehensive approach.

What is BMI?

- Body Mass Index (BMI) is a numerical value derived from a person's weight and height, **used to assess whether an individual is underweight, normal weight, or obese**.
- While BMI is widely used, it has **limitations in accurately diagnosing obesity-related health risks**, particularly in populations with different fat distributions, such as Asian Indians.

$$BMI = \frac{\text{Weight (kg)}}{\text{Height (m)}^2}$$

New Changes

- The term "Overweight" has been removed, and obesity is now classified into two grades:

- **Grade I – Innocuous Obesity:** Increased body fat without metabolic or organ dysfunction. It includes individuals with BMI > 23 kg/m², but without noticeable impacts on organ functions or daily activities.
- **Grade II – Obesity with Consequence:** Obesity that results in metabolic or organ-related complications. This includes a BMI > 23 kg/m², along with abdominal adiposity, excessive Waist Circumference (WC) or Waist-to-Height Ratio (W-HtR).
- **Focus on Abdominal Fat Distribution:** The new guidelines emphasize waist circumference and body composition, acknowledging that abdominal obesity poses a higher health risk, even if BMI is within the normal range.

GLOBAL ANTIBIOTIC RESEARCH AND DEVELOPMENT PARTNERSHIP (GARDP)

Context: The WHO and the GARDP released a report titled "Policy and Regulatory Interventions to Address Antibiotic Shortages in Low- and Middle-Income Countries."

Global Antibiotic Research and Development Partnership (GARDP)

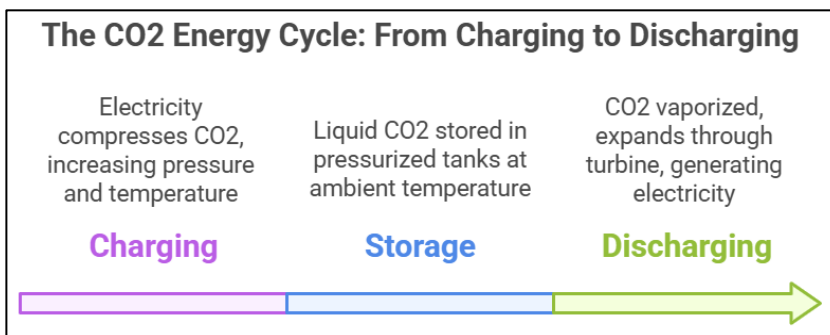
- It is a non-profit initiative established in **2016** by the **World Health Organization (WHO)** and the **Drugs for Neglected Diseases initiative (DNDi)**.
- It aims to **address the global crisis of antimicrobial resistance (AMR)** by **developing new antibiotics and ensuring their equitable and affordable access**, particularly for serious bacterial infections and sexually transmitted infections (STIs).
- **5by25 Goal:** GARDP aims to deliver five new antibiotic treatments by 2025 to combat drug-resistant infections
- GARDP is currently supported by over 70 partners from public and private sectors in more than 20 countries.
- GARDP teams are currently hosted in several locations worldwide through DNDi, including Brazil, India, Japan and Thailand.

CO₂ BATTERY ENERGY STORAGE TECHNOLOGY

Context: The National Thermal Power Corporation (NTPC) has partnered with Energy Dome, an Italian company, to implement a 160 MWh CO₂ battery energy storage system at Kudgi Super Thermal Power Plant in Karnataka.

What is CO₂ Battery Energy Storage?

- It is an **innovative long-duration energy storage (LDES) technology** that **uses carbon dioxide (CO₂) in a closed-loop thermodynamic process** to store and release energy efficiently.
- During charging, CO₂ is drawn from a storage unit (called a 'Dome' gasholder) and compressed under pressure.
- When energy is needed, the stored CO₂ is evaporated and expanded through a turbine, generating electricity before returning to the gasholder for reuse.



Advantages

- Suitable for storing excess renewable energy for extended periods.
- More affordable than lithium-ion batteries or pumped hydro storage.
- Uses readily available, non-toxic materials (CO₂, water, and steel).
- **Scalable & Flexible** Can be adapted for various energy storage needs.
- **Long Lifespan**, since it can operate for over 30 years, ensuring long-term reliability.

Applications

- **Grid-Scale Energy Storage:** Stores surplus energy from solar and wind power and releases it when needed, helping to balance electricity supply and demand.

GRAPHICS PROCESSING UNIT (GPU)

Context: The Indian government is set to procure more graphics processing units (GPUs) under the IndiaAI Mission.

What is a Graphics Processing Unit (GPU)?

- A GPU is a **specialized processor designed for tasks involving complex computations, originally developed to render images and videos efficiently.**
- Unlike Central Processing Units (CPUs), which handle tasks sequentially, GPUs are **optimized for parallel processing**, enabling them to execute multiple operations simultaneously. This capability makes them **ideal for graphics rendering, scientific computing, and AI model training.**
- **Initially, GPUs were primarily used in gaming and video editing.** However, their immense processing power led to their adoption in diverse fields such as: **Artificial Intelligence (AI), Scientific Research, Cryptocurrency Mining**
- While GPUs consume more power than Central Processing Units (CPUs) due to parallel processing, they provide **better performance-per-watt efficiency** for tasks requiring high computational power.
- **Types of GPUs:**
 - **Integrated GPUs:** Built into the CPU, providing basic graphics processing with lower power consumption.
 - **Discrete GPUs:** Separate from the CPU, offering higher performance but consuming more power.
- Leading AI models today are trained using high-performance GPUs such as **Nvidia's H-100.**

Applications of GPUs Beyond Gaming

- **Healthcare:** Medical imaging, drug discovery, and research on high-dimensional data. **Example:** DeepMind's AlphaFold used GPUs to revolutionize protein folding research.
- **High-Frequency Trading:** Real-time stock market analysis and Algo-trading.
- **Cloud Computing:** GPUs accelerate cloud-based AI/ML solutions, such as Google Cloud TPU and Amazon Web Services (AWS).
- **AI Edge Computing:** GPUs power real-time AI applications (e.g., autonomous vehicles).

(For More Information on IndiaAI Mission, Refer to Prelims Quick Revision Part 1, Page No. 368)

SRY GENE

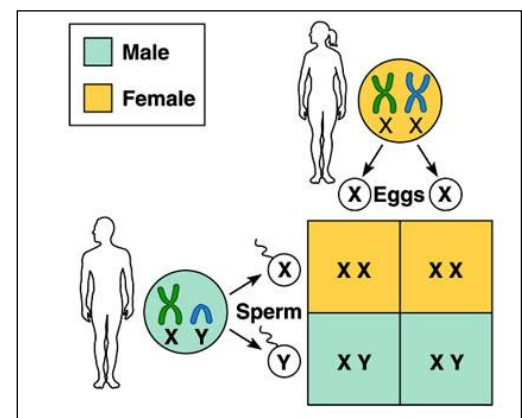
Context: Recent studies have revealed rare cases where individuals with an **XX** karyotype (biologically female) **possess the SRY gene**, challenging traditional concepts of sex determination.

What is the SRY Gene?

- The SRY gene (**Sex-Determining Region Y**) is a **critical gene located on the Y chromosome that initiates male sex determination in mammals, including humans.**
- It acts as the **primary genetic switch for male development.**

Functions of the SRY Gene

- **Testis Development:** The SRY gene encodes the Testis-Determining Factor (TDF), also called the SRY protein, which triggers the formation of testes in an embryo.
- **Transcription Factor Role:** The TDF protein functions as a transcription factor, meaning it binds to DNA and regulates the activity of other genes involved in male reproductive organ development.
- **Formation of Sertoli Cells:** The SRY protein initiates a cascade of genetic events leading to the development of Sertoli cells, which play a crucial role in further male reproductive differentiation.



Clinical Implications of the SRY Gene: Changes in the SRY gene can lead to Disorders of Sex Development (DSDs), where the genetic sex does not align with the physical traits.

- **Swyer Syndrome:** Individuals with an **XY karyotype but a non-functional SRY** gene develop female characteristics because the gene fails to trigger testis development.
- **XX Males:** In rare cases, individuals with an **XX karyotype** but with **the SRY gene present** can develop testes and male characteristics due to an abnormal transfer of the gene onto the X chromosome.

GARBHINI-DRISHTI

Context: GARBHINI-DRISHTI was launched by the Director General of the Biotechnology Research and Innovation Council.

- It is a **pioneering data repository and information-sharing hub** developed under the **GARBH-INI program by the Department of Biotechnology (DBT)** at the **Translational Health Science and Technology Institute (THSTI)**.

Key Features of GARBHINI-DRISHTI

- **One of South Asia's Largest Maternal Health Databases**, it hosts clinical data, images, and bio-specimens collected from over 12,000 pregnant women, newborns, and postpartum mothers.
- Built through partnerships with India's top research institutions and hospitals, it fosters interdisciplinary collaboration.
- Enables predictive modeling and AI-driven insights to improve maternal & neonatal health outcomes.

About GARBH-INI

- The GARBH-INi (Interdisciplinary Group for Advanced Research on Birth Outcomes – DBT India Initiative) is a **flagship maternal and child health research program** supported by the **DBT**.
- It aims to **improve maternal and neonatal health outcomes** by integrating clinical, biomedical, and data science research.
- Launched in **2014**, the program is **led by the Translational Health Science and Technology Institute (THSTI)** in Faridabad and involves collaboration with various institutions.
- GARBH-Ini is one of the five **“Atal Jai Anusandhan Biotech Missions – Undertaking Nationally Relevant Technology Innovation (UNaTI)”**

EINSTEIN RING

Context: The European Space Agency's (ESA) Euclid space telescope has captured a rare Einstein ring around the galaxy NGC 6505, located approximately 590 million light-years from Earth.

What is an Einstein Ring?

- An Einstein ring is a **striking example of gravitational lensing, where the light from a distant celestial object** (such as a galaxy or quasar) **is bent and magnified by a massive intervening object** (such as another galaxy or a black hole) located between the source and the observer.

Gravitational Lensing:

- The phenomenon that causes Einstein rings is called gravitational lensing, where the gravity of a massive object warps the space around it, causing light passing nearby to bend and appear distorted.
- For an Einstein ring to form, the background galaxy, the lensing galaxy, and the observer (like a telescope on Earth) need to be **almost perfectly aligned (syzygy)**.

Examples of Einstein Ring

- **Einstein's Cross:** While not a complete ring, this is an example of gravitational lensing where a quasar's light is distorted into four distinct images surrounding a lensing galaxy.



- **B1938+666:** Nearly complete Einstein ring (discovered in 1998, using the Hubble Space Telescope), where the light from a distant galaxy is lensed into a ring by a foreground galaxy

PARAS-2 SPECTROGRAPH

Context: Scientists from the Physical Research Laboratory (PRL), Ahmedabad, have successfully detected a new exoplanet, TOI-6038A b, using the PARAS-2 spectrograph.

What is PARAS-2 (PRL Advanced Radial velocity Abu Sky Search-2)?

- It is a high-resolution **Radial Velocity (RV) Spectrograph** used to detect and measure the mass of exoplanets. It has the **highest resolution among spectrographs in Asia**.
- PARAS 2 is installed at **Mount Abu Observatory** on PRL's 2.5-meter telescope, benefiting from high-altitude, clear skies, and stable atmospheric conditions.
- **How Does It Work?**
 - Uses the radial velocity method, which **detects tiny "wobbles" in a star's motion caused by the gravitational pull of an orbiting planet**.
 - This method is particularly **useful for identifying low-mass exoplanets**, such as super-Earths and sub-Saturn-like planets.

About TOI-6038A b

- It is a dense **sub-Saturn Planet** located in a **wide binary star system**. The planet has a **mass 78.5 times that of Earth** and a radius 6.41 times Earth's size.
 - TOI-6038A b falls between Neptune-like planets and gas giants, making it part of the rare "Sub-Saturn" category, which is absent in our solar system.
- The **exoplanet's host star, TOI-6038A, is part of a binary system**, with a companion K-type star, TOI-6038B, located 3,217 AU away.
- **TOI-6038A b is only the fifth sub-Saturn exoplanet discovered in a binary system.**

MAJORANA 1

Context: Microsoft has introduced Majorana 1, a revolutionary **quantum computing chip** designed to produce more reliable and scalable qubits.

Key Features of Majorana 1

- **Topological Core Architecture**
 - Majorana 1 is built on a topological core architecture, a **novel design that enhances qubit stability and fault tolerance**. It uses Majorana particles, a type of **quasiparticle** fabricated using topological conductors (topoconductors).
 - Unlike conventional states of matter (solid, liquid, gas), **topoconductors create a new quantum state** that enables more robust quantum computing.
- **Majorana Fermions**
 - The chip relies on Majorana fermions, **special particles that act as their own antiparticles**.
 - First theorized by Ettore Majorana over 80 years ago, these particles had no direct physical evidence until recent research indicated their existence in a form called **Majorana zero modes (MZM)**.
 - Microsoft has developed topoconductors by combining indium arsenide (semiconductor) and aluminum (superconductor), enabling the creation of these exotic particles.

Advantages of Topological Core Architecture

- **Reduces Quantum Decoherence:** Minimizes errors in quantum computations.
- **Enhances Fault Tolerance:** Increases reliability of quantum operations.
- **Improves Scalability:** Supports the development of larger quantum systems.

Potential Applications

- **Quantum Simulations:** Studying plastic-eating bacteria to break down microplastics.
- **Self-Healing Materials:** Designing materials that can repair themselves.
- **Healthcare Innovations:** Accelerating drug discovery through AI-Quantum integration.
- **Advanced Chemistry & Material Science:** Solving complex molecular and material-related challenges.

- **Scalability & Design**

- Majorana 1 is an **8-qubit chip**, which may seem **modest compared to Google's Willow** (106-qubit) and **IBM's R2 Heron** (156-qubit) chips.
- However, its **topological design allows for scalability up to a million qubits**, a crucial threshold for practical quantum applications.
- The chip consists of aluminum nanowires arranged in an 'H' shape, with each H-structure housing four controllable Majorana particles, forming a single qubit.

INDIRECT PROMPT INJECTION

Context: Researchers have raised concerns about the rapid rise of Indirect Prompt Injection (IPI) attacks targeting AI chatbots, particularly those using Large Language Models (LLMs).

Understanding Indirect Prompt Injection Attacks

- Indirect prompt injection attacks are a type of prompt injection that manipulates large language model users or system prompts to accept input from an external source that contains malicious code crafted so the LLM will treat it as an additional prompt.
- This technique exploits the ability of LLMs to follow embedded instructions within the content they process, often without the user's knowledge.

Key Threats Posed by Indirect Prompt Injection:

- **Data Breaches:** AI chatbots can be tricked into retrieving and revealing sensitive information.
- **Persistent False Memories:** Malicious inputs can corrupt a chatbot's long-term memory, causing it to retain and act on false information across multiple sessions.
- **Covert Execution:** Attack activates only under specific user interactions, making it harder to detect.
- **Misinformation and Manipulation:** Attackers can alter chatbot responses, spreading false or biased information.

CORONAL HOLES

Context: A study has estimated the physical parameters of thermal and magnetic field structures of solar coronal holes, enhancing understanding of their role in space weather and solar activity.

About Coronal Holes

- They are regions in the **Sun's corona** (outer atmosphere) **that appear dark in extreme ultraviolet (EUV) and X-ray images**. Coronal holes were first discovered in the **1970s through X-ray observations by satellites**. These regions are characterized by the following features:
- **Lower Temperature and Density:** Coronal holes are cooler & less dense than surrounding plasma.
- **Open Magnetic Field Lines:** Unlike other regions of the Sun where magnetic field lines loop back, coronal holes have unipolar magnetic field lines that remain open. This allows solar wind to escape more readily into space, resulting in high-speed solar wind streams.
- **Location:** Coronal holes are **most stable at the solar poles** but can expand to lower latitudes. They may also form independently or break off from polar holes as isolated structures.
- **Space Weather Impact:** High-speed solar wind from coronal holes triggers geomagnetic activity, **intensifying auroras like the Northern Lights**. These energetic particles may also impact **stratospheric ozone** and global temperature patterns.
- **Solar Cycle Dependence:** Coronal holes are **more frequent and persistent during solar minimum phases**. They can vary in size and duration, from a few weeks to several months.

Monitoring and Research

- **NASA's Solar Dynamics Observatory (SDO)** and **ESA's Solar Orbiter** provide real-time monitoring of coronal hole activity.
- **India's Aditya-L1 Mission** (launched in 2023) is dedicated to studying solar activity and its impact on space weather.

Significance and Impact on Earth

- **Geomagnetic Storms:** High-speed solar wind from coronal holes can disrupt Earth's magnetosphere, affecting satellites, power grids, and communication systems.
- **Satellite & Aviation Disruptions:** Solar activity increases LEO satellite drag, GPS errors, and HF radio disruptions, leading to potential radio blackouts over polar regions.
- **Weather Influence:** Solar wind may impact upper atmospheric circulation, affecting cloud formation, precipitation, and possibly the Indian summer monsoon.

BACTERIA-MADE BAND-AID FOR PLANTS

Context: Researchers have found that bacterial cellulose (BC) can be used as a **bandage for plants**, aiding in healing and regeneration.

What is Bacterial Cellulose?

- Unlike plant-based cellulose, **BC is synthesized by bacteria**, mainly from the *Komagataeibacter* genus.
- It **lacks lignin, pectin and hemicellulose**, making it **highly pure** and superior in certain applications.
- **Unique Properties:** BC forms a **nanofiber-woven, three-dimensional network**, giving it: High tensile strength, Exceptional water-holding capacity, Biocompatibility and moldability, High crystallinity
- BC offers a sustainable, biodegradable solution for plant protection, biomedical applications, and industrial innovations.

App- lications	• Plant Healing & Agriculture: Used as a bandage for plants, preventing infections and aiding regeneration. Retains moisture, reducing drought stress. • Biomedical: Used in wound dressings, skin substitutes, tissue engineering, and drug delivery. Genetically modified BC can release growth hormones. • Food Industry: Used in edible packaging and films, food thickeners, and post-harvest preservation. • Cosmetics: Found in facial masks, skincare, and hair care products. • Industrial Uses: High-strength paper, textiles, acoustic membranes, and filtration systems.
Case Studies	• Apple Orchards (USA): BC bandages tested to prevent fungal infections. • Banana Plantations (India): Used to protect wounds from Panama disease-causing fungi. • Vineyards (France): Applied to grapevines for post-pruning recovery.

SELENIUM

Context: As per a medical expert's report, incidents of sudden hair loss in Maharashtra's Buldhana were due to high selenium found in wheat from Punjab and Haryana supplied by ration shops.

About Selenium (Symbol: Se; Atomic Number: 34)

- Selenium (Se) is a rare metalloid closely related to sulfur and tellurium. **Found mainly in heavy metal ores** (copper, mercury, lead, silver), it is primarily obtained as a by-product of **copper refining**.
- Selenium is used in **electronics, pigments, and glassmaking**. Its

Deficiency of Selenium

- **Keshan Disease:** A heart disorder prevalent in selenium-deficient regions of China.
- **Kashin-Beck Disease:** A type of osteoarthritis often linked to selenium deficiency.
- **Other Effects:** Weak immune function, infertility, and cognitive decline.

Excess Selenium (Selenosis)

- **Symptoms:** Nausea, hair loss, brittle nails, and neurological abnormalities.
- **Chronic Exposure Risks:** Can lead to severe organ damage.
- **Environmental Impact:** Excess selenium in aquatic ecosystems causes toxicity in birds and fish, as seen in the Kesterson Reservoir disaster (USA).

gray, metallic form is the most stable and exhibits increased electrical conductivity when exposed to light.

Role of Selenium in Human Health

- Essential trace mineral vital for thyroid hormone metabolism, DNA synthesis, and immune function.
- Plays a key role in antioxidant defense, particularly through glutathione peroxidase, an
- The recommended daily allowance for selenium is 20 micrograms for children, 55 micrograms for adults and 60-70 micrograms for pregnant and lactating women. As per FSSAI it should be 40 micrograms.
- **Diet Sources:** Brazil nuts (highest concentration), fish, eggs, poultry, sunflower seeds, whole grains.

TECHNOLOGY ADOPTION FUND

Context: The Indian National Space Promotion and Authorisation Centre (IN-SPACe) has launched the Technology Adoption Fund with a corpus of ₹500-crore.

About TAF

- **Purpose:** To support space technology firms, startups, and MSMEs in developing commercially viable products.
- **Aim:** To bridge the gap between early-stage innovation and commercialisation, ensuring that promising ideas transition from the conceptual phase to market-ready solutions.
- **Financial Support:** It provides up to 60% of project costs for startups and MSMEs and 40% for larger industries, with a funding cap of ₹25 crore per project.
- **Open to all eligible Non-Government Entities (NGEs)** that can demonstrate the commercial potential of their innovations.

“IMAGINE A WORLD WITH MORE WOMEN IN SCIENCE” CAMPAIGN

- To mark the **10-year anniversary of the International Day of Women and Girls in Science**, UNESCO launched the campaign on 11 February 2025.
- This campaign **demonstrates the essential role women play in driving progress in science** and calls on the global community to not only envision, but also work towards, a **more gender-balanced scientific community** where every voice is heard.
- The campaign is supported by **Canada’s International Development Centre (IDRC)**.

International Day of Women and Girls in Science

- It is observed annually on **February 11** and was **established by the UN General Assembly Resolution in 2015 to promote gender equality in STEM fields**.
- It is implemented by UNESCO and UN-Women in collaboration institutions and civil society partners.

WHO FRAMEWORK CONVENTION ON TOBACCO CONTROL (WHO FCTC)

Context: WHO marked 20 years of its life saving tobacco control treaty.

About WHO FCTC

- The WHO FCTC is a **global treaty addressing the tobacco epidemic** and reinforcing the right to the highest standard of health.
- As the **first treaty negotiated under WHO**, it was **adopted on May 21, 2003**, and entered into force on **February 27, 2005**.
- **Parties: 182 (Including India)**. The US has signed but not yet ratified.
- WHO-FCTC provides for various **measures to reduce the demand as well as supply of tobacco**.
- **India played a leading role in FCTC negotiations** to finalize its provisions and was the regional coordinator for the South- East Asian countries.
- The **Conference of the Parties (COP) is the Governing Body** of the WHO FCTC and is comprised of all Parties to the Convention

Protocol to the WHO FCTC

- The **Protocol to Eliminate Illicit Trade in Tobacco Products**, was adopted at the fifth session of the COP, held in 2012 in Seoul, Korea, following several rounds of negotiations by the Parties.

- The Protocol builds the WHO FCTC in the fight against illicit trade and is a new international treaty in its own right. **India is Party to this Protocol.**

NUCLEAR ENERGY MISSION

Context: The Nuclear Energy Mission was announced in the Union Budget 2025-26.

About Nuclear Energy Mission

- This initiative aims to enhance domestic nuclear capabilities, promote private sector participation, and accelerate the deployment of advanced nuclear technologies such as Small Modular Reactors (SMRs).
- With a **target of 100 GW of nuclear power by 2047**, the initiative aligns with India's goal of achieving Net Zero emissions by 2070. (India currently has 8.18 GW of installed nuclear power)
- The government will enter into partnerships with the private sector with the motive of:
 - Setting up Bharat Small Reactors,
 - Research & development of Bharat Small Modular Reactor
 - Research & development of newer technologies for nuclear energy

About Bharat Small Reactors (BSRs)

- BSRs are **compact nuclear reactors designed to generate electricity on a smaller scale** compared to traditional large nuclear power plants. These reactors are **based on India's proven 220 MW Pressurized Heavy Water Reactor (PHWR) technology**, which has been successfully operational in 16 units across the country.
- The **private sector will contribute land, cooling water, and capital**, while the Nuclear Power Corporation of India Limited (NPCIL) **will oversee design, quality assurance, operation, and maintenance.**

About Bharat Small Modular Reactor

- BARC is developing a Small Modular Reactor for repurposing of retiring coal-based power plants and catering to power requirements at remote locations in the country.

(For Information on Small Modular Reactors, Refer to Prelims Quick Revision Part 1 Page 338)

NON-COMMUNICABLE DISEASES (NCD)

Context: Ministry of Health & Family Welfare has launched an Intensified Special NCD Screening Campaign.

- This drive aims **to achieve 100% screening of all individuals aged 30 years and above** for prevalent NCDs, including **Diabetes, Hypertension, and three common cancers—Oral, Breast, and Cervical.**
- The campaign will be **executed across Ayushman Arogya Mandirs (AAMs)** and various healthcare facilities nationwide, under the **National Programme for Prevention and Control of Non-Communicable Diseases (NP-NCD).**

About NP-NCD

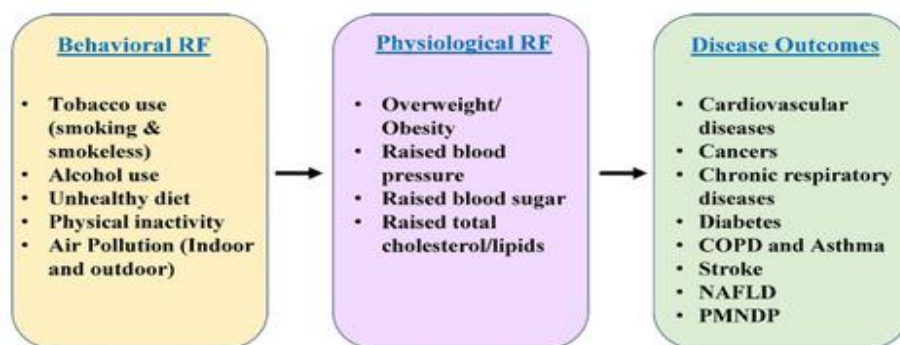
- NP-NCD, formerly known as the **National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases, and Stroke (NPCDCS)**, was **launched in 2010** across 100 districts in 21 states to prevent and control major NCDs. Over time, it was expanded nationwide in a phased manner.
- Initially, opportunistic screening for common NCDs was conducted at District Hospitals and Community Health Centres (CHCs) through NCD clinics.
- To expand services and ensure early detection, the **Population-Based Screening (PBS) initiative was introduced in 2016.** It targets individuals aged 30 and above for five common NCDs.

About Non-Communicable Diseases (NCDs)

- NCDs are **chronic diseases that are not caused by infections** and develop over a long period due to genetic, environmental, and lifestyle factors. Unlike infectious diseases, NCDs **cannot be transmitted from person to person.**

- **NCDs account for 63% of all deaths in India**, as per WHO's 2018 NCD India Profile. The major contributors include: Cardiovascular diseases (27%), Chronic respiratory diseases (11%), Cancers (9%), Diabetes (3%), Others (including obesity) (13%).

Risk Factors for NCDs



DEEP OCEAN MISSION

Context: India is set to launch its first human underwater submersible (Deep-Sea Manned Vehicle) under Deep Ocean Mission.

About Deep Ocean Mission

- The DOM is a flagship initiative at **exploring deep-sea resources and developing advanced technologies for their sustainable utilization.**
- **It is a Central Sector Scheme of Ministry of Earth Sciences**
- The mission, **approved by the Cabinet Committee on Economic Affairs (CCEA)**, has a **budget of ₹4,077 crore for five years.** It aims to:
 - Explore deep-sea minerals, energy sources, and biodiversity.
 - Develop advanced deep-sea technologies, including manned submersibles and mining systems.
 - Enhance India's capacity in marine biology and ocean engineering.
 - Support India's Blue Economy strategy, which focuses on sustainable ocean resource utilization.
- The Deep Ocean Mission consists of the six major components. (as seen in image)

About MATSYA 6000

- Under the Deep Ocean Mission, the **National Institute of Ocean Technology (NIOT) is developing Matsya-6000**, a 4th generation deep-ocean submersible under the **Samudrayan Project.**
- Designed for three crew members, it features a 2.1-meter diameter spherical hull, marking a significant step in India's ocean exploration.
- It is designed for operations of up to 12 hours, with an emergency endurance of up to 96 hours, supported by a DNV-certified Human Support and Safety System (HSSS).
- Only five nations – France, the US, China, Russia and Japan – have thus far carried out successful deep-ocean crewed missions.

Components of Deep Ocean Mission	
Deep-Sea Mining and Manned Submersible Development	• Development of a manned submersible to carry three people to 6,000 meters depth. • Integrated Mining System to extract polymetallic nodules (manganese, nickel, cobalt, copper) from the central Indian Ocean.
Ocean Climate Change Advisory Services	• Development of climate models for seasonal to decadal forecasts on weather and climate patterns.
Technological Innovations for Deep-Sea Biodiversity Conservation	• Bio-prospecting of deep-sea flora, fauna, and microorganisms to explore applications in medicine and biotechnology. • Research on sustainable utilization of deep-sea bio-resources.
Deep Ocean Survey and Exploration	• Identification of mineral-rich sites, specifically multi-metal hydrothermal sulphide deposits along mid-oceanic ridges in the Indian Ocean. • Enhancement of India's deep-sea resource mapping capabilities.
Energy and Freshwater from Oceans	• Development of Ocean Thermal Energy Conversion (OTEC) technology for offshore renewable energy generation. • Designing a desalination plant powered by ocean energy.
Advanced Marine Station for Ocean Biology	• Establishment of research and business incubator facilities for marine biotechnology, blue trade, and blue manufacturing. • Focus on translating ocean research into industrial applications.

GENE BANK FOR CROPS GERMPLASM

Context: PM Modi has announced that a Second Gene Bank will be established to conserve the country's genetic resources. This new facility will have a capacity to store 1 million (10 lakh) germplasm lines.

What is a Gene Bank?

- A gene bank is a **repository of genetic material**, such as seeds, pollen, or tissue samples, collected from various plant species to protect them from extinction and preserve vital genetic diversity for future generations.

India's First Gene Bank

- India's first National Gene Bank was established in **1996** by the **Indian Council of Agricultural Research - National Bureau of Plant Genetic Resources (ICAR-NBPGR)** in New Delhi.
- It operates through **12 regional stations** across the country, collecting and preserving essential crop germplasms—genetic materials used for research, conservation, and crop breeding.
- As of January 15, 2025, the bank stores 0.47 million accessories, including: Cereals (0.17 million), Millets (60,600+), Legumes (69,200+), Oilseeds (63,500+), Vegetables (30,000).

CHINA'S EAST CREATES NEW RECORD IN FUSION REACTION

Context: Chinese scientists reported that they were able to maintain a plasma at a temperature of 100 million degrees C for about 1,066 seconds in a nuclear fusion reactor called the Experimental Advanced Superconducting Tokamak (EAST).

What is Experimental Advanced Superconducting Tokamak (EAST)?

- The **EAST**, commonly referred to as China's "**artificial sun**", is a **superconducting tokamak fusion device** located in Hefei, China. It is operated by the Institute of Plasma Physics (AISPP) at the Hefei Institute of Physical Science and became operational in 2006.
- EAST is the **first tokamak to achieve deuterium plasma** containment using superconducting niobium-titanium toroidal and poloidal magnets.
- The primary objective of EAST is **to replicate the nuclear fusion processes occurring in the Sun, thereby providing a potential source of limitless, clean energy and advancing technologies for deep-space exploration.**
- Additionally, EAST serves as a testbed for the **International Thermonuclear Experimental Reactor (ITER)**, currently under construction in Cadarache, France.
- A key feature of EAST is its ability to sustain plasma in the **high-confinement regime (H-mode)**. This occurs when neutral beam heating induces an abrupt enhancement in plasma confinement, effectively doubling its efficiency.
- The ability to achieve and sustain H-mode operation is a crucial requirement for next-generation fusion reactors, including ITER, making EAST a significant platform for fusion energy research.

FIRST DETAILED MAPPING OF MOON'S SOUTH POLE

Context: Astronomers are analyzing the first detailed geological map of the Moon's south polar region, where Chandrayaan-3 mission successfully landed its Vikram module on August 23, 2023.

Geological Mapping of Moon

- The geological map was developed by researchers from the **Physical Research Laboratory (PRL), Ahmedabad; Panjab University, Chandigarh; and the Laboratory for Electro-Optics Systems, Indian Space Research Organisation (ISRO), Bengaluru.**
- It is based on data collected by the **Pragyan rover**, which was **deployed by Vikram** for a nine-day exploration mission.
- Pragyan conducted chemical analysis of the lunar regolith, a layer of fragmented rock and dust covering the Moon's surface.

Key Findings from Chandrayaan-3's South Pole Exploration

- **Lunar Magma Discovery:** Pragyan rover detected magma beneath the surface, confirming that the Moon once had a global molten rock ocean.

- **Geological Mapping:** First detailed map of the lunar south pole revealed highlands, flat plains, and secondary craters.
- **Lunar Crater Analysis:** Vikram landed near the South Pole-Aitken Basin, one of the oldest impact craters in the Solar System.
- **Age of Landing Site:** 3.7 billion years old, aligning with Earth's early microbial life period.
- **Detection of Sulfur & Other Elements:** Elements like S, Al, Ca, Fe, Cr, Ti, Si, and O were found in the lunar regolith.

About Chandrayaan- 3			
Launch Date	July 14, 2023	Landing Date	August 23, 2023
Launch Site	Satish Dhawan Space Centre, Sriharikota	Landing Region	Near the Lunar South Pole
Significance	• India's first successful soft landing on the Moon's south pole • Fourth country to achieve a soft landing on the Moon (after the USA, USSR, and China)		
Launcher	LVM3 M4		
Mission Components	• Propulsion Module: Transported the lander and rover to lunar orbit • Lander (Vikram): Performed a soft landing and carried scientific instruments • Rover (Pragyan): Analyzed lunar soil and rocks		
Objectives	• To demonstrate Safe and Soft Landing on Lunar Surface • To demonstrate Rover roving on the moon and • To conduct in-situ scientific experiments.		
Mission Life	One lunar day (~14 Earth days) for Lander & Rover		

RED COLOR OF MARS

Context: A NASA-funded study suggests Mars' red color supports evidence of a cool, wet, and potentially habitable ancient climate.

- Mars' red hue was **previously believed to result from hematite-based iron oxidation** in dry conditions. New research suggests **ferrihydrite**, an iron oxide that forms in water, is the main component of Martian dust.
- This suggests that Mars once had abundant surface water billions of years ago, indicated by dried-up rivers, lakes, and water-formed minerals.
- Mars' iron-rich material has been breaking down into fine dust for billions of years. The process continues due to strong Martian winds, redistributing dust across the planet.
- Researchers combined data from **NASA's Mars Reconnaissance Orbiter, ESA's Mars Express, and Trace Gas Orbiter** with surface-level measurements from **Mars rovers like Curiosity and Opportunity**.
- Scientists recreated Martian dust in a lab by mixing ferrihydrite with basalt. The synthetic dust closely matched spacecraft observations, supporting the hypothesis.

LOWER-SODIUM SALT SUBSTITUTES (LSSS)

Context: The Department of Nutrition and Food Safety (NFS) of the World Health Organization (WHO) is launching its new guideline on the use of lower-sodium salt substitutes.

About Lower-Sodium Salt Substitutes (LSSS)

- The LSSS are **alternatives to regular table salt that contain less sodium** and often include potassium chloride or other agents to maintain a similar taste.
- Since high sodium intake is linked to high blood pressure and cardiovascular diseases (CVDs), LSSS can help reduce these risks.
- Excessive potassium intake (hyperkalaemia) can be harmful, especially for people with kidney disease or certain medical conditions.

- The **average sodium intake worldwide (4.3 g/day)** is more than double the WHO recommendation (less than 2 g/day).

SHATAVARI –FOR BETTER HEALTH CAMPAIGN

Context: The Ministry of Ayush has launched “Shatavari –For Better Health” to raise awareness about the health benefits of medicinal plants.

About Shatavari (*A. racemosus*)

- It is commonly known as Satawar, Satamuli, or Satavari. Shatavari is a woody climber, growing 1-2 meters tall with pine needle-like leaves and white flowers.
- It thrives in gravelly, rocky soils at elevations of 1,300-1,400 meters, particularly in Asia, Australia, and Africa.
- In Ayurveda, Shatavari is regarded as the “Queen of Herbs” due to its rejuvenating properties. It acts as a rasayana (rejuvenator) that promotes longevity, immunity, mental function, and overall vitality.
- It is also used in nervous disorders, digestive issues (dyspepsia, diarrhea, dysentery), inflammation, tumors, liver diseases, bronchitis, and hyperacidity.
- Shatavari is a versatile medicinal herb, highly valued in Ayurveda for its ability to support female reproductive health, boost immunity, and enhance overall well-being.

BHARAT TECH TRIUMPH PROGRAM

- The Bharat Tech Triumph Program (TTP) is an initiative launched as part of the **Create in India Challenge Season 1**.
- It is organized by the **Interactive Entertainment and Innovation Council (IEIC)** in partnership with the **Ministry of Information and Broadcasting (MIB)**.
- The primary goal of the Program is **to promote and highlight India's gaming industry, encouraging innovation, technological advancements, and international recognition**.
- It provides Indian game developers, studios, and tech companies with an **opportunity to present their work to a global audience**.
- Winners of the Bharat Tech Triumph Program will be fully sponsored to present their games and technologies at GDC 2025 in San Francisco and WAVES 2025 in India.

SOLAR FLARES AND ADITYA L1 MISSION

Context: The Solar Ultraviolet Imaging Telescope (SUIT) onboard India's first dedicated solar space mission, Aditya-L1, has captured a view of a powerful solar flare ‘kernel’ in the lower solar atmosphere, namely the photosphere and the chromosphere.

About Solar Flares

- Solar Flares are **powerful bursts of energy that come from the Sun**. These bursts happen when there is a **sudden release of magnetic energy, especially around dark patches on the Sun called sunspots**. Solar flares are some of the most violent explosions in our solar system.
- They **appear as very bright spots on the surface of the Sun** and can last anywhere from a few minutes to several hours. We can observe these flares because they **release a large amount of light (photons), which can be seen across many types of wavelengths**, from visible light to x-rays.
- Solar flares are classified into different categories: B-class (the weakest), followed by C-class, M-class, and X-class (the strongest). Each letter class is 10 times more powerful than the previous one.

Aditya-L1: India's First Solar Mission

- **Launched:** September 2, 2023 aboard PSLV C-57 rocket
- **Mission:** Study the Sun from a halo orbit around Lagrange point 1 (L1) which is about 1.5 million km from the Earth.
- **Primary Goal:** To investigate the solar atmosphere, solar magnetic storms, and their impact on the environment around Earth.

- **Payloads:** Visible and X-ray spectrometers, Coronagraph, Solar wind and energetic particle analysers, Magnetometers
- **Targets:** Sun's corona, chromosphere, and photosphere, Flares and coronal mass ejections.

OCELOT CHIP

Context: Amazon Web Services (AWS) announced a new prototype quantum chip called Ocelot, after Microsoft's Majorana 1 and Google's 'Willow' chips.

About Ocelot

- Ocelot is a **prototype quantum computing chip developed by Amazon Web Services (AWS)**. It has been **designed to test how well AWS's quantum error correction system works—an important step toward building more reliable quantum computers**.
- The chip is made of two small silicon microchips, each about 1 cm² in size. These chips are stacked one on top of the other and connected electrically, forming a compact, efficient design.
- On the surface of each chip, there are thin layers of superconducting materials. These materials help create the special quantum circuits needed for quantum computing.
- The Ocelot chip includes 14 main components:
 - **5 data qubits (called cat qubits)**, which hold the quantum information,
 - **5 buffer circuits**, which help stabilize the data qubits,
 - **4 additional qubits** that are used to detect and correct any errors in the data qubits.
- The **cat qubits rely on devices called oscillators** (components that produce a repeating electrical signal with perfect timing). These oscillators are essential for storing and processing quantum information.
- To improve performance, AWS scientists use a thin layer of a superconducting material called **Tantalum** (Symbol- Ta and Atomic Number - 73) for making the oscillators.

BLUE GHOST MISSION

Context: Firefly Aerospace's Blue Ghost lunar lander has successfully landed in the Mare Crisium region of the Moon — a volcanic area located on the Moon's northeastern near side.

About the Blue Ghost Mission

- The mission is **part of NASA's Commercial Lunar Payload Services (CLPS) initiative**, which **aims to involve commercial companies in delivering scientific instruments and technology demonstrations to the Moon**.
- The **Blue Ghost lander carries ten advanced instruments designed for scientific and technological research**.
- The lander is expected to operate for one full lunar day (approximately 14 Earth days).
- **Purpose:** To support NASA's Artemis program and broader lunar exploration goals, that aims to establish a long-term human presence on the Moon.

Key Instruments:

- **Lunar Environment Heliospheric X-ray Imager (LEXI):** Captures images of Earth's magnetosphere as it interacts with solar wind, contributing data to space weather research.
- **Lunar Instrumentation for Subsurface Thermal Exploration with Rapidity (LISTER):** Designed to measure heat flow from Moon's interior by drilling into the lunar soil (regolith).

BOSE METAL

Context: Scientists from Japan and China have found that niobium diselenide (NbSe₂) exhibits properties of a Bose metal, a long-theorized but unproven quantum state.

What is a Bose Metal?

- Every metal has a finite electrical conductivity that varies with temperature. For instance, zinc conducts electricity at about 16.9 million siemens per metre at 20°C. But when cooled to -272.3°C, it becomes a superconductor with infinite conductivity.

- This dramatic shift is due to changes in electron behavior. At room temperature, electrons move freely through the metal's atomic grid, allowing for conduction. As the metal cools, many resisting forces weaken. Below a critical temperature — for zinc, -272.3°C — electrons experience a weak net attraction and form distant pairs, known as Cooper pairs.
- These pairs undergo a phase transition, creating a new state of matter: a superconductor, where electrical resistance vanishes.
- Some metals, however, don't become superconductors but still improve in conductivity as they cool. In certain cases, Cooper pairs form but don't condense into a superconducting state. Instead, the metal enters an anomalous metallic state, or Bose metal, where current flows through uncondensed Cooper pairs.
- **Potential Applications:**
 - **Quantum Computing:** Can help develop more stable qubits, reducing quantum decoherence
 - **Energy Transmission:** Future power grids may integrate materials based on Bose metals to enhance energy efficiency.

THERAPEUTIC PROTEINS

Context: Therapeutic proteins are becoming an essential part of modern healthcare, in treatment of both infectious diseases and non-communicable diseases such as diabetes and cancer.

About Therapeutic proteins

- Therapeutic proteins are **biologically derived molecules that are utilized for medicinal purposes to prevent, treat, or cure diseases and medical conditions**. These proteins are **typically produced through biotechnological methods**, often using recombinant DNA technology.
- Therapeutic proteins can take **various forms, including antibodies, enzymes, hormones, growth factors, cytokines, and fusion proteins**.
- They are **designed to interact with specific molecular targets in the body, such as receptors, enzymes, or signaling molecules, to modulate biological processes or restore physiological functions**.

Role in Personalized and Precision Medicine

- The combination of mRNA technology and therapeutic proteins is enabling the development of customized treatments tailored to individual patients.
- Advanced tools like gene editing technologies (e.g., CRISPR) are improving the way protein-based drugs are produced.
- Gene therapy combined with therapeutic proteins shows promise in curing genetic disorders.

Challenges of Therapeutic Proteins

- High risk of unwanted immune reactions (immunogenicity).
- Need for detailed protein characterization and toxicity control.
- Risk of protein clumping (aggregation) during production and storage.
- Complicated manufacturing and delivery processes (requires strict safety, cold chain logistics).

Therapeutic Proteins and Their Functions

- **Hormones:** Replace missing or deficient hormones. Example: Insulin, Growth hormone.
- **Monoclonal Antibodies (mAbs):** Target disease-causing antigens (e.g., cancer, autoimmune disorders). Examples: Trastuzumab (breast cancer), Rituximab (lymphoma).
- **Enzymes:** Replace or assist faulty enzymes. Examples: Factor VIII (hemophilia), Dornase alfa (cystic fibrosis).
- **Cytokines:** Regulate the immune system. Examples: Interferons (hepatitis, MS), Interleukins (cancer therapy).
- **Fusion Proteins:** Combine parts of proteins for better effectiveness. Example: Etanercept (rheumatoid arthritis).
- **Protein-based Vaccines:** Train the immune system to fight infections. Examples: Novavax (COVID-19), HPV vaccine (cervical cancer).

PUNCH MISSION

Context: NASA is preparing to launch its PUNCH solar mission during the **solar maximum phase** of the Sun's 11-year cycle. This is the period **when the Sun is most active, with more sunspots and solar flares.**

About the Polarimeter to Unify the Corona and Heliosphere (PUNCH) Mission

- **Objective:** To study how the Sun's corona (its outer atmosphere) transforms into the solar wind (a continuous stream of charged particles that flows through the solar system). It will help scientists better understand space weather, which can affect satellites, astronauts, and power grids on Earth.
- Unlike earlier missions such as SOHO and the Parker Solar Probe, **PUNCH will use a method called polarimetry to capture a real-time, dynamic view of the solar wind.** This technique measures the polarization of light to help **create detailed, 3D images of solar activity.**
- PUNCH will **consist of four small satellites** (suitcase-sized) in low Earth orbit and spread out near Earth's day-night line.
- The PUNCH mission will view the entire inner solar system continuously, with one camera on each of the four satellites, all acting together as a single "virtual instrument" with a 90° field of view centered on the Sun.
- The data from PUNCH will be important for NASA's Artemis program, which plans to build a lunar base by the 2030s. Understanding solar radiation will be crucial to protect astronauts.
- The PUNCH mission is the first mission specifically designed to make use of the polarization of light to measure the corona and solar wind in 3D.

Other solar missions:

- The Parker Solar Probe (launched in 2018) observes the Sun's corona from close distances.
- ISRO's Aditya-L1 Mission, which studies the solar corona from a different vantage point.

PLASTIC ICE (THE FOURTH FORM OF WATER)

Context: Scientists have confirmed the existence of a fourth form of water, known as Plastic Ice VII—a phase of ice that forms under extreme pressure conditions.

About Plastic Ice VII

- This unique form of ice **exists in deep planetary interiors** and has been **recreated in high-pressure laboratory experiments.** Scientists first predicted its existence in 2008.
- Plastic Ice VII **forms at very high pressures**, specifically above 3 gigapascals (GPa) (30,000 times the atmospheric pressure at sea level). It also needs temperatures above 450 Kelvin (177°C). Under such extreme pressure, water molecules arrange themselves into a special crystalline structure.
- **Unique Property:** Unlike regular ice, it can bend and flow without breaking, thanks to its **special crystal structure (body-centered cubic)**, where water molecules can rotate freely.
- This may explain the plastic flow seen in Antarctic and Greenland ice sheets.
- **Scientific Importance:** The discovery of plastic ice VII offers valuable insights into the behavior of water beyond Earth. This rare phase may exist deep within planets and moons, potentially influencing their habitability. Researchers suggest that even icy worlds like Neptune, Uranus, and Jupiter's moon Europa may have once contained plastic ice VII.
- **Medical Use:** Could improve cryopreservation methods for storing organs, stem cells, and vaccines safely at low temperatures.

NORTHEAST CENTRE FOR TECHNOLOGY APPLICATION & REACH (NECTAR)

Context: Central government has decided to establish NECTAR's permanent campus in Shillong.

About NECTAR (North East Centre for Technology Application and Reach)

- An autonomous body under the Department of Science & Technology (DST), headquarter at **Shillong, Meghalaya.**

- Created by **merging** the **National Mission for Bamboo Applications** and **Mission for Geospatial Applications in 2012**
- **Objective:** NECTAR aims to deliver and promote technology-based solutions for the social and economic development of the North Eastern Region (NER). It focuses on equitable growth by applying niche and frontier technologies for the benefit of local communities and institutions.
- **Focus Areas:** Biodiversity concerns, watershed management, telemedicine, horticulture, infrastructure planning & development, planning and monitoring, and tele-schooling using cutting-edge MESHNET solutions, employment generation

BIREFRINGENCE

Context: Recent research reveals that there is growing use of Birefringent materials in LCD screens, medical microscopes, optical switches, frequency converters, and high-power lasers.

What is Birefringence?

- Birefringence is **when light passes through certain materials and splits into two rays that travel at different speeds and in different directions**. This happens because the material affects light in two distinct ways. It is also known as double refraction.
- This happens only in case of anisotropic materials. **Anisotropy** refers to the **property of a material where its characteristics, such as refractive index, differ depending on the direction**. This happens because of the material's crystal structure or how its molecules are arranged.
- **Examples of birefringent materials include:** calcite, quartz, mica, Collagen fibers, muscle tissues, Liquid crystals in LCD screens, certain plastics
- Birefringent materials split unpolarized light into two polarized rays. When light enters such a material, it divides into:
 - **Ordinary ray (o-ray)**, which follows Snell's law of refraction.
 - **Extraordinary ray (e-ray)**, which does not follow Snell's law and travels at a different speed.

Applications

- Next-Gen Display Technologies
- Optical Communication (Fiber Optics)
- Medical Diagnostics
- Alzheimer's & Neurodegenerative Research
- Polarization Cameras

CHANDRAYAAN-5

Context: The Centre has recently accorded approval for the Chandrayaan-5 mission.

About Chandrayaan-5

- ISRO's Chandrayaan-5 mission will feature a 250 kg rover, a significant upgrade from the 25 kg 'Pragyan' rover used in Chandrayaan-3. This mission will be in collaboration with Japan.

Previous Chandrayan Missions

- **Chandrayaan-1 (2008)** successfully mapped the Moon's chemical, mineralogical, and photo-geological features.
- **Chandrayaan-2 (2019)** ended in partial failure when its Vikram lander crashed during its attempt to land on the Moon. However, the mission's orbiter successfully entered lunar orbit and continues to operate, collecting scientific data
- **Chandrayaan-3 (2023)**, a follow-up to Chandrayaan-2, successfully demonstrated end-to-end capabilities for safe landing and roving on the lunar surface. On August 23, **2023**, its Vikram lander achieved a successful soft-landing on the Moon's south pole region.
- **Chandrayaan-4, planned for 2027**, aims to collect lunar soil samples and bring them back to Earth for further study.

ChaSTE

- **Chandrayaan-3** and its **ChaSTE** (Surface Thermophysical Experiment) made history as **the first mission to measure temperatures near the Moon's south pole**.
- ChaSTE successfully penetrated the lunar soil and deployed a thermal probe. It gathered vital data

on surface and subsurface temperatures, helping confirm the **presence of water ice deposits**.

- ChaSTE also became the **first mission to successfully penetrate the soil of a celestial body to deploy a thermal probe after two previous missions had fallen short**.
- ChaSTE aims at in-situ measurements of thermal conductivity and temperature profile on the lunar surface to derive the vertical temperature gradient up to a depth of 100 mm at the site of landing.

Similar Previous Missions

- The **ESA's Philae lander**, which landed on **Comet 67P** in 2014, carried an instrument called MUPUS (Multi-Purpose Sensors for Surface and Subsurface Science). It **failed** to collect the intended temperature data due to an awkward landing position.
- **NASA's InSight lander**, which reached **Mars** in 2018, was equipped with the **Heat Flow and Physical Properties Package (HP3)**. It **failed** due to low friction in Martian soil, and sensors were attached to a tether instead of the probe itself, making data unusable.

GAIA MISSION

Context: The European Space Agency (ESA) shut down space observatory mission - GAIA (Global Astrometric Interferometer for Astrophysics).

About Global Astrometric Interferometer for Astrophysics (GAIA) Mission

- GAIA was **launched in 2013 by ESA**, aiming **to create the most precise, three-dimensional map of our galaxy, the Milky Way**.
- GAIA was **designed for astrometry**, the science of mapping the cosmos, through precise measurement of the location and movement of stars and other celestial bodies.

Key Highlights:

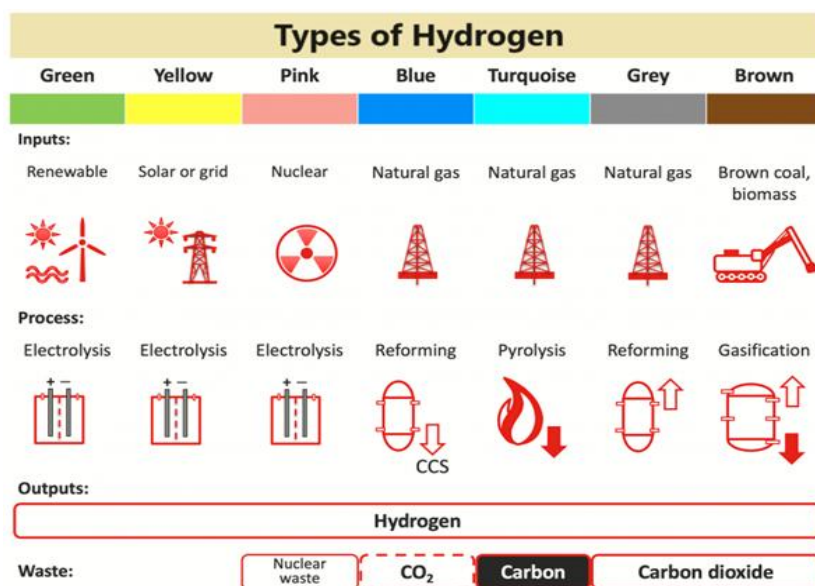
- Over the last decade, GAIA has taken 3 trillion observations of 2 billion stars and objects and helped inform at least 13,000 scientific publications.
- Gaia was placed at **Lagrange Point 2 (L2)** to observe the cosmos without interference.
- It **used twin telescopes and three instruments** (astrometer, photometer, spectrometer) for astrometry i.e. precise mapping of celestial bodies.
- The data revealed a warped, wobbling disc shape of the Milky Way and the galaxy's dynamic history.
- The Gaia mission has discovered a new family of black holes – Gaia BH1 (1560 light-years), Gaia BH3 (2,000 light-years).
- On retirement, Gaia was "passivated" (powered down) and nudged into a safe retirement orbit around the Sun to avoid interference with future missions

WHITE HYDROGEN

Context: France has discovered a 46-million-ton white hydrogen reserve in the Moselle region.

About White Hydrogen

- Unlike "green" or "blue" hydrogen, which require production processes, **white hydrogen is found naturally within the Earth**. It is **formed through geological processes**, such as reactions between water and certain minerals
- It is **considered a potentially clean energy source**, as its



extraction could have a lower carbon footprint compared to traditional hydrogen production.

- Production costs of around \$1 per kilogram, making it highly affordable.

POLAR ORBIT

Context: SpaceX's Fram2 mission became the first private astronaut crew to orbit Earth from pole to pole, a historic **first for human spaceflight**.

- A Polar Orbit (PO) is a **Low Earth Orbit (LEO) (200–1,000 km altitude)** where **satellites travel from pole to pole** instead of west to east.
- A deviation of up to 10° is still considered a polar orbit.
- Satellites in polar orbit look down on the Earth's entire surface and can pass over the North and South Poles several times a day.
- Launching into a polar orbit requires more fuel since rockets can't use Earth's rotational boost. This Orbit is essential for Earth observation, climate monitoring, and reconnaissance.

VIBE CODING

- It refers to the **use of generative AI to create entire app code from natural language prompts**. Users communicate with AI models like ChatGPT, which generate required code.
- Coined by **Andrej Karpathy**, OpenAI founding engineer, vibe coding **enables non-programmers to turn ideas into apps without needing coding expertise**.
- Vibe coding poses security risks when it replaces experienced coders with untrained users directing AI chatbots. AI-generated code may lack efficiency, security, and contextual understanding. This can lead to costly maintenance, performance issues.

GREAT RED SPOT

Context: New observations of the Great Red Spot on Jupiter have revealed that the planet's atmosphere above and around the infamous storm is surprisingly interesting and active,

About Great Red Spot

- It is an **anticyclone, a long-lasting area of high pressure** on Jupiter creating a **persistent storm**. **Located in Jupiter's Southern Hemisphere**, it appears as a giant red spot on Jupiter's surface.
- The **source of the red coloration is unknown**. It extends well above Jupiter's main cloud layers. It is the **largest known storm in the Solar System**. With a diameter of 15,400 miles, it is almost twice the size of the entire Earth and one-sixth the diameter of Jupiter itself.
- Winds inside this Jovian storm reach speeds of about **270 mph**. It has existed for the last 150 years, possibly even longer.
- The long lifetime of the Red Spot may be due to the fact that Jupiter is mainly a gaseous planet. It possibly has liquid layers but lacks a solid surface, which would dissipate the storm's energy, much as happens when a hurricane makes landfall on the Earth.
- However, the Red Spot does change its shape, size, and color, sometimes dramatically.

ART AND CULTURE

LOTHAL TO BECOME GLOBAL HUB FOR MARITIME HERITAGE

Context: Lothal, an ancient city of the Indus Valley Civilization, is poised to become a global centre for maritime heritage with the development of the National Maritime Heritage Complex (NMHC) in Gujarat.

About National Maritime Heritage Complex

- The NMHC, located in Lothal, Gujarat, has been developed under the **Ministry of Ports, Shipping, and Waterways**.
- **Aim:** to showcase India's rich maritime heritage, spanning from ancient times to the modern era.
- **Key Features:** At the heart of the NMHC lies the Iconic National Maritime Museum.
 - The museum will include 14 themed galleries.
 - The world's tallest Lighthouse Museum will rise to an impressive height of over 75 meters.
 - The NMHC will also feature four dedicated maritime heritage-based theme parks.
- **Designed by renowned architect Hafeez Contractor** and managed by Tata Projects Ltd.

About Lothal

- Lothal is one of the southernmost sites of the Indus Valley Civilization (IVC), located in **Gujarat's Bhal** region. The name "Lothal" in Gujarati translates to "the **mound of the dead**," likely referring to burial sites in the area.
- It is believed to have been built around 2,200 BC and flourished as a major trade center during the same period. The city was inhabited during 3700 BCE and was a **thriving trading port**.
- Archaeologists believe that the city was a part of a major river system on the ancient trade route from Sindh to Saurashtra in Gujarat.
- Lothal has two primary zones – the upper and the lower town. The Citadel is demarcated by platforms of mud-brick of 4 meters in height instead of a fortification wall.
- Lothal was especially known for its **trade in beads, gems, and ornaments**. The remains of the lower town suggest that the area had a bead-making factory.
- The availability of antiquities whose origin is traceable to the Persian Gulf and Mesopotamia and the presence of what is identified as a bead making industry further attributes Lothal as an industrial port town of the Harappan culture.
- **Significance:** The excavated site of Lothal is the **only known port town** of the Indus Valley Civilization, further highlighting its importance as a maritime and trade hub.
- **UNESCO Nomination:** Lothal was **nominated** for inclusion on the **UNESCO World Heritage List in April 2014**. Its nomination is still pending on the **tentative list of UNESCO**.

YAKSHAGANA

Context: Tulasi Raghvendra Hegde, a 15-year-old prodigy has gained recognition for being a Yakshagana performer. She was recently awarded the Young Achiever Award 2024 by the Rotary Club.

About Yakshagana

- Yakshagana is a vibrant and unique folk dance form from the **coastal regions of Karnataka**. This art form is a rare blend of dance, music, song, scholarly dialogues, and colorful costumes.
- While traditionally, men performed all roles, including female characters, women have now become an integral part of Yakshagana troupes.
- A typical troupe consists of 15 to 20 actors along with a Bhagawatha, who serves as the master of ceremonies and the main storyteller.



Key Elements of Yakshagana:

- **The Act:** Each performance typically centers around a small sub-story (known as 'Prasanga') from the ancient Hindu epics, such as the Ramayana or Mahabharata. The performance combines: **Stage performances** by skilled artists; **Commentary**, delivered by the lead singer (Bhagawatha), accompanied by **traditional music**.
- **The Music:** The musical accompaniment plays a key role in Yakshagana. Instruments commonly used include: Chande (drums), Harmonium, Maddale, Taala (mini metal clappers), Flute, etc.
- **The Dress:** Yakshagana is known for its elaborate costumes. The key features of the costumes include: Large headgear, Colored faces, Intricate and colorful costumes covering the body, Gejje (Musical beads worn on the legs that add rhythm to the performance.)
- **The Troupes:** There are several popular troupes (known as Melas) performing Yakshagana throughout the year. **Saligrama mela, Dharmasthala Mela, Mandarthi Mela, Perduru Mela** are some of the leading names.

VEER BAL DIWAS

Context: The Prime Minister of India recently participated in the Veer Baal Diwas event held at Bharat Mandapam, New Delhi.

About Veer Baal Diwas:

- It is **commemorated to honour the martyrdom of Sahibzadas Baba Fateh Singh and Zorawar Singh**, the **Sahibzade of 10th Guru Govind Singh Ji** on 26th December every year.
- It is annually observed on **December 26**, every year since 2022.

Background

- Guru Gobind Singh, along with his family and disciples, were compelled to flee as the Mughal Army encircled the Anandpur fort.
- During the chaos, Guru Gobind Singh's youngest sons, Zorawar Singh and Fateh Singh, along with their grandmother Gujari Devi were captured by the Mughal forces.
- The two young boys courageously refused to abandon their faith, and consequently, Wazir Khan ordered them to be bricked alive around December 26, 1705.
- Exemplifying bravery and loyalty to their religion, Government of India in 2022 declared to mark December 26 as Veer Bal Diwas annually to honour and remember their sacrifice.

About Guru Gobind Singh (1666-1708)

- He was 10th Sikh guru, following the demise of his father, Guru Tegh Bahadur, the ninth Sikh Guru.
- He is renowned for **founding the principles of Khalsa or the Five 'K's** i.e kesh (uncut hair), kanga (wooden comb), kara (iron or steel bracelet), kirpan (dagger) and kachera (short breeches).
- He fought against the Mughals later in the battle of Muktsar in 1705.
- He **declared Guru Granth Sahib as Sikhism's holy scripture in 1708, before his death.**

HORNBILL FESTIVAL

Context: The Hornbill Festival, Nagaland's iconic cultural and tourism fair, is annually held from December 1 to 10.

About Hornbill Festival:

- The Hornbill Festival is Nagaland's premier cultural and tourism event, held annually from December 1 to 10. **Organized by the Government of Nagaland**, it was first **introduced in 2000** to promote the state's rich cultural heritage and encourage inter-tribal interaction.
- Nicknamed the "Festival of Festivals," the event showcases both traditional and contemporary aspects of Naga culture.
- Initially a five-day event held at Khouchiezie in Kohima, it has since expanded into a grand ten-day celebration. The festival is named after the Hornbill, a bird deeply revered in Naga folklore.

Key Features:

- **Activities include:** Traditional Naga Morungs (youth dormitories), arts and crafts exhibitions, food stalls, herbal medicine booths, cultural performances, fashion shows, Naga wrestling, indigenous games, and musical concerts.
- The festival is held at the **Naga Heritage Village in Kisama**, about 12 km from Kohima.
- Nagaland, often called the "Land of Festivals," is home to 17 major tribes. It **features 17 traditional tribal houses (Morungs)** and a range of attractions, including the World War II Museum, Bamboo Heritage Hall, and live events like Naga Idol and beauty pageants.
- The Hornbill Festival 2024 is themed "Cultural Connect".

AKAL TAKHT

Context: A former Deputy Chief Minister of Punjab Sukhbir Badal was awarded religious punishment by the Akal Takht, the supreme temporal seat of the Sikhs.

About Akal Takht

- Akal Takht, meaning "Throne of the Immortal," is the highest political and spiritual institution of the Sikh community, located in Amritsar, Punjab.
- It was **founded by Guru Hargobind (the sixth Sikh Guru) on June 15, 1606**, as a center for addressing both spiritual and temporal matters related to Sikhism.
- The Akal Takht stands directly **opposite the Golden Temple (Harmandir Sahib)**, symbolizing the balance between spiritual guidance and temporal authority within the Sikh faith.

Historical Significance

- **Founding:** Guru Hargobind established the Akal Takht to embody the dual principles of **Miri** (worldly authority) and **Piri** (spiritual prominence). This pivotal moment in Sikh history marked a shift towards a more organized community, addressing both religious and political matters.
- **Role in Sikh Governance:** The Akal Takht historically functioned as a court for religious and political activities. It was the **venue for the Sarbat Khalsa**, the assembly of Sikhs, to resolve disputes, especially during times of conflict.
- **Architectural Features:** It is a five-story structure located within the Golden Temple complex, originally known as Akal Bunga. The building was designed to serve the secular needs of the Sikhs.

Modern Context

- The Jathedar of Akal Takht is the supreme spokesperson for Sikhs worldwide.
- There are four other takhats established by the panth (community) during the last century: Keshgarh Sahib (Anandpur), Patna Sahib, Hazur Sahib (Nanded), Damdama Sahib (Talwandi Sabo)

BIRSA MUNDA

Context: India commemorated the 150th birth anniversary of Bhagwan Birsa Munda on Janjatiya Gaurav Divas with nationwide celebrations.

Key Highlights

- **Declaration of Janjatiya Gaurav Divas:** The Indian government declared **15th November** as Janjatiya Gaurav Divas in 2021 during the Azadi Ka Amrit Mahotsav.
 - The day honors Bhagwan Birsa Munda and recognizes the contributions of tribal communities, especially during India's freedom struggle.
- **Celebratory Activities:** Special programs such as "Maati Ke Veer Padyatra" and "My Bharat Youth Volunteers" were organized in Chhattisgarh.
- **Commemorations:** A commemorative coin and postal stamp in honor of Bhagwan Birsa Munda.
- **Development Projects:** Projects worth ₹6640 crore inaugurated to uplift tribal communities, including initiatives under the Pradhan Mantri Janjati Adivasi Nyaya Maha Abhiyan (PM-JANMAN) and Van Dhan Vikas Kendras (VDVKs).

About Pradhan Mantri Janjati Adivasi Nyaya Maha Abhiyan (PM-JANMAN)

- **Objective:** To provide basic amenities such as safe housing, clean drinking water, and education to Particularly Vulnerable Tribal Groups (PVTGs).
- **Scope:** Covers 75 PVTG communities in 18 States and 1 Union Territory over three years (2023-24 to 2025-26).
- **Budget:** ₹24,104 crore (comprising Central Sector and Centrally Sponsored Schemes)
- **Focus Areas:** Includes 11 critical interventions implemented by 9 ministries, such as housing and roads by the Ministry of Rural Development, led by the Ministry of Tribal Affairs.

About Bhagwan Birsa Munda

- Born in 1875 in Ulihatu, Khunti district (present-day Jharkhand), he was named Daud Munda at birth.
- He belonged to the **Munda tribe** of the Chota Nagpur plateau. He was **influenced by Vaishnav preacher Anand Panre**, which shaped his spiritual and reformist ideals.
- In 1895 Birsa was arrested and jailed for two years on charges of rioting.
- After his release, he continued organizing tribal resistance, culminating in his capture in 1900. He died of cholera in captivity.

Contributions:

- **Religious Leader:** Founded the **Birsait sect**, emphasizing monotheism, moral conduct, and societal reform.
- **Social Reformer:** Campaigned against alcoholism, witchcraft, and sorcery. Advocated for cleanliness and cultural awareness among tribals.
- **Freedom Fighter:** Mobilized tribal communities to resist British colonial oppression and restore the **Mundari Khuntkatti (community land ownership) system**. Birsa educated his followers about British exploitation and fostered pride in tribal heritage. He was **revered as Dharti Aaba (Father of the Earth)** for his leadership.

The Munda Rebellion (Ulgulan Movement) (1899-1900)

- The Ulgulan or "the **Great Tumult**," was a significant tribal uprising that occurred between 1899 and 1900 in the Chotanagpur plateau region, primarily in present-day Jharkhand, India.
- **Led by Birsa Munda**, this movement aimed to resist British colonial rule and reclaim tribal rights over their ancestral lands.
- **Causes:**
 - **Zamindari System:** British policies replaced traditional Mundari Khuntkatti with the exploitative zamindari system, reducing tribals to landless laborers.
 - **Exploitation by Outsiders (Dikus):** Non-tribal intermediaries imposed heavy taxes and forced labor (Veth Begari).
 - **Missionary Influence:** Christian missionaries often criticized tribal traditions, fueling discontent.
- **Rebellion:**
 - The rebellion began in earnest on December 24, 1899, when Birsa's followers launched coordinated attacks against British officials and local landlords.
 - Utilizing **guerrilla warfare** tactics, they targeted police stations and government properties.
 - Despite initial successes, the rebellion faced severe repression from British forces, who employed superior military strength to quell the uprising.
- **Outcomes:**
 - **Chhotanagpur Tenancy Act, 1908:** Prohibited tribal land transfers to non-tribals, safeguarding tribal rights.
 - **Abolishment of Forced Labor:** Exploitative Veth Begari system was dismantled.

Symbols of Resistance

- **White flag:** Represented independence.
- **Slogan:** "Abua Raj Setarjana, Maharani Raj Tundujana" (End the Queen's rule, establish our kingdom).

PRAJA MANDAL MOVEMENT

Context: January 20 marks the death anniversary of Sewa Singh Thikriwala, who led the Praja Mandal movement (self-rule movement).

About Praja Mandal Movement

- The **Praja Mandal Movement** was a self-rule movement that emerged in various princely states of India, including Punjab, during British rule. It aimed to secure civil liberties, economic reforms, and responsible governance for the common people who lived under the rule of princely states.
- The movement was part of the broader struggle against oppressive princely rulers who were seen as allies of the British colonial administration.
- Princely states in British India were semi-autonomous but often had repressive governance, heavy taxation, and lack of civil rights for their subjects.

Objectives of the Movement

- **Protection of Civil Liberties:** Ensuring freedom of speech, assembly, and press for the people.
- **Reduction of Oppressive Taxes:** Protesting against high land revenue and forced labor imposed by the rulers.
- **Peasant Reforms:** Improving the economic conditions of farmers and laborers who suffered under feudal rule.
- **Educational Development:** Establishing schools and colleges for the masses.
- **Establishment of Responsible Government:** Replacing autocratic princely rule with democratic governance.

About Sewa Singh Thikriwala (1886-1935)

- Sewa Singh Thikriwala was born in Thikriwala village, Patiala princely state (now in Barnala, Punjab). His father, Dewa Singh, was a high-ranking official in the court of Maharaja Rajinder Singh.
- Sewa Singh himself was appointed as a Health Officer in the state administration.

Association with the Singh Sabha Movement

- Despite being from a privileged background, Sewa Singh left his government job to join the Singh Sabha Movement.
- The Singh Sabha Movement arose in response to Christian missionary activities after the British annexation of the Sikh Empire.
- Its main goal was to revive Sikh traditions, counter religious conversions, and promote education.

Role in the Praja Mandal Movement

- Sewa Singh openly criticized the autocratic rule of the Patiala Maharaja, leading to his persecution by the state authorities. The Patiala state falsely implicated him in a theft case, but he was later released due to lack of evidence.
- In 1928, after coming out of jail, he became the President of the Punjab Riyasat Praja Mandal, leading the resistance against princely oppression.

Imprisonment and Martyrdom

- He was arrested again in August 1933 and sentenced to three years in prison. In 1935, while still in prison, he went on a hunger strike to protest the inhumane treatment of political prisoners.
- He died in jail in 1935, marking the end of a crucial phase of the movement.

KOKBOROK DAY

Context: Kokborok day was recently celebrated in the state of Tripura.

About Kokborok Day

- Kokborok is the **native language of the Borok people**, also known as Tripuris, and is one of the official languages of Tripura.
- It was **officially recognized on January 19, 1979**. To commemorate its recognition and promote its development, Kokborok Day is celebrated annually on this date.

About the Kokborok Language

- The term "Kokborok" was first recorded as "Kok-boro" in 1897/98 by Daulat Ahmed in an early language primer. Kokborok is a Tibeto-Burman language spoken mainly in Northeast India.
- As per the 2011 Census, 8,80,537 people speak Kokborok, making up 23.97% of Tripura's total population.
- Originally written in the Koloma script, which is now considered lost. Today, it is written using: Bengali script and Latin script.

ETIKOPPAKA TOYS

Context: Andhra Pradesh's eco-friendly Etikoppaka Toys earned accolades at the Republic Day parade.

About Etikoppaka Toys

- Etikoppaka Toys, also known as **Etikoppaka Bommalu**, are exquisite **wooden toys** that trace their origins to the Etikoppaka village in Andhra Pradesh.
- These handcrafted toys boast a 400-year-old tradition, known for their smooth contours, vibrant colors, and eco-friendly nature.
- The toys gained prominence due to their fine craftsmanship and use of natural dyes.



Geographical Origin

- **Etikoppaka village**, located along the banks of the Varaha River, is the hub of this craft.
- The region provides **suitable raw materials**, including **softwood from Ankudu trees** (Wrightia Tinctoria), essential for toy-making.
- In 2017, the toys received official recognition with a Geographical Indication (GI) tag.

Unique Features of Etikoppaka Toys

- **Material:** Made from soft, lightweight Ankudu wood (Wrightia Tinctoria), ideal for carving.
- **Natural Colors:** Painted with eco-friendly dyes from seeds, lacquer, bark, roots, and leaves.
- **Design & Safety:** Rounded edges ensure child safety, while the Turned Lacquerware technique gives a smooth, glossy finish.

DECIPHERING INDUS VALLEY SCRIPT

Context: Tamil Nadu has announced a \$1 million prize for successfully deciphering the Indus Valley Script, one of the world's oldest undeciphered writing systems.

About the Indus Valley Script

- **Distribution & Medium:** Found at over 60 archaeological sites, with approximately 3,500 surviving inscriptions. These are primarily on **stamp seals, molded terracotta, faience amulets, pottery fragments, and copper tablets**.
- **Characteristics:** The script is **logosyllabic** and **partially pictographic**, featuring abstract symbols, human and animal motifs, including the distinctive unicorn symbol. Most inscriptions are **short, averaging five signs**. Unlike the Rosetta Stone for Egyptian hieroglyphs, no multilingual inscriptions have been found.
- **Writing Direction:** Typically written **right to left**, but longer inscriptions **sometimes** follow the **Boustrophedon style** (alternating directions between lines).
- **Materials:** Terracotta, ceramics, shell, bone, ivory, stone, metal, and perishable materials like wood and fabric.
- **Methods:** Carving, chiseling, incising, inlaying, molding, embossing, and painting.



KALARIPAYATTU

Context: Kalaripayattu has become a bone of contention ahead of the 38th National Games.

About Kalaripayattu: Kerala's Ancient Martial Art

- Kalaripayattu is one of the world's oldest and most scientific martial arts, emphasizing mind-body coordination.
- Kalaripayattu is derived from two words – “Kalari” meaning place of exercise or gymnasium and “payattu” meaning to fight or exercise.
- Originating in **Kerala**, it is practiced in **Kalaris** (traditional training arenas). Traditionally, the Kalari centers are like a temple. Mythology credits sage **Parasurama** with its creation.
- Recent research traces the roots of Kalaripayattu from the Sangam period (600 to 300 BCE).
- The Government of Kerala organizes an annual Kalaripayattu combat event called "**Ponnyathankam**" every February.
- **Training Stages:**
 - **Maipayattu:** Body conditioning to prepare for combat.
 - **Kolthari:** Training with wooden weapons like short and long sticks.
 - **Angathari:** Introduction of sharp metal weapons.
 - **Verumkai:** Bare-hand combat, focusing on pressure points.
- **Styles & Influence:**
 - **Vadakkan Kalari (Northern Style):** Focuses on graceful movements and weaponry, predominant in Malabar.
 - **Thekkan Kalari (Southern Style) or Adi Murai:** Emphasizes free-hand techniques and powerful movements, flourishing in Travancore.
 - It is believed that Kalaripayattu was introduced to China at the Shaolin Temple in the 5th century AD by Bodhidharma, who was originally from Thanjavore.



KASHI TAMIL SANGAMAM

Context: The Kashi Tamil Sangamam (KTS) 3.0, a 10-day cultural event, was recently held in Varanasi, Uttar Pradesh.

About Kashi Tamil Sangamam (KTS)

- First launched in **2022**, this **initiative is a part of the Ek Bharat Shreshtha Bharat program**, which fosters unity and cultural exchange between different regions of India.
- **Organized by:** The Ministry of Education, in collaboration with various central ministries and the Government of Uttar Pradesh.
- **Alignment with NEP 2020:** The initiative resonates with the National Education Policy 2020, which advocates for integrating Indian Knowledge Systems with modern education.
- **Theme for 2024:** Contributions of Sage Agasthyar (a revered scholar and spiritual figure)

Sage Agasthyar's Legacy

- **One of the Saptarishis:** Revered in Vedic traditions for his contributions to multiple fields, including health, philosophy, science, linguistics, and art.
- **Founder of Siddha Medicine:** an ancient Tamil medical system.
- **Contributor to Tamil Grammar:** Authored **Agattiyam**, an early Tamil grammar text.
- **Proponent of Vedic Culture:** Helped in expanding Vedic traditions in South India; also worshipped in Java and Sumatra.

Kashi Tamil Sangamam Objectives



Cultural and Literary Exchange

Showcasing spiritual, literary, and artistic connections



Academic and Research Collaboration

Enhancing research and knowledge-sharing



Promotion of Traditional Art & Cuisine

Exhibiting traditional art forms and food



Educational Exploration

Exploring Kashi's historical and educational legacy

- **Authored Sanskrit Texts:** His works include: *Agastya Gita* (in Varaha Purana), *Agastya Samhita* (in Skanda Purana), *Dvaidha-Nirnaya Tantra*

About Ek Bharat Shreshtha Bharat (EBSB) Initiative

- Launched in 2015, this program aims to **promote inter-state cultural exchange and national integration through state and UT pairings.**
- **Key Objectives:**
 - Celebrate India's unity in diversity.
 - Promote national integration by fostering deeper engagement between states.
 - Showcase heritage, culture, customs, and traditions to create a shared national identity.
 - Encourage cross-learning by sharing best practices and experiences among states.

HARAPPAN WATER MANAGEMENT TECHNIQUES

Context: Excavations at Rakhigarhi (Haryana) have uncovered a 5,000-year-old water management system, including a water storage area between mounds with a depth of 3.5 to 4 feet.

- Additionally, the discovery of a dried riverbed of the Chautang (Drishavati) River highlights the advanced hydraulic knowledge of the Harappan civilization.

Key Water Management Practices

- **Well-Planned Drainage System:** Cities like Mohenjo-Daro and Harappa had well-structured drainage systems. Each house had access to a private or shared bathroom connected to covered drains. These drains were made of bricks and had inspection holes for cleaning.
- **Public and Private Wells:** Hundreds of wells were dug within cities, ensuring a steady water supply. Mohenjo-Daro alone had more than 700 wells, showing their reliance on groundwater.
- **Great Bath (Mohenjo-Daro):** A large, watertight pool made of baked bricks and bitumen (a natural tar) to prevent seepage. Possibly used for ritual bathing or community activities.
- **Reservoirs and Water Storage:** Cities like Dholavira had sophisticated water conservation structures. Large reservoirs were built to collect and store rainwater. Stepwells were also found, allowing easy access to stored water.
- **Dams and Water Channels:** Evidence from Dholavira suggests use of small dams to channel and store rainwater. These structures helped in irrigation and sustained the population during dry periods.

PAGRI SAMBHAL JATTA MOVEMENT AND AJIT SINGH

Context: On February 23, farmers protesting at the Punjab and Haryana borders observed Pagri Sambhal Diwas, paying tribute to Ajit Singh, paternal uncle of freedom fighter Bhagat Singh.

- Since 2021, February 23 has been observed as Pagri Sambhal Diwas to honor Ajit Singh. The tradition began during the farmers' protests at Delhi, where protestors marked his birth anniversary while demanding the repeal of the now-scrapped three farm laws.

Ajit Singh: The Revolutionary Leader

- Born in February 1881, in Khatkar Kalan village, (it is now part of Shaheed Bhagat Singh Nagar district), Punjab, Ajit Singh was a freedom fighter, revolutionary, and activist who inspired his nephew Bhagat Singh.
- He played a **pivotal role in mobilizing farmers against oppressive British laws through the Pagri Sambhal Jatta movement.**
- Due to his anti-British activities, he was **exiled from 1909 to 1947**, spending decades abroad in revolutionary efforts.
- He **returned to India in 1947**, but due to ill health, passed away on August 15, 1947, in Dalhousie.

Pagri Sambhal Jatta (PSJ) Movement

- The phrase "Pagri Sambhal Jatta" translates to "*Take care of your turban, O farmer*", symbolizing self-respect and defiance. This slogan was **coined by Banke Dayal, a nationalist poet**, and became a rallying cry for farmers protesting British exploitation.

- In 1907, Ajit Singh launched the PSJ movement **to challenge British-imposed agricultural laws that threatened farmers' land rights. These included:**
 - **Punjab Land Alienation Act (1900):** Restricted farmers from freely selling or mortgaging their land. Favored moneylenders and landlords, increasing farmer indebtedness.
 - **Punjab Land Colonisation Act (1906):** Gave the British control over newly developed lands in the Chenab Colony (now in Pakistan). Farmers were required to transfer their land to the British upon death rather than passing it to heirs.
 - **Doab Bari Act (1907):** Further restricted farmers' ownership rights, reducing them to contract laborers on their own land.
 - British authorities also raised land and irrigation taxes, forcing many small farmers into debt and land loss.
- Ajit Singh, with Kishan Singh (Bhagat Singh's father), formed **Bharat Mata Society**, a revolutionary group to mobilize farmers and published **journal "Bharat Mata"**, later compiled into a book.
- The movement received strong support from leaders like Lala Lajpat Rai, leading to mass protests and civil disobedience.
- Under pressure, the British withdrew some of the oppressive laws, marking one of the first major peasant victories against colonial rule.

Ajit Singh's Exile and Legacy

- In May 1907, **Ajit Singh and Lala Lajpat Rai were arrested and exiled to Burma** but were released in November 1907.
- Ajit Singh later traveled across Europe, continuing his anti-colonial activism and was associated with **Lala Hardayal and Madame Cama**.

KUMBH MELA

Context: MahaKumbh Mela of Prayagraj was concluded recently.

Kumbh Mela: The Festival of the Sacred Pitcher

- Kumbh Mela is the **largest peaceful gathering of pilgrims on Earth**, where millions of devotees take a dip in sacred rivers, believing it cleanses them of sins and liberates them from the cycle of birth and death.
- This grand congregation includes ascetics, saints, sadhus, spiritual seekers (kalpavasis), and visitors from all walks of life, regardless of caste, creed, or gender.
- The primary bearers of this tradition are members of religious organizations such as akhadas and ashrams, as well as individuals who live on alms.
- During the Kumbh Mela, a number of ceremonies take place; the traditional procession of **Akharas** called '**Peshwai**' on elephant backs, horses and chariots, the shining swords and rituals of Naga Sadhus during 'Shahi Snaan'.
- **Mythological Origins:**
 - The word "Kumbh" means pitcher or pot in Sanskrit. According to Hindu mythology, when the Devas (gods) and Asuras (demons) churned the ocean (Samudra Manthan) for Amrita (elixir of immortality), a pot of this divine nectar emerged.
 - To prevent the Asuras from seizing it, Indra's son, Jayant, fled with the pot, spilling its contents at four places—Haridwar, Prayagraj, Ujjain, and Nashik-Trimbakeshwar.
 - The Kumbh Mela is celebrated every 12 years at these locations, aligning with the movement of celestial bodies, particularly Jupiter, the Sun, and the Moon.
- **Historical Evolution:**
 - Although the origins of the Kumbh Mela are traced to ancient scriptures like the Skanda Purana, the festival in its present form developed over centuries.
 - Mention of the Kumbh Mela can be found in the accounts of Chinese traveler Xuanzang, who documented the Kumbh during his visit to India during 629–645CE.

- Some historians believe that Adi Shankaracharya (8th century) institutionalized it as a gathering for Hindu monks (sadhus) to discuss spiritual matters.
- The Bhakti movement and later historical records, including Mughal-era accounts, mention the festival as an established tradition.
- Recognizing its cultural and spiritual importance, **UNESCO** inscribed Kumbh Mela on the **Representative**

Types of Kumbh Melas

- **Purna Kumbh (Maha Kumbh):** Celebrated every 12 years at Prayagraj.
- **Ardh Kumbh:** Held every 6 years at Prayagraj and Haridwar.
- **Simhashta Kumbh:** Kumbh Mela in Nashik and Ujjain when Jupiter is in Leo (Simha Rashi).
- **Magh Mela:** An annual fair at Prayagraj, considered a miniature version of Kumbh.

Sacred Locations and Rivers

Each Kumbh site is associated with a sacred river:

- **Haridwar** – River Ganga
- **Prayagraj** – Confluence of Ganga, Yamuna, and the mythical Saraswati
- **Ujjain** – River Kshipra
- **Nashik-Trimbakeshwar** – River Godavari

List of the Intangible Cultural Heritage of Humanity in 2017.

ALI AI LIGANG FESTIVAL

- Ali Ai Ligang is a significant agricultural festival celebrated by **Assam's Mising tribe**, primarily in **Jorhat** and other regions.
- The festival is observed **annually** on the first Wednesday of the month of **Fagun (February–March)**, marking the beginning of the sowing season.
- The festival continues for five days and during this festival certain taboos with respect to the cutting of trees, fishing, ploughing, burning jungles etc. are strictly observed.
- The name reflects its agricultural significance: **Ali** means roots and seeds; **Ai** means fruits; **Ligang** means to sow.
- The celebrations begin with **Laitom Tomchar (flag hoisting)**, followed by prayers to **Donyi Polo** (Mother Sun and Father Moon) for protection of crops from pests and natural calamities. The Mising community has only one major festival, which is Ali Ai Ligang.
- At **Morung Okum** (Morung Ghar – a traditional youth dormitory), offerings such as **Apong** (rice beer), meat, and fish are made to deities, followed by the vibrant Gumrag dance, performed by both men and women.

LEZIM

Context: A Hindi film based on the life of Chhatrapati Sambhaji Maharaj, has sparked controversy over a Lezim dance sequence.

About Lezim

- Lezim is a **folk dance of Maharashtra**, performed using a **small wooden instrument with metal cymbals that create rhythmic sounds**.
- The dance involves vigorous movements like stepping, squatting, and jumping, often performed in pairs or circles. **Traditionally accompanied by dhol** (a type of drum), it is known for its energetic and coordinated formations.
- There are three main types of Lezim - military lezim (mostly used as a martial art for defense), talathekya and samanyajananna.

About Chhatrapati Sambhaji Maharaj

- Sambhaji Maharaj, the **eldest son of Chhatrapati Shivaji**, ruled the Maratha Empire from 1681 to 1689. His reign was marked by **continuous battles with Mughal Emperor Aurangzeb**, successfully defending key forts in the Deccan.

- In 1689, he was captured by the Mughals, subjected to brutal torture for refusing to convert to Islam, and executed after weeks of resistance.
- He is remembered as a brave warrior and a symbol of Maratha resilience against the Mughal expansion.

INTERNATIONAL MOTHER LANGUAGE DAY

- International Mother Language Day (IMLD) 2025 was celebrated worldwide on February 21, continuing the annual tradition since 2000 to promote linguistic and cultural diversity and multilingualism.
- This year marks the 25th anniversary (Silver Jubilee) of IMLD, with the theme: "Silver Jubilee Celebration of International Mother Language Day."

Background

- Proclaimed by UNESCO in 1999, IMLD was later recognized by the UN General Assembly in 2002.
- The day **commemorates the 1952 protest in East Pakistan (now Bangladesh) against West Pakistan's imposition of Urdu as the official language.**
- In Bangladesh, February 21 has been observed as **Ekushe Day** since 1953, derived from the Bengali word for twenty-one.

Global Language Landscape

- **English** is the most widely spoken language (~1.5 billion speakers), followed by **Mandarin** (~1.11 billion) and **Hindi** (~609.5 million).
- **Bengali**, the seventh most spoken language, has ~273 million speakers globally.

Linguistic Diversity in India

- India is one of the most linguistically diverse nations, with over 19,500 languages and dialects spoken.
- Hindi remains the most spoken language in India, with 528 million speakers as per the 2011 Census.
- India has lost around 250 languages in the last 60 years, and 42 Indian languages are critically endangered, the highest in the world.
- **197 Indian languages are at risk of extinction**, posing a significant cultural and linguistic challenge.

THAIPUSAM

- The Prime Minister greeted everyone recently on the occasion of Thaipusam.
- Also known as **Thai poosam**, it is a Hindu festival celebrated to **honour Lord Murugan** (also known as Lord **Kartikeya**), the Hindu **god of war, victory, and wisdom.**
- The name "Thaipusam" is a combination of Thai (the Tamil month) and Poosam, which is the name of a star that is at its highest point during this festival. **It is celebrated on the full moon in the Tamil month of Thai.**
- The festival marks the day when Goddess Parvati presented Lord Murugan (Lord Kartikeya) with a divine spear, known as the Vel, to help him defeat the demon Soorapadam. The event symbolises the victory of good over evil.
- It is widely celebrated by the Tamil community in Tamil Nadu and across the world, especially in Sri Lanka, Singapore, Malaysia, and more

TRINATION BUDDHIST MOTORCYCLE EXPEDITION

- The **Heartfulness Lord Buddha Trination Tri-Services Motorcycle Expedition** was recently flagged off.
- Organized in collaboration with the **International Buddhist Confederation (IBC)** and other partners, this unique initiative unites India, Nepal, and Sri Lanka.
- The journey **began from Lumbini, Nepal**, the **birthplace** of Lord Buddha, and will cover significant Buddhist heritage sites across the three nations.
- The Indian chapter of the expedition is being conducted with support from:
 - **Land Port Authority of India** (under the Ministry of Home Affairs).
 - **Nalanda University, Rajgir** (under the Ministry of External Affairs).

- **BIMSTEC** as the strategic partner.
- The route in India includes key Buddhist landmarks such as:
 - **Sarnath**, Uttar Pradesh – Site of Buddha's **first sermon**.
 - **Bodhgaya**, Bihar – Place of **Buddha's enlightenment**.
 - **Nalanda**, Bihar – Renowned ancient **Buddhist university**.
 - **Nagarjuna Sagar**, Andhra Pradesh – Important Buddhist learning center.
 - **Udayagiri**, Odisha – Significant Buddhist monastic site.
 - **Karnataka** – Various Buddhist sites reflecting India's rich Buddhist heritage.

VIJAY DURG (FORT WILLIAM)

Context: In a move aimed at removing colonial legacies, Fort William has now been renamed Vijay Durg, a significant Maratha naval base along the Sindhudurg coast under Chhatrapati Shivaji Maharaj.

About Fort William, Kolkata

- **Built by the British in 1781** and named after King William III of England, it has served as a key military installation in India.
- It has been the headquarters of the Indian Army's Eastern Command.
- It sits on the eastern banks of the River Hooghly, the major tributary of the River Ganga.
- The **Black Hole Tragedy** was an incident on the night of 20 June 1756, when troops of **Siraj-ud-Daulah, the Nawab of Bengal, captured Fort William in Calcutta** and imprisoned British soldiers in a small dungeon.

VAJRAYANA BUDDHISM

Context: Excavation at Ratnagiri's 5th-13th Century Buddhist complex uncovered an 8th-9th Century AD Buddha head, massive palm, ancient wall, and inscribed relics.

About Ratnagiri Site of Odisha

- Located **100 km northeast of Bhubaneswar**, Ratnagiri sits between the **Birupa and Brahmani rivers** and is Odisha's most excavated Buddhist site.
- Along with **Udaygiri and Lalitgiri**, Ratnagiri forms Odisha's famous Diamond Triangle in Jajpur and Cuttack districts.
- Ratnagiri was a key **Vajrayana** site, emphasizing mystical powers through "Vajra" (thunderbolt/diamond), which inspired the "Diamond Triangle" name.
- Ratnagiri houses India's only Buddhist monastery with a curvilinear roof and once sheltered around 500 monks.

Odisha: A Buddhist Hub

- Buddhism thrived in Odisha under the **Bhaumakara dynasty (8th–10th century)**, making it a key center for Buddhist learning.
- The region's maritime trade with Southeast Asia facilitated cultural exchanges, commemorated through the **Baliyatra festival**.
- Odisha played a crucial role in Buddhism's early spread—**Tapassu and Bhallika, among Buddha's first disciples, were from Utkala**.
- **The Kalinga War (261 BCE)** led Emperor Ashoka to embrace Buddhism, promoting it across Asia.

Baliyatra, literally 'voyage to Bali' is a seven-day festival to commemorate the 2,000-year-old maritime and cultural links between Kalinga and Bali and other South and Southeast Asian regions such as Java, Sumatra, Borneo, Burma (Myanmar) and Ceylon (Sri Lanka).

Vajrayana Buddhism (also known as Tantric Buddhism)

- Emerging from Mahayana Buddhism in the **6th–7th century CE**, Vajrayana flourished in **Bengal, Bihar, and Tibet**, where it continues to be practiced.
- This sect emphasizes **spiritual power (Vajra)**, meaning *thunderbolt or diamond*, as the path to salvation.

- It highlights the role of feminine divinities (Shakti), considered the source of power behind male deities. These divine figures, known as **Tārās**, were revered as saviors.
- A key tantric chant in Vajrayana is “**Om mani padme hum**”, believed to grant mystical power and lead to enlightenment.
- Vajrayana incorporates **esoteric rituals, meditation, and deity visualization**, often guided by an initiated master.

AMIR KHUSRAU

Context: PM Modi, at the 25th **Jahan-e-Khusrau** festival, described the event as carrying the “fragrance of the soil of Hindustan.”

About Amir Khusrau

- Abul Hasan Yaminuddin, famously known as Amir Khusrau (1252–1325) wore many hats—a soldier, courtier, Sufi, poet, literary innovator, and music maestro. Sultan Jalaluddin Khalji conferred on him the title of ‘Amir’.
- His father, a Turkic chieftain, is believed to have migrated to India during the reign of Shamsuddin Iltutmish, after fleeing the invasions of Chengez Khan. Khusrau was later born in Patiyali, in the present-day Etah district of Uttar Pradesh.
- Khusrau also served at least five Delhi Sultans: Muizuddin Qaiqabad, Jalaluddin Khalji, Alauddin Khalji, Qutbuddin Mubarak Shah, Ghiyasuddin Tughlaq
- Khusrau is sometimes referred to as the “voice of India” or “Parrot of India” (Tuti-e-Hind).
- **Sufi Influence:** Spiritually, Khusrau remained deeply devoted to the famous Sufi saint Hazrat Nizamuddin Auliya. So strong was their bond that Khusrau was buried at his master’s feet in Delhi.



Contribution:

- Khusrau is celebrated as a pioneer poet who wrote in **Persian, Hindavi, and Rekhta** (an early form of the Hindustani language).
- He developed a unique and expressive style that moved beyond the traditional **Apabhramsha**, shaping a new literary language that bridged cultures and classes.
- Beyond literature, Khusrau’s legacy in music is equally profound. He is credited with:
 - Creating **new ragas**
 - Developing forms like **khayal, tarana, qaul, and qawwali**
 - Inventing musical instruments like the **tabla and sitar** (though some of these attributions remain debated by scholars)
- His famous compositions include: Chhaap Tilak, Zehal-e-Maskeen, Sakal Ban Phool Rahi Sarson

HERATH FESTIVAL

- The **annual** festival of ‘Herath’ or **Maha Shivaratri** is celebrated by **Kashmiri Pandits** in the Jammu and Kashmir Valley.
- The word **Herath** is believed to have come from the phrase “**Har Ratri**”, meaning the night of Lord Shiva. Kashmiri Pandits observe Herath with great devotion inside their homes.
- The festival marks the wedding of Lord Shiva and Goddess Parvati. Special pujas (ritual prayers) are held, especially after sunset and often continue till midnight.
- A symbolic deity setup known as ‘**Vatukh Raaz**’ is created for the rituals.
- Beginning from the 13th night of Phalgun month (February-March) until the new moon, it marks the unity of divinity, consciousness, and feminine energy that leads to creation.
- The day following Shiva Chaturdashi is known as **Salam**, a unique tradition reflecting the historical unity of Pandits and Muslims in the Kashmir Valley.

- On the fifteenth day, called **Dooni-Mavas**, walnuts are distributed among family members as a sacred offering. Kashmiri Pandits greet one another with the phrase **Herath Poshte**, extending warm wishes for the occasion.
- The largest gathering takes place at the Shankaracharya Temple overlooking Dal Lake in Srinagar.

MENHIR

Context: The **Menhirs or the standing stones of Mudumal in Narayanpet in Telangana** have made it to the **tentative list of UNESCO World Heritage Sites**.

- This is among the six sites added to the UNESCO tentative list, including the Ashokan Edicts along Maurayan Routes, Kanger Valley National Park (Chhattisgarh), Chausath Yogini Temples, Gupta Temples and Palaces-Fortress of Bundelas (Madhya Pradesh and Uttar Pradesh)

About Mudumal Megalithic Menhirs

- These Menhirs are **large upright stones** placed in a specific pattern by ancient people erected between 1500-500 BC (oldest known menhirs in India). These stones are found near Mudumal village, not far from the Krishna River, covering an area of around 80 acres.
- The menhirs are considered sacred by the local population, who refer to them as "*Niluralla Thimmappa*" (Thimmappa of the Standing Stones), with one particular menhir being worshipped as Goddess Yellamma.
- The Mudumal site has been described as a "megalithic astronomical observatory" by the UNESCO dossier.



What is Menhir?

- **A menhir is a large upright standing stone.** Menhirs may be found singly as monoliths, or as part of a group of similar stones. Often menhirs were placed together, forming circles, semicircles, or vast ellipses.
- The term 'menhir' is derived from the Brittonic "maen" meaning "stone", and "hîr" meaning "long".
- The largest surviving menhir, the Grand Menhir Brisé or the Great Broken Menhir in Brittany, France, once stood at 20.6 m tall.
- The menhirs in Europe were originally associated with the Beaker culture who lived during the late Neolithic and early Bronze Age — roughly 4,800 to 3,800 years before present (BP).
- But the oldest European menhirs are today dated to as early as 7,000 BP.

SWADESH DARSHAN SCHEME

- The Swadesh Darshan Scheme was launched as a Central Sector Scheme by the Ministry of Tourism in the year 2014-15.
- The scheme aims to develop thematic tourist circuits in a planned and sustainable manner.
- The scheme focused on thematic tourist circuits, such as the Buddhist Circuit, Desert Circuit, Coastal Circuit, Eco Circuit, Heritage Circuit, and more.
- In recent years, the Ministry of Tourism has revamped the scheme and introduced **Swadesh Darshan 2.0 (SD 2.0)**.
 - Unlike the earlier version that focused mainly on building infrastructure, SD 2.0 aims to create sustainable and responsible tourism destinations. It follows a more tourist- and destination-centric approach.

VIKRAMSHILA UNIVERSITY

Context: A decade after Nalanda University came up in the foothills of Rajgir, work is on to revive another ancient centre of learning Vikramshila University, in Bhagalpur Bihar.

About Vikramshila Mahavihara

- Vikramshila Mahavihara was **founded by King Dharmapala** of the Pala dynasty in the late 8th to early 9th century AD.
- While Nalanda university flourished from the Gupta Period (320-550 AD) to the 12th century, **Vikramshila thrived during the Pala Period (8th to 12th century).**
- Subjects such as theology, philosophy, grammar, metaphysics and logic were taught at Vikramshila.
- But the most important branch of learning were the **tantras** because Vikramshila flourished in the days of tantricism, when occult sciences and magic were subjects of study both in Buddhism as well as Hinduism.
- The university produced several eminent scholars, among them, **Atisa Dipankara**, who played a key role in the establishment of Buddhism in Tibet.
- The institution prospered for about four centuries before fading out along with Nalanda around the 13th century due to the rise of Hinduism and the decline of Buddhism along with the invasion of Bakhtiyar Khalji.

KOCH-RAJBONGSHI

Context: Assam decided cases pending in the state's Foreigners Tribunals against members of the Koch Rajbongshi community will be withdrawn.

About Koch Rajbongshi

- The Koch Rajbongshis trace their roots to the **Kamata kingdom**, which comprised parts of the present day Assam, West Bengal, Nepal and Bangladesh. They are currently spread across these areas.
- Their **identity is closely linked to the Koch dynasty. Rajbanshi elites opposed being identified with the name Koch**, asserting their Kshatriya heritage.
- Today, **Rajbanshis in Bengal are listed as Scheduled Castes (SC)**, while in **Assam they are classified as OBC**. However, the Koch Rajbanshis of Assam have been demanding Scheduled Tribe (ST) status for their community.

KANNADIPPAYA

- Kannadippaya, a traditional Kerala Tribal handicraft, has received the GI tag, marking it as the first tribal handicraft from the state to earn this recognition.
- The term Kannadippaya means “**mirror mat**,” referring to its **unique reflective design**.
- It is woven from the soft inner layers of **reed bamboo**, giving it **excellent thermal properties—it stays warm in winter and cool in summer**.
- The mat is mainly woven by five ethnic groups – Oorali, Mannan, Muthuva, Malayan, and Kadar tribes, primarily from Idukki, Thrissur, Ernakulam, and Palakkad districts. Other indigenous communities such as Ulladan, Malayarayan, and Hill Pulaya, are also engaged in its weaving to a lesser extent.
- The finest version is made from a bamboo species called **Teinostachyum wightii**, known locally by names like **Njoonjileetta, Njoojoora, and Ponneetta**.
- Other species like **Ochlandra** (called Kareetta, Pereetta, and Velleeta) are also used.



EVENTS AND AWARDS

WISAM MUBARAK AL-KABEER

Context: The Prime Minister was recently awarded the Wisam Mubarak al-Kabeer or the Order of Mubarak the Great, by Sheikh Meshal Al-Ahmad Al-Jaber Al-Sabah, the Amir of Kuwait.

Overview of the Award

- Highest national award of Kuwait. Conferred as a gesture of friendship and goodwill.
- Conferred upon Heads of State, Sovereigns of foreign countries, Members of foreign royal families.
- **Historical Background:** Established in 1974 and named after Mubarak Al Sabah (Mubarak al-Kabeer or Mubarak the Great). He ruled Kuwait from 1896 to 1915. Under his reign, Kuwait got more autonomy from the Ottoman Empire.
- **Notable Recipients:** Queen Elizabeth II (England), George HW Bush and Bill Clinton (Former American Presidents), King Salman (Saudi Arabia), Nicolas Sarkozy (Former French President) etc

TURNER PRIZE 2024

Context: Indian-origin Scottish artist Jasleen Kaur has won the prestigious Turner Prize 2024 for her exhibition, "Alter Altar", that reflects on plurality, personal and political themes

Overview of the Award

- **Establishment:** Initiated in 1984 to foster interest in contemporary art.
- **Eligibility:** The award is given to a British artist, which includes artists either born in Britain or those working primarily in Britain.
- **Focus:** Recent developments in British art, not lifetime achievement.
- **Naming and Founding:** The award is named after the renowned English painter J.M.W. Turner and was established by the Patrons of New Art, a group led by Alan Bowness.
- **Age Restriction:** 1991–2016: Only artists under 50 years were eligible. Post-2017: **Age restriction removed.**
- **Notable Recipients:** Anish Kapoor, an Indian-origin British artist, won the Turner Prize in 1991.

PRADHAN MANTRI RASHTRIYA BAL PURASKAR

Context: The President of India presented the Pradhan Mantri Rashtriya Bal Puraskar to 17 children, in seven categories, on December 26 on 'Veer Bal Diwas'.

About the Pradhan Mantri Rashtriya Bal Puraskar:

- The Award celebrates the energy, determination, and enthusiasm of children in India. It is the highest civilian honor awarded to children for exceptional achievements.
- **Organized by:** Ministry of Women and Child Development, Government of India.
- **Categories:** Art & Culture, Bravery, Innovation, Science & Technology, Social Service, Sports, Environment
- **Award:** Each recipient will be awarded a medal, certificate, and a citation booklet.
- **Eligibility Criteria:**
 - The child must be an Indian citizen of 5 to 18 years (as of July 31 of the respective year).
 - The act or achievement should have occurred within two years from the last date of application submission.
 - A maximum of 25 awards may be given annually. However, the National Selection Committee may allow exceptions.

RASHTRIYA TANSEN SAMMAN

Context: Renowned tabla maestro Pt. Swapan Choudhary from Kolkata has been awarded the National Tansen Samman for 2023 in recognition of his contribution to Indian classical music.

About Tansen (1493 - 1589)

- Ramtanu Pandey, popularly referred to as Mian Tansen, or Sangeet Samrāt, was a Hindustani classical musician.
- Born into a Hindu Gaur Brahmin family in **Gwalior**, he learnt and perfected his art in the northwest region of modern Madhya Pradesh.
- **Legacy:**
 - A prominent composer, vocalist, and instrumentalist who refined the **plucked rabab** (of Central Asian origin).
 - Created numerous classical music compositions and introduced **ragas like Miyan ki Malhar, Miyan ki Sarang, Miyan ki Todi, and Darbari**.
 - Tansen is remembered for his epic **Dhrupad** compositions, as well as for writing two classic books on music, **Sri Ganesh Stotra** and **Sangita Sara**.
- **Career:**
 - Served under **Daulat Khan**, son of Sher Shah Suri, and later as the court singer of King **Ramchandra** of Bandhavgarh.
 - One of the Navaratnas (Nine Jewels) in the court of Emperor **Akbar**, who bestowed upon him the title Mian (meaning learned man)

National Tansen Samman

- **Established:** 1980.
- **Presented by:** Madhya Pradesh government.
- **Significance:** The highest national award in Indian classical music, named after the legendary musician Tansen.
- **Award Package:** Honorarium of ₹5 lakh, Citation plaque, shawl, and shripthal.

*A national music festival known as '**Tansen Samaroh**' is held every year in December, near the tomb of Tansen at Hazira, Gwalior*

NATIONAL SPORTS AWARDS 2024

Context: Recently, the Union Ministry of Youth Affairs & Sports announced the National Sports Awards 2024.

About National Sports Awards:

- The National Sports Awards is the collective name given to the six sports awards given by the Ministry of Youth Affairs & Sports.
- **Purpose:** To acknowledge and celebrate exceptional achievements in sports.
- Organized by the Ministry of Youth Affairs and Sports. **Presented by the President** of India at the Presidential Palace.

Categories of Awards

Major Dhyan Chand Khel Ratna Award	• India's highest sporting honor, established in 1991-92 and renamed in 2021. • Recognizes outstanding performances over four years. • Cash prize: ₹25 lakh. • First recipients: Vishwanathan Anand (Chess) & Geet Sethi (English Billiards), in the year 1991–1992. • 2024 Winners: Gukesh D (Chess), Harmanpreet Singh (Hockey), Praveen Kumar (Para-Athletics), Manu Bhaker (Shooting).
Dronacharya Award	• Given to outstanding coaches for consistent, meritorious work in training athletes. • Includes a bronze statue of Dronacharya, certificate, and cash prize. • Lifetime contribution: ₹15 lakh; Regular coaches: ₹10 lakh. • 2024 Winners: 5 coaches
Arjuna Award	• Recognizes excellence in sports over the past four years. • Instituted in 1961 and named after Arjuna from the Mahabharata. • Includes a statuette of Arjuna, certificate, and ₹15 lakh cash prize. • 2024 Winners: 32 Athletes

Arjuna Award (Lifetime Contribution)	- Honors retired athletes for significant contributions during and after their careers. 2024 Winners: Shri Sucha Singh (Athletics), Shri Murlikant Rajaram Petkar (Para-Swimming).
Maulana Abul Kalam Azad (MAKA) Trophy	- Recognizes top-performing institutions/universities in inter-university tournaments. - Instituted in 1956-57. - Includes a rolling trophy and ₹15 lakh cash prize. 2024 Winner: Chandigarh University.
Rashtriya Khel Protsahan Puruskar	- Recognizes organizations/individuals promoting and developing sports over the past three years. 2024 Winner: Physical Education Foundation of India.

SUBHASH CHANDRA BOSE AAPDA PRABANDHAN PURASKAR 2025

Context: The Indian National Centre for Ocean Information Services (INCOIS) has been selected for the Subhash Chandra Bose Aapda Prabandhan Puraskar-2025, in the Institutional Category.

About Subhash Chandra Bose Aapda Prabandhan Puraskar

- The Subhash Chandra Bose Aapda Prabandhan Puraskar was instituted by the Government of India **to recognize and honor individuals and organizations for their exceptional work and selfless service in the field of disaster management.**
- The award is announced annually on **January 23 (Parakram Diwas)**, commemorating the birth anniversary of Netaji Subhash Chandra Bose.
- Eligibility Criteria**
 - Only Indian nationals and Indian institutions are eligible to apply.**
 - Eligible institutions include **voluntary organizations, corporate entities, academic/ research institutions, response/ uniformed forces**, or any other organization involved in disaster management.
 - The award recognizes contributions in **prevention, mitigation, preparedness, rescue, response, relief, rehabilitation, research/innovation, and early warning systems in India.**
- Nomination Process:** Any individual or institution can nominate a candidate. Applications open from 1st July to 31st August each year.
- Selection Process:** A Screening Committee constituted by the National Disaster Management Authority (NDMA) reviews all applications and recommends deserving candidates for the award.
- Number of Awardees:** 3 awardees (can be individuals or institutions)
- Award Benefits**
 - For Institutions:** A certificate and a cash prize of ₹51 lakh, which must be utilized for disaster management-related activities.
 - For Individuals:** A certificate and a cash prize of ₹5 lakh.

SAVITRIBAI PHULE

Context: Every year on January 3rd, India celebrates a special day called Savitribai Phule Jayanti.

About Savitribai Phule (1831-1897)

- Savitribai Phule was born on January 3, 1831, in Naigaon, Maharashtra, into the Mali community, which belongs to the Other Backward Classes (OBC).
- She was married at the age of nine to **Jyotirao Phule**, who later educated her at home.
- She passed away on March 10, 1897, while caring for patients during the bubonic plague epidemic.

Contribution to Women's Education

- In 1848, she established **India's first school for women in Pune alongside her husband, Jyotirao Phule.** By 1851, they were running three schools with around 150 girl students.
- She received teacher training at an American missionary institute in Ahmednagar.

- She also founded **The Native Female School, Pune**, and The Society for Promoting the Education of Mahars, Mangs, and other marginalized communities.

Social Reforms and Women's Rights

- Established **Mahila Seva Mandal (1852)** to raise awareness about women's rights.
- Opposed child marriage and supported widow remarriage.
- Founded a home for pregnant Brahmin widows (1863) to prevent infanticide.
- In 1873, the Phules set up the **Satyashodhak Samaj**. She led it after Jyotirao's death in 1890.
- Defied social norms by lighting Jyotirao's funeral pyre.
- Conducted India's first dowry-free inter-caste marriage (1873) for her adopted son.

Literary Contributions

- Published *Kavya Phule* (1854) and *Bavan Kashi Subodh Ratnakar* (1892).
- Her poem "*Go, Get Education*" encouraged marginalized communities to seek education.

SWAMI VIVEKANAND

Context: On the occasion of National Youth Day, commemorating the birth anniversary of Swami Vivekananda, the Prime Minister participated in the Viksit Bharat Young Leaders Dialogue 2025.

Swami Vivekanand (1863-1902)

- January 12 this year marked the 162nd birth anniversary of Swami Vivekananda, also observed as **National Youth Day**.
- Born as Narendranath Datta in 1863, he became a Hindu monk and a prominent spiritual leader.
- He was also associated with **Brahmo Samaj**, dedicated to eliminating child marriage and illiteracy.
- A **disciple of Sri Ramakrishna Paramahansa**, he was hailed as a Dhyana Siddha (meditation expert) by his guru.
- Advocated for **Indian spirituality blended with Western material progress**.

Philosophy and Teachings

- Emphasized self-purification through service to others.
- Promoted the four yogas (Jnana, Bhakti, Karma, and Raja Yoga) as paths to self-realization.
- Advocated the harmony of religions, the divinity of the soul, and serving humanity as God.
- On the coexistence of various faiths, he believed religious acceptance, and not tolerance was important. He claimed that tolerance comes out of a superiority complex.

Global Influence

- Represented Hinduism at the **1893 World's Parliament of Religions in Chicago**.
- Returned to India and founded the **Ramakrishna Order** in **1897** at **Belur, Kolkata**.

Ramakrishna Order: A Legacy of Spiritual and Social Service

- Established by Swami Vivekananda in 1897, inspired by Sri Ramakrishna.
- Structured into two parallel institutions:
 - **Ramakrishna Math** – Focused on spiritual growth and meditation.
 - **Ramakrishna Mission** – Dedicated to social service, education, and humanitarian work.

SAINT NARAHARI TIRTHA

Context: An idol of Saint Narahari Tirtha (13th century), a key figure in the Dvaita Vedanta tradition, was recently discovered.

About Narahari Tirtha:

- A **disciple of Madhvacharya**, he played a vital role in **spreading Dvaita philosophy in eastern India**, particularly the **Kalinga region** (modern Odisha and Andhra Pradesh).
- He hailed from **Chikakolu** (present-day Srikakulam, Andhra Pradesh) and was linked to the aristocracy of the Gajapati Empire. Historical records show he assisted the Eastern Ganga dynasty for three decades.
- He wrote 15 books, but only **Gita Bhasya** and **Bhavaprakasika** survive today.

- As the first composer of Devaranamas in Kannada, he also played a crucial role in developing **Yakshagana Bayalata (a dance-drama from Karnataka)** and **Kuchipudi (a classical dance from Andhra Pradesh)**.
- After his passing, he was **consecrated near Chakratirtha in Hampi** on the Tungabhadra River.

FIRST EDITION OF THE SOUL LEADERSHIP CONCLAVE

Context: PM Modi inaugurated the inaugural edition of the School of Ultimate Leadership (SOUL) Leadership Conclave 2025 at Bharat Mandapam, New Delhi.

About SOUL Leadership Conclave 2025

- The SOUL Leadership Conclave 2025 served as a **premier platform for leaders from diverse fields to share insights**, discuss contemporary leadership challenges, and explore strategies for fostering innovation and progress.
- The event focused on collaboration, knowledge exchange, and leadership development, equipping India's future leaders with the skills necessary to navigate an evolving global landscape.

About School of Ultimate Leadership (SOUL)

- The School of Ultimate Leadership (SOUL), a newly established institution in Gujarat, is dedicated to training and nurturing leaders for public service.
- Unlike traditional political pathways, SOUL promotes a merit-based approach to leadership, emphasizing commitment, integrity, and passion over political lineage.

LIBIA LOBO SARDESAI

- Goan freedom fighter Libia Lobo Sardesai, aged 100, has been honored with the Padma Shri for her contributions to Goa's liberation struggle.
- Born in 1924 in Portuguese-ruled Goa and raised in Bombay, she became actively involved in the Goan nationalist movement during her college years.
- In 1954, after Portuguese forces attacked and arrested satyagrahis demanding an end to colonial rule, India closed its borders to Goa, imposing an economic blockade that cut off sea, road, and rail links.
- In August 1955, thousands of satyagrahis attempted to enter Goa but were met with gunfire from Portuguese forces, resulting in several deaths, while strict censorship was enforced.
- To counter Portuguese suppression and maintain nationalist morale, activists sought alternative ways to spread information about the liberation movement.
- From 1955 to 1961, Libia Lobo Sardesai and her colleague—later husband—Vaman Sardesai operated an underground radio station from the jungles of the Western Ghats.
- On November 25, 1955—the anniversary of Goa's Portuguese reconquest in 1510—the station, now called **Goenche Sodvonecho Awaz** (Voice of Freedom of Goa) for Konkani broadcasts and **Voz de Liberdade** for Portuguese broadcasts, began its operations.
- Initially, the radio station was run from Amboli, Maharashtra, before relocating to Castle Rock, Karnataka.
- **It was Libia Lobo Sardesai who announced Goa's liberation from four-and-a-half centuries of Portuguese rule on December 19, 1961.**

DR. PURNIMA DEVI BARMAN

- Dr. Purnima Devi Barman has been named in TIME's Women of the Year 2025 list, recognizing her extraordinary contributions to conservation. The distinguished wildlife biologist from Assam is the only Indian woman on the list.
- She is best known for her **efforts to save the endangered greater adjutant stork (Hargila)** and for **founding the Hargila Army, an all-female conservation group** of around 10,000 women dedicated to protecting the species and its habitat.
- The Hargila Army engages in rescuing injured birds, planting trees, and educating communities about conservation.

- Dr. Barman's unique approach of **combining wildlife protection with women's empowerment** has led to a sustainable, community-driven movement.
- Her work has contributed to improving the stork's conservation status, moving it from "endangered" to **"near threatened"** under the International Union for Conservation of Nature (IUCN).
- The initiative has also helped local women gain financial independence by involving them in sustainable businesses, such as creating textiles with stork-themed embroidery.
- Dr. Barman has received several prestigious awards for her work:
 - **Nari Shakti Puraskar (2017)** – India's highest civilian award for women.
 - **Champions of the Earth Award (2022)** – The UN's highest environmental honor.
 - **Whitley Gold Award (2024)** – Also known as the "Green Oscar".

BHARATIYA BHASHA PUSTAK SCHEME

Context: The Union Budget 2025-26 has announced Bharatiya Bhasha Pustak Scheme to provide digital-form Indian language books for students.

About Bharatiya Bhasha Pustak Scheme

- It is an initiative aimed at **making learning more accessible by offering digital textbooks and study materials in various Indian languages for students in schools and universities.**
- The scheme is designed to benefit students from different linguistic backgrounds by **providing study materials in regional languages.**
- This initiative also complements **ASMITA (Augmenting Study Materials in Indian Languages through Translation and Academic Writing) Initiative.**

Key Facts about ASMITA Initiative

- It is an initiative **to develop 22,000 books in Indian languages in the next five years.**
- It is a collaborative effort of the UGC and the **Bharatiya Bhasha Samiti**, a high-powered committee under the Ministry of Education.
- It aims to promote and integrate Indian languages more deeply into the education system, thereby enriching the learning experience and making it more inclusive.

PADMA AWARDS

Context: For the year 2025, the President has approved conferment of 139 Padma Awards.

About Padma Awards

- The Padma Awards are among the highest civilian honors in India, instituted in **1954** to recognize exceptional achievements and distinguished service in various fields.
- They are **announced annually on Republic Day (January 26)** and **conferred by the President of India** at a ceremonial function held at Rashtrapati Bhawan, usually in **March or April.**
- They were not announced during the years 1978 and 1979 and 1993 to 1997.

Categories of Padma Awards

- **Padma Vibhushan:** For exceptional and distinguished service.
- **Padma Bhushan:** For distinguished service of a high order.
- **Padma Shri:** For distinguished service in any field.

Fields of Recognition

- Art, Social Work, Public Affairs, Science and Engineering, Trade And Industry, Medicine, Literature And Education, Sports, Civil Service, Etc.

Eligibility & Selection

- The Padma Awards Committee, constituted annually by the Prime Minister, recommends awardees.
 - The Committee is **headed by the Cabinet Secretary** and includes Home Secretary, Secretary to the President and four to six eminent persons as members.
- All Indian citizens, regardless of race, occupation, or position, are eligible.
- However, government servants, including PSU employees, are not eligible, except for Doctors and Scientists.

- The award is normally not conferred posthumously. However, in highly deserving cases, the Government could consider giving an award posthumously.
- A higher category of Padma award can be conferred on a person only where a period of at least five years has elapsed since conferment of the earlier Padma award. However, in highly deserving cases, a relaxation can be made by the Awards Committee.

Legal Status

- The Padma Awards are **not titles under Article 18(1)** of the Constitution and do not confer any privileges.
- In *Balaji Raghavan v. Union of India (1996)*, the Supreme Court ruled that national awards are a form of state recognition and do not violate constitutional provisions.

JNANPITH AWARD

- Renowned Hindi poet and writer Vinod Kumar Shukla, hailing from Chhattisgarh, has been selected for the 59th Jnanpith Award for the year 2024 in recognition of his remarkable contribution to Hindi literature. He is the first recipient from Chhattisgarh to receive this prestigious honour.
- His first poetry collection, 'Lagbhag Jai Hind', was published in 1971. Some of his major novels include 'Naukar Ki Kameez', 'Deewar Mein Ek Khidki Rahti Thi', and 'Khilega To Dekhenge'.
- He is also a recipient of the Sahitya Akademi Award.

About the Jnanpith Award

- The Jnanpith Award, instituted in **1961**, is India's highest literary honour. It has been **awarded annually by the Bharatiya Jnanpith** since 1965, to authors for their outstanding contributions to literature.
- The award is **conferred only on Indian citizens**, and eligible works must be in one of the Indian languages listed in the **Eighth Schedule of the Constitution or in English**. Posthumous awards are not allowed.
- The honour includes a cash prize of ₹11 lakh, a statue of Goddess Vagdevi (Saraswati), and a citation.
- The first recipient of the Jnanpith Award was G. Sankara Kurup, a Malayalam poet, who was honoured in 1965 for his collection of poems 'Odakkuzhal' (The Bamboo Flute).

ABEL PRIZE

Context: The **Abel Prize for Mathematics** was recently awarded to **Japanese** mathematician **Masaki Kashiwara**, a specialist in algebraic analysis, representation theory, and sheaf theory.

- Named after **Niels Henrik Abel, Norway's greatest mathematician**, the Abel Prize honors his lasting impact on mathematics, which has influenced major technological advancements, including the development of the internet.
- **Established by the Norwegian Parliament in 2002** to mark Abel's 200th birth anniversary, the prize is **awarded by the Norwegian Academy of Science and Letters** on behalf of the **Ministry of Education**. The winner receives 7.5 million Norwegian Kroner.
- **Abel Committee**, composed of five leading mathematicians worldwide, evaluates nominees and selects recipient/s. Modeled after the Nobel Prizes, the Abel Prize is **awarded annually**.

KHELO INDIA GAMES

Context: The 7th edition of the Khelo India Youth Games will be staged in five cities of Bihar.

About Khelo India Games

- **Khelo India** was proposed by the government of India in 2017 to revive India's sporting culture by engaging with children at the grassroots level. The initiative also focused on building better sporting infrastructure and academies across the country for various sports.
- Under this movement, the **Khelo India Youth Games (KIYG)**, the **Khelo India University Games (KIUG)** and the **Khelo India Winter Games (KIWG)** were set up as **annual national sports**

competitions where youngsters, representing their states and universities, respectively, showcased their skills and competed for medals.

- The initiative began with the Khelo India School Games in 2018 held in New Delhi with 18 sports. Khelo India School Games were renamed to the Khelo India Youth Games from 2019.
- The first Khelo India University Games were hosted in 2020 at the Kalinga Institute of Industrial Technology (KIIT), Odisha. In 2024, when the KIYG was held in Tamil Nadu, it had 26 sports.
- A total of 28 sports will be contested in the KIYG 2025, in the Olympic, non-Olympic as well as indigenous disciplines. **Esports** has been included in the programme for KIYG 2025 as a demonstration sport for the first time.

REPORTS & INDICES IN NEWS

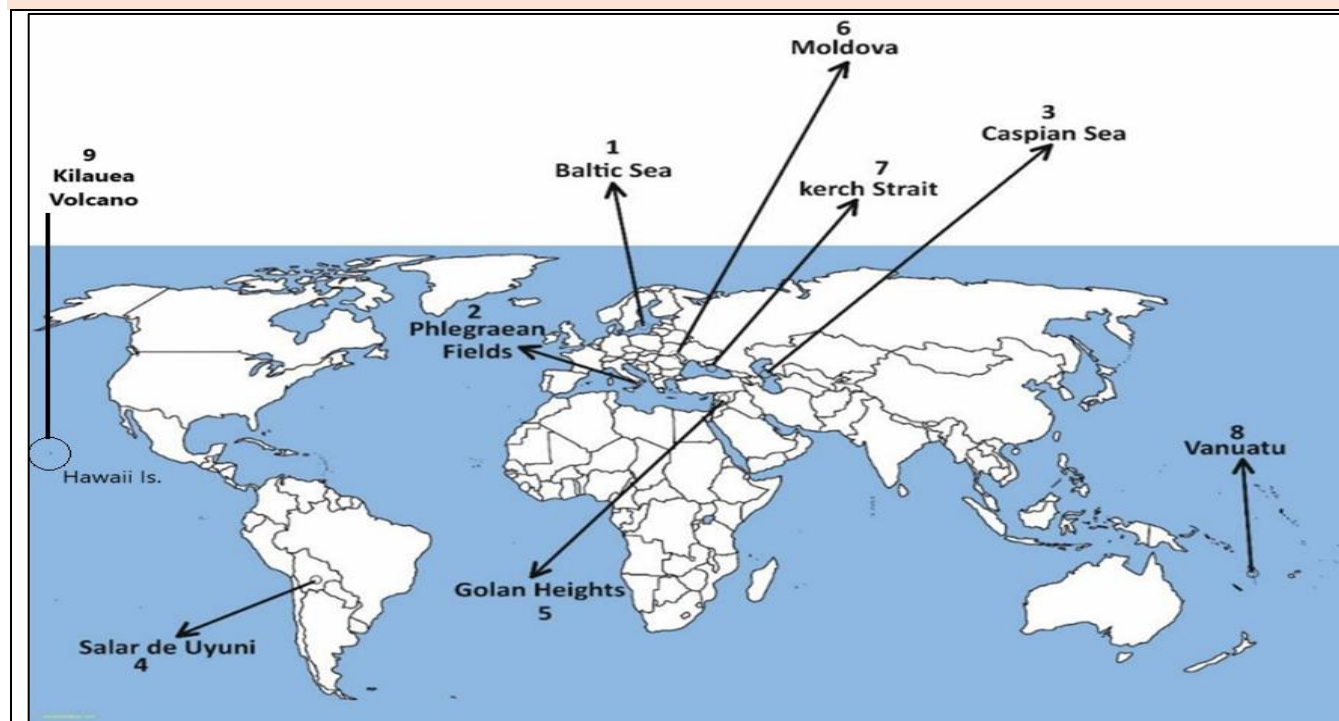
Report	Agency	Details
World Cities Report 2024	UN- Habitat	- The 6th Annual World Air Quality Report by IQAir identified New Delhi as the most polluted capital city globally. 9 out of the 10 most polluted cities in the world were located in India.
Annual International Debt Report	World Bank	Rising External Debt: The total external debt of Low and Middle-Income Countries (LMICs) increased by 2.4% in 2023, reaching \$8.8 trillion. Factors Driving Indebtedness: High Interest Rates: Tight monetary policies in high-income countries led to a 20-year high in interest rates. Both Bangladesh and India saw over 90% increases in interest payments in 2023. Other Contributing Factors: Inflation, depreciating currencies, and global economic uncertainties due to armed conflicts and trade fragmentation.
State of Tax Justice	Tax Justice Network	Global Tax Losses: Countries are losing US\$492 billion annually due to global tax abuse. - Two-thirds (US\$347.6 billion) is lost due to multinational corporations shifting profits offshore to underpay taxes. - One-third (US\$144.8 billion) is lost due to wealthy individuals hiding wealth offshore. - Countries Opposing UN Tax Convention: 43% of these losses are enabled by eight OECD countries that oppose a UN tax convention: Australia, Canada, Israel, Japan, New Zealand, South Korea, UK, and US.
Global Wage Report	ILO	Global: After a decline in 2022, global real wage growth showed recovery in 2023. Regional: Wages are rising faster in Asia & the Pacific, Central and Western Asia, and Eastern Europe compared to other regions. India: Approximately 9.5% of Indian workers earn low wages.
Smuggling in India Report	Directorate of Revenue Intelligence	Insights on Smuggling Trends: The report analyzes emerging patterns, challenges, and countermeasures in tackling smuggling activities. DRI's Enforcement Actions: The Directorate of Revenue Intelligence (DRI) has intercepted a rising volume of illegal goods, including: Drugs, Wildlife products, Foreign currencies, Insecticides etc.
World Energy Employment Report, 2024	International Energy Agency	Employment Share: Energy sector jobs in India surpassed 8.5 million, accounting for 1.5% of total employment (566 million) in 2023.

Network Readiness Index (NRI) 2024	Portulans Institute and Saïd Business School, University of Oxford.	- The report assesses the network-based readiness of 133 economies, evaluating their performance across four key pillars: Technology, People, Governance, and Impact. - India has climbed 11 ranks, securing the 49th position in the NRI 2024.
An Eye On Methane: Invisible But Not Unseen	United Nations Environment Programme's (UNEP) International Methane Emissions Observatory (IMEO).	- Human-caused methane emissions contribute to one-third of global warming. - Methane Alert and Response System (MARS) alerts countries about major emissions, but only 1% of these alerts receive a substantive response.
Protected Planet Report 2024	UNEP World Conservation Monitoring Centre (UNEP-WCMC) and IUCN	First report to assess the global status of Protected and Conserved Areas (PCA) under Target 3 of the Kunming-Montreal Global Biodiversity Framework (GBF).
Emissions Gap Report 2024	UNEP	- Global GHG emissions reached a record high of 57 gigatons (Gt) of CO₂ equivalent in 2023 - India ranks 3rd in total GHG emissions with 4,140 MtCO₂e, behind China and the US.
Adaptation Gap Report	UNEP	The adaptation gap is estimated at US\$187-359 billion per year.
Global Education Monitoring Report 2024	UNESCO	- Lack of Funding: 40% of countries allocate less than 4% of GDP to education. - Out-of-School Children: 251 million children and youth globally remain out of school, with only a 1% reduction since 2015.
Global Carbon Budget Report	Global Carbon Project	According to the report, at the current rate of emissions, there is a 50% chance that global average temperatures will consistently exceed 1.5°C above pre-industrial levels within the next six years.
Climate Risk Index (CRI) 2025	German-watch	- Assesses human and economic losses due to climate-induced disasters. - Uses data from International Disaster Database (Em-dat) and IMF. Most Affected Countries: Pakistan, Belize, and Italy were the most affected due to heatwaves, storms, and floods. - India was ranked 6th among the most affected countries (1993-2022), despite improving to 49th in 2022. - Storms (35%) caused the highest economic losses, followed by heatwaves (30%) and floods (27%).
India Bio-Economy Report 2024	Department of Biotechnology, Gol	- India's bioeconomy crossed \$165 billion, contributing 4.2% of GDP. - BioIndustrial Sector is the largest contributor, followed by BioPharma. - Maharashtra, Karnataka, and Telangana continue to be key contributors to bio-economy.
Quality of Public	Reserve Bank of India (RBI)	To measure the effectiveness of public spending, the RBI has created this index using data since 1991.

Expenditure Index		It includes indicators such as: Capital outlay to GDP ratio, Revenue expenditure to capital outlay ratio, etc.
Technology and Innovation Report 2025	UN Trade and Development (UNCTAD)	- The 2025 edition entitled: <i>Inclusive artificial intelligence for development</i>, Aims to guide policymakers through the complex AI landscape and support them in designing science, technology and innovation policies that foster inclusive and equitable technological progress. - India ranked #36/170 in 2024 on the 'Readiness for Frontier Technologies' Index in the Report

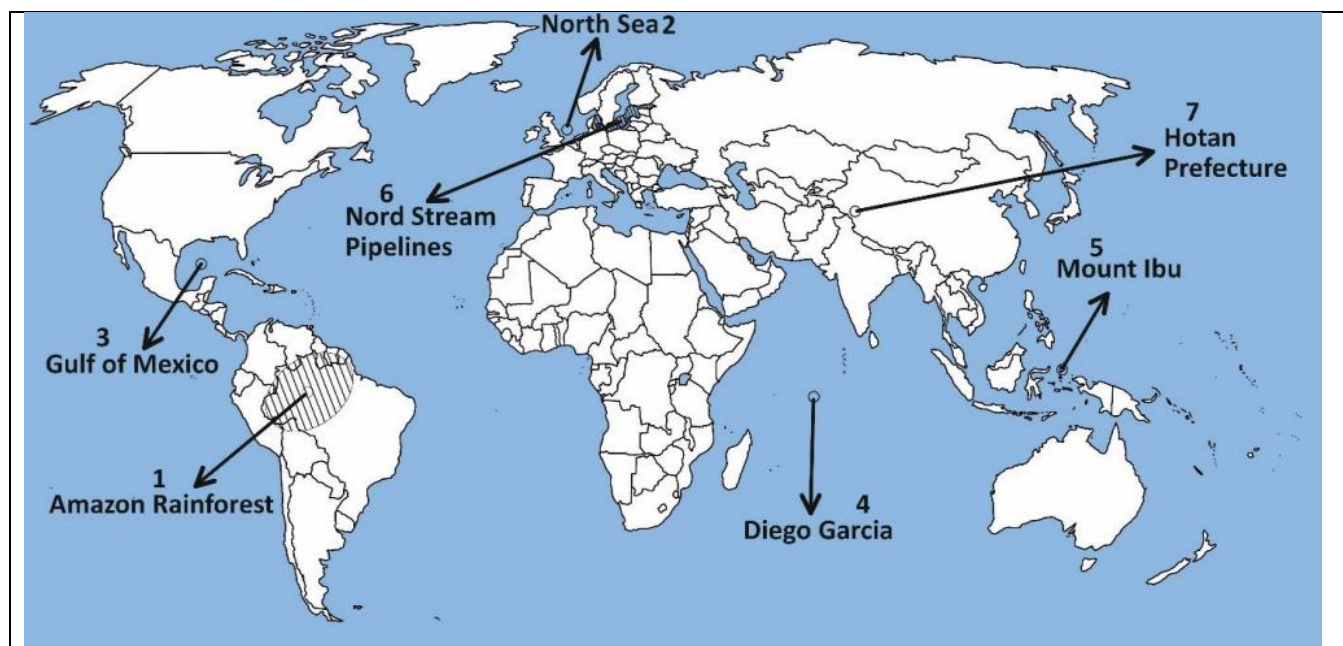
MAPS: PLACES IN NEWS

INTERNATIONAL PLACES IN NEWS



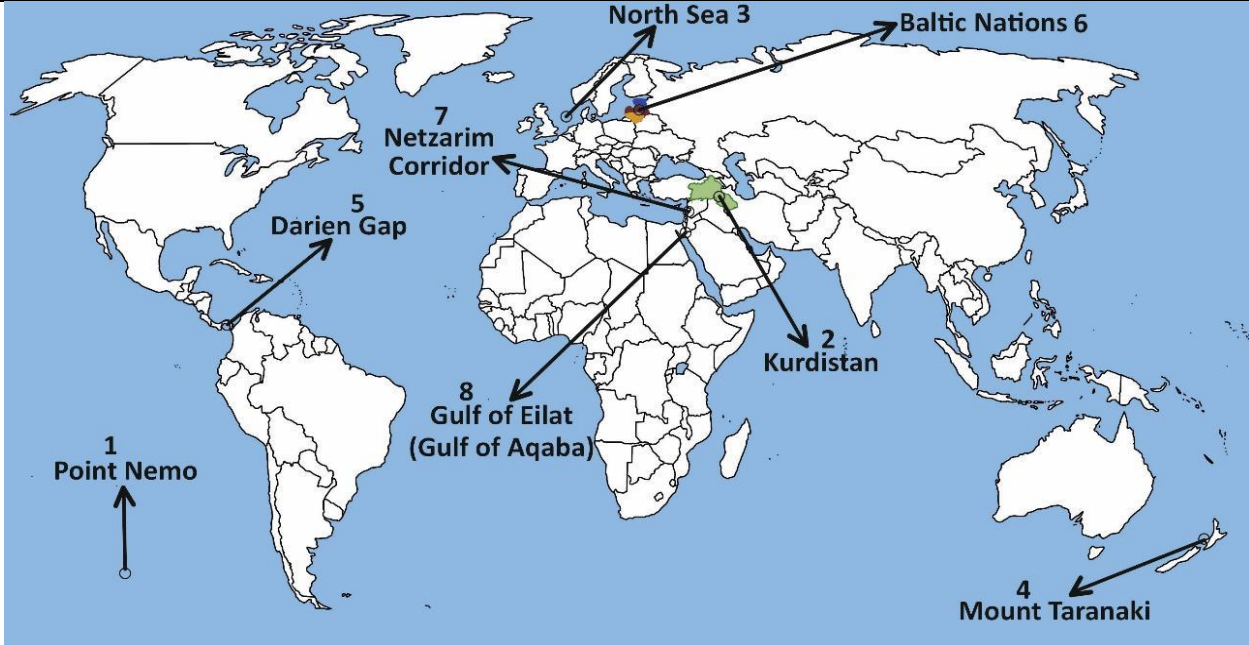
1	Baltic Sea	- The cutting of undersea cables in the Baltic Sea has escalated geopolitical tensions - Surrounding countries are Denmark, Germany, Poland, Lithuania, Latvia, Estonia, Russia, Finland, and Sweden.
2	Phlegraean Fields	It is an active super volcano (located in the vicinity of Naples, Italy) which is showing signs of increased activity
3	Caspian Sea	- Kazakhstan's state-owned energy company said that it had decontaminated Soviet-era oil waste on the shores of the Caspian Sea - It lies between Europe and Asia, bordered by five countries: Russia, Kazakhstan, Turkmenistan, Iran, and Azerbaijan. - Volga, Ural, and Kura rivers flow into the Caspian Sea.
4	Salar de Uyuni	- It is the world's largest salt flat in Bolivia, plays a pivotal role in the global energy transition due to its immense lithium reserves - located in the heart of the 'lithium triangle' (Chile, Argentina, and Bolivia) - Situated in southwest Bolivia, near the crest of the Andes.
5	Golan Heights	- Israel recently agreed to double its population on the occupied Golan Heights. - It is a strategically significant plateau located in south-western Syria, bordered by Israel, Lebanon, and Jordan.
6	Moldova	Officially joined the International Solar Alliance (ISA) by signing its Framework Agreement. Landlocked country in northeastern Balkans, bordered by Ukraine and Romania. Drained by rivers Prut, Dniester, and Danube; east of the Carpathian Mountains; streams flow into the Black Sea.
7	Kerch strait	- Two Russian oil tankers were damaged in the Black Sea, causing an oil spill. - Kerch Strait, separating Russia from Crimea, annexed by Moscow in 2014. - Narrow waterway connecting the Black Sea with the Sea of Azov in Eastern Europe

8	Vanuatu	- A 7.3 magnitude earthquake struck Vanuatu, causing damage and potential casualties. Island nation in the South Pacific, east of Australia, west of Fiji, southeast of the Solomon Islands. - Comprises 13 principal volcanic islands and many smaller ones with active volcanoes like Yasur, Manaro, and Garet.
9	Kilauea Volcano	- Recently, Kilauea volcano erupted on Hawaii's Big Island. - Location: Situated in the southeastern part of Hawaii's Big Island, in the U.S. state of Hawaii. - Its slopes seamlessly merge with the nearby Mauna Loa volcano, which is part of Hawaii's Volcanoes National Park.

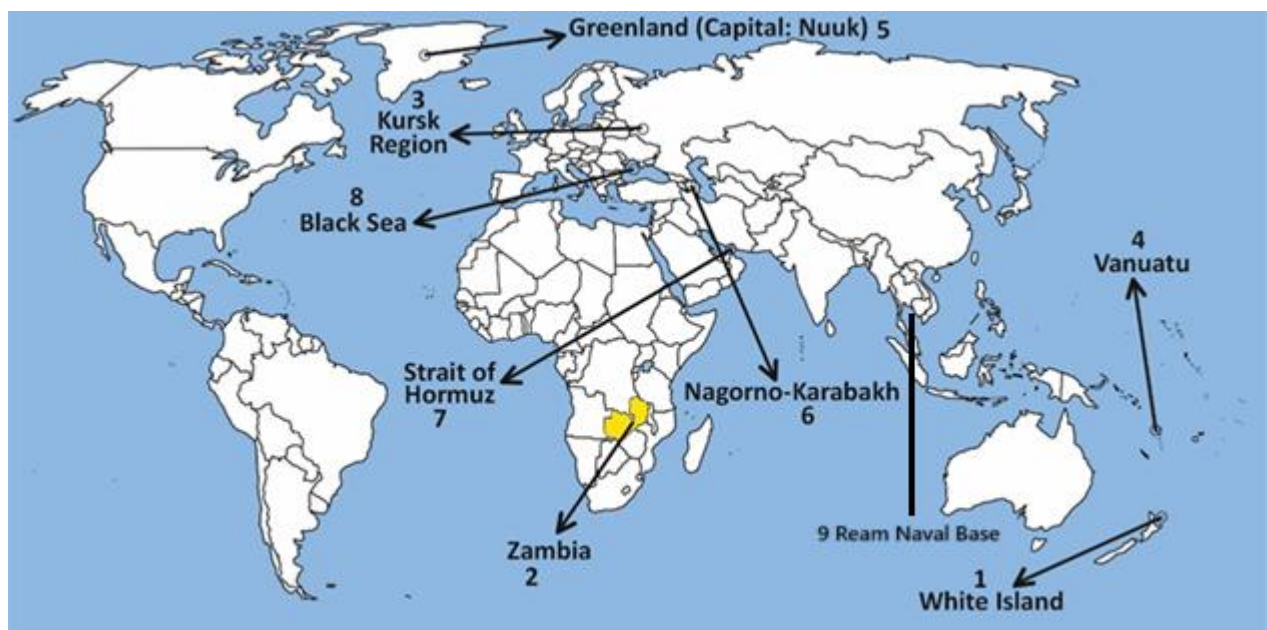


1	Amazon Rainforest	2024 saw severe wildfires and droughts in the Amazon, impacting its role in climate regulation. - It spans the Amazon River Basin, covering Brazil, Peru, Colombia, and other nations. The region has a humid, equatorial climate with temperatures of 25–30°C and year-round rainfall.
2	North Sea	- Donald Trump called to "open up" the North Sea, a marginal sea of the Atlantic Ocean. It is bordered by the UK, Norway, Denmark, Germany, the Netherlands, Belgium, and France. - The North Sea lies between Great Britain to the west and mainland Europe to the east. - It connects to the Atlantic Ocean through the English Channel and to the Baltic Sea via the Skagerrak Strait.
3	Gulf of Mexico	- The suggestion to rename the Gulf of Mexico to "Gulf of America" has sparked debate over historical, political, and cultural implications. - The Gulf is shared by the United States, Mexico, and Cuba, with overlapping economic zones. It connects to the Atlantic Ocean via the Straits of Florida and to the Caribbean Sea through the Yucatán Channel. - Major draining rivers into the Gulf include the Mississippi River and the Rio Grande.
4	Diego	A group of ten fishermen from Thothoor village has been arrested by the British

	Garcia	Navy near Diego Garcia Island. - Diego Garcia is a coral atoll located in the central Indian Ocean, part of the Chagos Archipelago and the British Indian Ocean Territory (BIOT). - It hosts a strategic military base jointly operated by the United Kingdom and the United States.
5	Mount Ibu	- Mount Ibu, one of Indonesia's most active stratovolcanoes, erupted over 1,000 times in January 2025 - It is located on the northwest coast of Halmahera Island, in North Maluku province.
6	Nord Stream pipelines	- The Nord Stream pipeline leaks released an estimated 465 ± 20 thousand metric tons of methane into the atmosphere. - Nord Stream is the longest subsea pipeline, running under the Baltic Sea, and carries gas from Russia to Europe. - The gas for Nord Stream primarily comes from the Bovanenkovo oil and gas condensate deposit in Western Siberia.
7	Hotan Prefecture	- India has protested China's creation of two new counties, He'an and Hekang, in the Hotan Prefecture. - The Hotan Prefecture encompasses parts of the disputed Aksai Chin region. - Hotan is an administrative division in southwestern Xinjiang, China, bordering Tibet to the south, and Ladakh and Gilgit-Baltistan to the west.

		
1	Point Nemo	Two Indian Navy women officers on INSV Tarini crossed Point Nemo, the remotest location on Earth , during Navika Sagar Parikrama-II. Located in the South Pacific, it is the farthest point from land. Space agencies use it to dispose of satellites, and its waters are a "biological desert" due to nutrient scarcity.
2	Kurdistan (Capital: Erbil)	India sent humanitarian aid to Kurdistan, a region spanning parts of Turkey, Iraq, Iran, Syria, and Armenia . It includes the Zagros and Taurus mountains and is rich in oil and natural gas. The Tigris and Greater Zab rivers flow through it.
3	North Sea	Trump proposed to "open up" the North Sea and remove windmills. Part of the Atlantic , it lies between Great Britain and northwestern Europe , bordering the

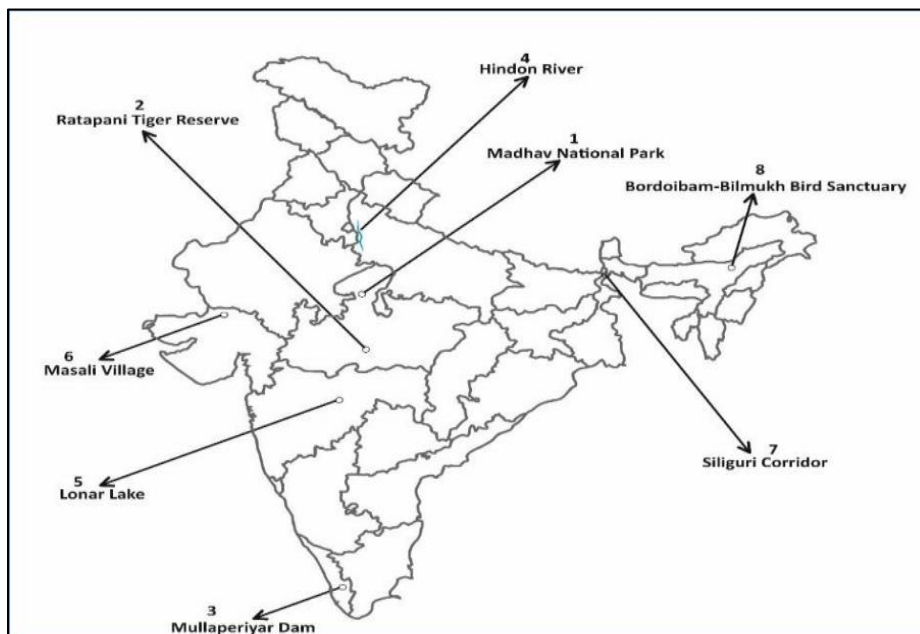
		UK, Norway, Denmark, Germany, the Netherlands, Belgium, and France. Major rivers include the Forth, Elbe, Scheldt, Thames, and Humber.
4	Mount Taranaki	New Zealand's Mount Taranaki, a stratovolcano , was granted legal personhood, following Te Urewera (2014) and Whanganui River (2017). Also called Mount Egmont, it formed due to the Pacific Plate's subduction under the Australian Plate.
5	Darien Gap	The Darien Gap, a 97 km rainforest between Colombia and Panama , is a major route for illegal U.S. migration. It features muddy trails, wetlands, and steep mountains, making it one of the world's most dangerous regions.
6	Baltic Nations	Estonia, Latvia, and Lithuania disconnected from Russia's power grid. These Baltic nations, on the eastern Baltic Sea coast, gained independence from the USSR in 1991 and are now part of NATO, the EU, the Eurozone, and the OECD.
7	Netzarim Corridor	As part of the Israel-Hamas ceasefire, Israeli forces withdrew from the Netzarim Corridor. This strategic military zone, created during the Gaza War , stretched from the Gaza-Israel border to the Mediterranean, splitting Gaza .
8	Gulf of Eilat (Gulf of Aqaba)	Coral reefs in the Gulf of Eilat saw a 3,000-year growth halt due to global cooling. The narrow gulf, part of the Red Sea, borders Egypt, Israel, Jordan, and Saudi Arabia , lying east of Sinai and west of Arabia.



1	White Island	- A New Zealand judge overturned the conviction of White Island's owners for the 2019 volcanic eruption. - Known as Whakaari by the Māori people, it is one of New Zealand's most active volcanoes. It holds cultural significance.
2	Zambia	- India has secured a 9000 sqkm block in Zambia to explore copper and cobalt. - Zambia, a landlocked country in Southern Africa, is the 7th largest global copper producer and is rich in rivers like the Zambezi, Kafue, and Luangwa. - It borders countries namely Angola, Democratic Republic of the Congo (DRC), Tanzania, Malawi, Mozambique, Zimbabwe, Botswana, and Namibia.
3	Kursk Region (Russia)	- Russia launched attacks to retake parts of the Kursk region from Ukraine. - Located near the Ukraine border, Kursk is known for the historic WWII tank battle and its fertile soil in the Central Black Earth Region.
4	Vanuatu	A South Pacific island nation with 83 islands arranged in a Y-shape.

		- Located east of Australia, its capital is Port Vila (located on Efate Island) - The archipelago is home to active volcanoes, including Mount Yasur. - It is situated southeast of the Solomon Islands, northeast of New Caledonia, and west of Fiji.
5	Greenland (Capital: Nuuk)	- Greenland, the world's largest island, held recent parliamentary elections. - Mostly covered in ice, it lies between the Arctic and Atlantic Oceans - Major mountains include Watkins Range, including Gunnbjorn Fjeld (tallest mountain in the Arctic). It is abundant with rare earth minerals, uranium, and other strategic metals.
6	Nagorno-Karabakh	- Armenia and Azerbaijan have agreed to a peace agreement set to end the conflict between over disputed Nagorno-Karabakh region. - Also known as Artsakh by Armenians, it is a landlocked, mountainous region in the South Caucasus
7	Strait of Hormuz	- Iran have installed its missile systems on the three disputed islands (Greater Tunb, Lesser Tunb, and Abu Musa) near the Strait of Hormuz. - It is a narrow waterway between Iran and the Arabian Peninsula, specifically the UAE, and Musandam (Oman). - It connects the Persian Gulf to the Gulf of Oman. Persian Gulf is on the west while Gulf of Oman is on the Strait's east.
8	Black Sea	- USA and Russia are engaged in diplomatic talks to advance a broader ceasefire in Ukraine and negotiate a Black Sea maritime ceasefire. - It is one of the marginal seas of the Atlantic Ocean. - It has bordering countries namely Russia and Ukraine (North), Turkey (South), Bulgaria (West), Georgia (East) and Romania.
9	Ream Naval Base	- Located on the Gulf of Thailand coast in Cambodia, close to the port city of Sihanoukville. It is close to the Malacca Strait. - Cambodia officially inaugurated the expanded Ream Naval Base which received substantial financial and technical support from China.

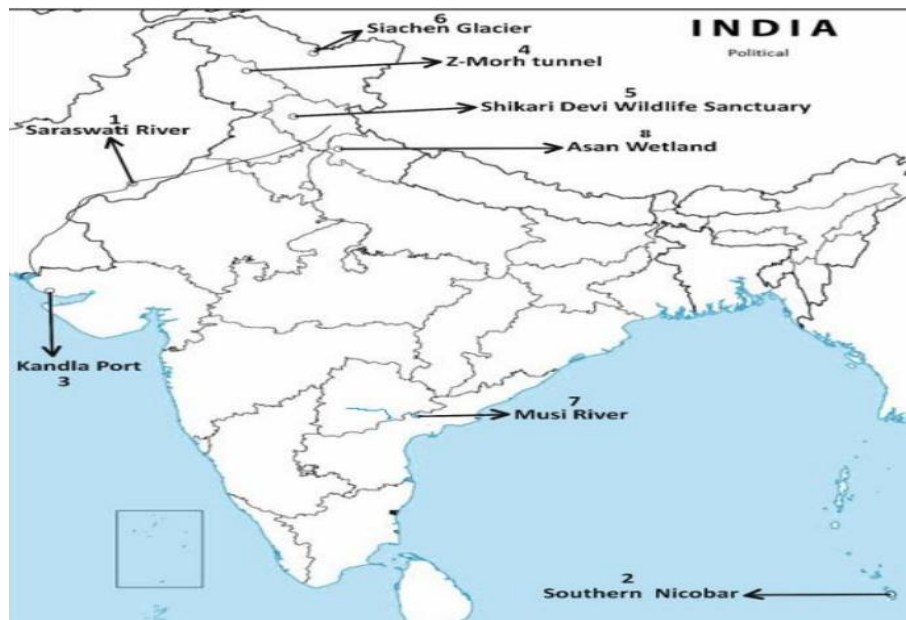
NATIONAL PLACES IN NEWS



1	Madhav	It is situated on the northern fringe of the Central Highlands of India forming a
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	National Park	part of the Upper Vindhyan Hills intermixed with plateaus, and valley sections • Sakhya Sagar and Madhav Sagar are the two lakes in the southern part of the park. Park area forms a catchment of the Sind river
2	Ratapani Tiger Reserve	• Madhya Pradesh government has officially notified the Ratapani Wildlife Sanctuary as the state's 8th Tiger Reserve. • It is situated in the Vindhychal Mountain Ranges across Raisen and Sehore districts of Madhya Pradesh. • It includes Bhimbetka rock shelters, a UNESCO World Heritage Site
3	Mullaperiyar Dam	• It is a masonry gravity dam situated on the Periyar River in Thekkady, Idukki district, in Kerala. • It is located 881 m above sea level, on the Cardamom Hills of the Western Ghats. The dam is built at the confluence of the Mullayar and Periyar rivers.
4	Hindon River	• Once a lifeline for communities settled along its banks, the Hindon River in Western Uttar Pradesh, often called India's Sugar Bowl, has declared "Dead" by environmental experts due to severe pollution and lack of aquatic life. • It originates in upper Shivalik Hills in Saharanpur district, Uttar Pradesh. • Its major tributaries include Krishna & Kali Rivers, which significantly impact its flow and pollution levels.
5	Lonar Lake	• It is one of only four known hyper-velocity impact craters in basaltic rock on Earth. • The other three basaltic impact structures are in Brazil. It is a notified National Geo-heritage Monument. • The lake's water is both saline and alkaline, making it unique
6	Masali village	• Masali village in Gujarat's Banaskantha district has become India's first fully solar powered border village under the PM Suryaghar Yojana.
7	Siliguri corridor	• The Siliguri Corridor, often referred to as the "Chicken's Neck", is a strategically critical narrow stretch of land in the Indian state of West Bengal • Surrounded by Nepal to the west, Bhutan to the north, and Bangladesh to the south.
8	Bordoibam Bilmukh Bird Sanctuary	• This Assam based Bird Sanctuary records a 72% decline in bird species count in 27 years. It is situated on the boundary of Dhemaji and Lakhimpur districts • It was originally part of the River Subansiri (a tributary of the Brahmaputra). • It experiences a moist tropical climate with an average annual rainfall of about 2,000 mm. • It is home to globally threatened species such as the Spot-billed Pelican and Lesser Adjutant

1	Palamau Tiger Reserve	Jharkhand's Forest Department is studying ways to revive the declining bison (gaur) population. The reserve, in western Chotanagpur Plateau , is the state's only tiger reserve , spanning Latehar and Garhwa districts within Betla National Park.
2	Parvati Arga Ramsar Site	MoEFCC celebrated World Wetlands Day 2025 at Parvati Arga Ramsar Site, Uttar Pradesh . This freshwater wetland consists of two oxbow lakes and shelters endangered vultures– White-rumped and Egyptian Vultures.
3	Teesta River	The MoEFCC approved rebuilding the Teesta-3 dam in Sikkim despite environmental concerns. Originating from Tso Lhamo Lake , Teesta flows through Sikkim, West Bengal, and into Bangladesh , merging with the Brahmaputra.
4	Gandhi Sagar Wildlife Sanctuary	Madhya Pradesh's Gandhi Sagar Wildlife Sanctuary, along the Rajasthan border, will be India's second cheetah habitat, receiving 6-8 cheetahs from South Africa. It lies in the Khathiar-Gir dry deciduous forest ecoregion , with the Chambal River passing through it.
5	Jogighopa	A new Inland Waterways Terminal was established on the Brahmaputra River in Assam's Jogighopa, Bongaigaon district. The town is known for rock-cut caves, believed to be from the Mlechchha dynasty era.
6	Peppara Wildlife Sanctuary	The Periyar Tiger Conservation Foundation introduced real-time monitoring in Peppara Wildlife Sanctuary, under Thiruvananthapuram Forest Division. The sanctuary covers the Karamana River's catchment area.
7	Andaman Sea	A 5.2 magnitude earthquake struck the Andaman Sea, a key maritime region for India's Indo-Pacific strategy. It has rich marine biodiversity, with coral reefs, mangroves, and endemic birds like Narcondam Hornbill and Andaman Teal.



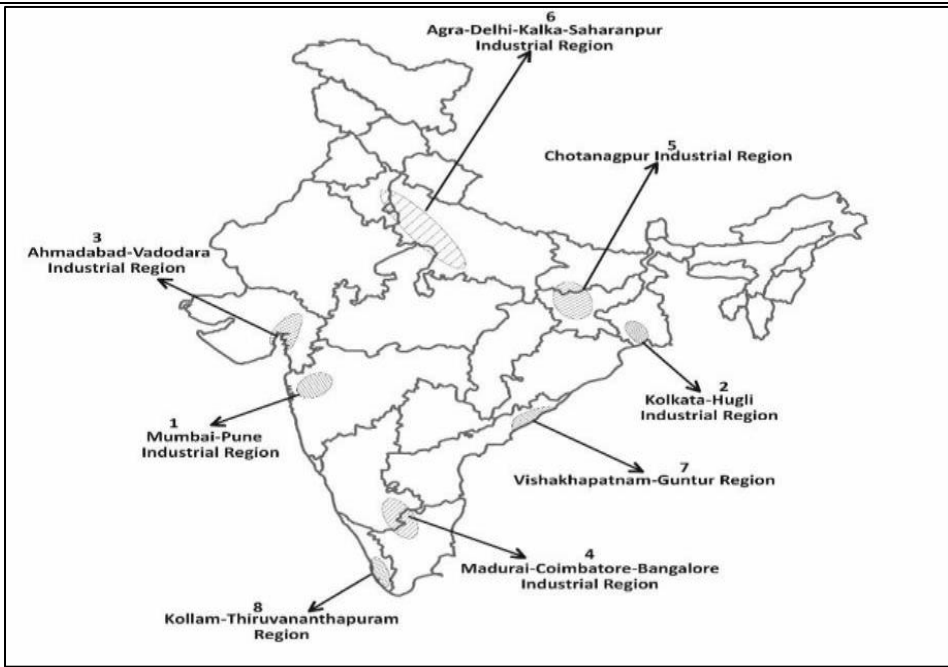
1	Saraswati River	- A geological event in Jaisalmer, Rajasthan, caused water and gas eruptions during tube well drilling, sparking debate over the resurfacing of the Saraswati River. - The Saraswati River passes through Haryana, Rajasthan, and Gujarat, with traces near Badrinath, Uttarakhand. It originates from Kapal Tirth in the Himalayas, near Kailash, flowing southward towards Mansarovar.
2	Southern Nicobar	- Proposal for three wildlife sanctuaries in southern Nicobar sparks concerns over indigenous tribes' displacement. - Located in the Bay of Bengal, the Nicobar Islands form part of the Andaman and Nicobar Islands. Indira Point is the southernmost point of India, with other islands including Little Nicobar and Kondul Island.
3	Kandla Port	Also known as Deendayal Port, located on the Gulf of Kutch, is the largest port in India by cargo volume.
4	Z-Morh Tunnel	Located in Ganderbal, Jammu & Kashmir, it connects Gagangir and Sonamarg, enhancing connectivity to Kargil, Baltal, and Ladakh.
5	Shikari Devi Wildlife Sanctuary	- The Government of India has designated eco-sensitive zones (ESZs) around Shikari Devi Wildlife Sanctuary to mitigate urbanization and development impact. - Located in the Himalayas at altitudes between 1,800 to 3,400 meters, the sanctuary exhibits a transition from pine to oak to alpine meadows. - The sanctuary is home to various species, including the goral, monal, black bear, barking deer, musk deer, cat leopard, and Himalayan black bear.
6	Siachen Glacier	- World's highest and coldest battlefield in the Karakoram Range, now equipped with 4G/5G connectivity - Second-longest non-polar glacier after Fedchenko Glacier in Tajikistan. - It lies between the Saltoro Ridge to the west and the main Karakoram Range to the east
7	Musi River	The 'Musi River Historic Buildings' in Hyderabad are included in the 2025 World Monuments Watch.

		- The Musi River flows through Telangana and is a tributary of the Krishna River, merging near Wazirabad in Nalgonda district. - Himayat Sagar and Osman Sagar are the two dams constructed over the Musi River.
8	Asan Wetland	- The Asan Wetland in Uttarakhand hosted the Asian Waterbird Census, recording 5,225 birds from 117 species. - Located at the confluence of the Asan River and Eastern Yamuna Canal, it lies near the borders of Uttarakhand and Himachal Pradesh in Dehradun district. - Declared Uttarakhand's first Ramsar site in 2020, the wetland is a critical habitat for endangered species like Brahminy duck, red-crested pochard, gadwall, and mallard.

1	Shendurney Wildlife Sanctuary	- Researchers have discovered two new species of jumping spiders in the Shendurney WLS, in Kerala's Kollam district. - Part of the Agasthyamalai Biosphere Reserve, the sanctuary is rich in biodiversity, home to tropical forests and endangered species like the lion-tailed macaque. - Linked to India's first planned eco-tourism project at Thenmala.
2	Kawal Tiger Reserve	- Located in Telangana along the Godavari River, - Features Southern Tropical Dry Deciduous Forests dominated by teak and bamboo. - Recently, Solar pumps have been installed to supply water to tanks and natural reservoirs, supporting wildlife conservation.
3	Majuli River Island	- Majuli River Island in Assam, one of the world's largest river islands, is facing rising human-wildlife conflict. - Formed by the Brahmaputra River, the island is prone to erosion - A key center of Assamese neo-Vaishnavite culture, known for its historic Satras. - In 2016, it became India's first island district.

4	Sagar Island	- The National Green Tribunal has directed restoration of Sagar Island in West Bengal's South 24 Parganas. - Located at the confluence of the Hooghly River and Bay of Bengal - It is the largest island in the Sundarbans and hosts the Gangasagar Mela. - The island faces severe climate threats like erosion, salinity, and extreme weather.
5	Bangus Valley, Kupwara (J&K)	- The J&K government has declared Bangus Valley, near the LoC, as an ecotourism destination. - Located around 100 km from Srinagar in the Pir Panjal range, it sits at 10,000 feet and is known for its lush meadows. - The valley is surrounded by the Rajwar and Mawar regions to the east, the Shamasbury and Dajlungun Mountains to the west, and the Chowkibal and Karnah Guli areas to the north. - The name "Bangus" comes from Sanskrit words for "forest" and "grass".
6	Madhav National Park (MP)	- It has been declared India's 58th Tiger Reserve. - Located in the Upper Vindhyan Hills, it includes valleys and plateaus. - Key water bodies include Sakhya Sagar and Madhav Sagar, both formed by damming the Manihar River.
7	Byrnihat (Meghalaya)	- Byrnihat has been named the world's most polluted city in the 2024 World Air Quality Report. Located near Guwahati, it hosts various industries. - Its bowl-shaped topography traps pollutants, worsening air quality.
8	Ana Sagar Lake (Rajasthan)	- The Supreme Court has ordered demolition of an illegal amusement park near Ana Sagar Lake in Ajmer due to environmental violations. - The artificial lake was built between 1135–1150 AD by Arnoraja, grandfather of Prithviraj Chauhan. It is not yet a Ramsar site.
9	New Pamban Rail Bridge	- India's first vertical lift sea bridge, Built by the Rail Vikas Nigam Limited to replace the now defunct old Pamban bridge. - Establishes a train link between Rameswaram on Pamban island and Mandapam on the mainland Tamil Nadu. - The new Pamban bridge is 2.07 kilometres long, extending across the Palk Strait in Tamil Nadu.

IMPORTANT INDUSTRIAL REGIONS IN INDIA

		
1	Mumbai-Pune Industrial Region	- Located in Maharashtra, it is one of the most important industrial regions in India. - It encompasses cities like Mumbai, Pune, Nashik, and Aurangabad. - This region is known for its automobile manufacturing, information technology, and pharmaceutical industries.
2	Kolkata-Hugli Industrial Region	- It is situated in West Bengal. Kolkata, Howrah, and Haldia are prominent cities within this region. - It is known for its jute mills, steel plants, and chemical industries.
3	Ahmadabad-Vadodara Industrial Region	- Located in Gujarat, it is renowned for its petrochemical, textile, and engineering industries. - Ahmedabad and Vadodara are the major cities in this region
4	Madurai-Coimbatore Bangalore Industrial Region	- Spanning across Tamil Nadu and Karnataka, it is a prominent manufacturing hub. - This region is known for its textile, automobile, and information technology industries.
5	Chotanagpur Industrial Region	- Situated in Jharkhand, it is known for its mineral-based industries. - It is rich in coal, iron ore, mica, bauxite and steel reserves. Cities like Jamshedpur, Bokaro, and Dhanbad are important industrial centers within this region.
6	Agra-Delhi-Kalka Saharanpur Industrial Region	- Located in northern India, it is known for its leather goods, textiles, and handicraft industries. - Agra and Delhi are major cities within this region, known for their historical significance and vibrant industrial activity.
7	Vishakhapatnam - Guntur Region	- Located in Vishakhapatnam, Andhra Pradesh., with its natural harbor, is a major center for industries such as shipbuilding, petrochemicals, and pharmaceuticals. - Guntur is known for its agricultural processing industries, particularly in the field of spices and tobacco.

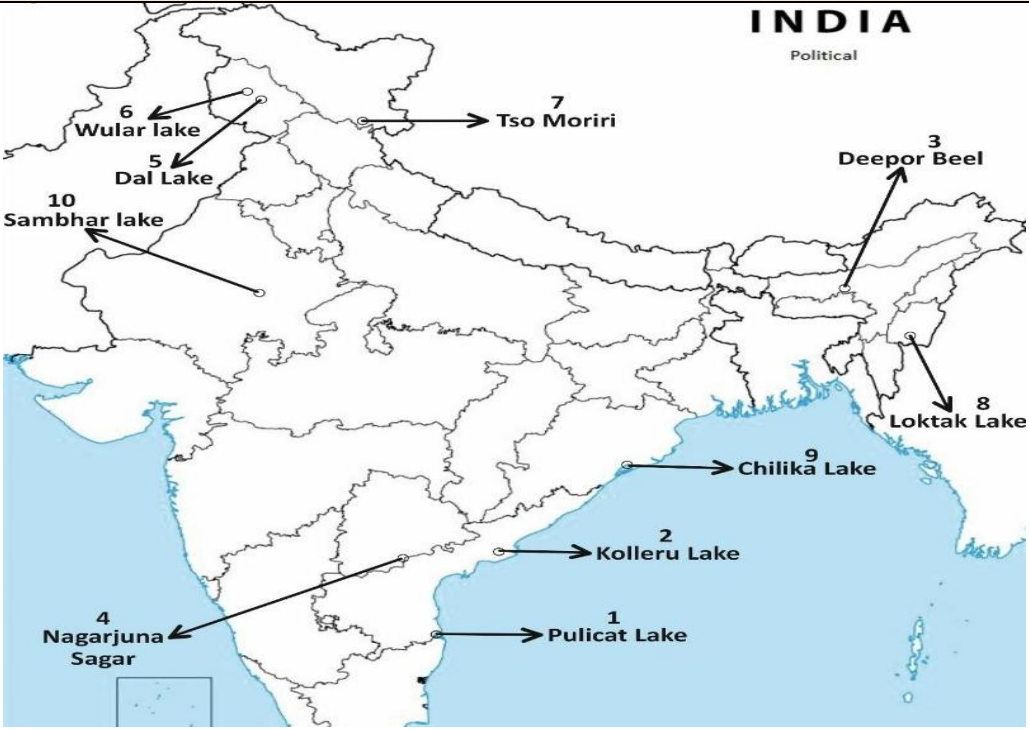
8	Kollam - Thiruvananthapuram Region	- Situated in Kerala, it is a notable industrial region in the southern part of India. - Kollam is renowned for its cashew processing and coir industries.
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IMPORTANT STRAITS OF THE WORLD

1	Malacca Strait	- The Strait of Malacca is a narrow waterway between the Malay Peninsula and the Indonesian island of Sumatra. - It connects the Andaman Sea (Indian Ocean) to the South China Sea (Pacific Ocean). - This passage is a vital route for global trade, especially for transporting oil, containers, and other goods.
2	Palk Strait	- The Palk Strait is a narrow waterway between Tamil Nadu (India) and northern Sri Lanka. - It connects Palk Bay (Bay of Bengal) to the Gulf of Mannar (Laccadive Sea). - It features islands and sandbanks, including Adam's Bridge (Ram Setu) between Pamban Island (India) and Mannar Island (Sri Lanka).
3	Sunda Strait	- The Sunda Strait is a crucial waterway located in Indonesia, between the islands of Java and Sumatra. - It connects the Java Sea (Pacific Ocean) to the Indian Ocean and separates the Java to the east from Sumatra to the west.
4	Yucatan Strait	- The strait separates the Yucatán Peninsula (Mexico) from Cuba. - It connects the Yucatán Basin (Caribbean Sea) with the Gulf of Mexico. - The Yucatán Current influences the strong currents, contributing to the Gulf Stream system and affecting the Atlantic Ocean climate.
5	Bab-el-Mandeb Strait	- Strategically important waterway between the Horn of Africa and the Arabian Peninsula. - Separates Yemen from Djibouti and Eritrea, connecting the Red Sea to the Gulf of Aden and the Indian Ocean. - One of the world's busiest shipping lanes, crucial for oil tankers and sea routes linking Europe and Asia via the Suez Canal.
6	Mozambique Strait	- Crucial waterway in the western Indian Ocean, separating Madagascar from mainland Africa. - Borders Tanzania and the Comoros archipelago at its northern entrance. - Influenced by complex ocean currents, including the Mozambique Current,

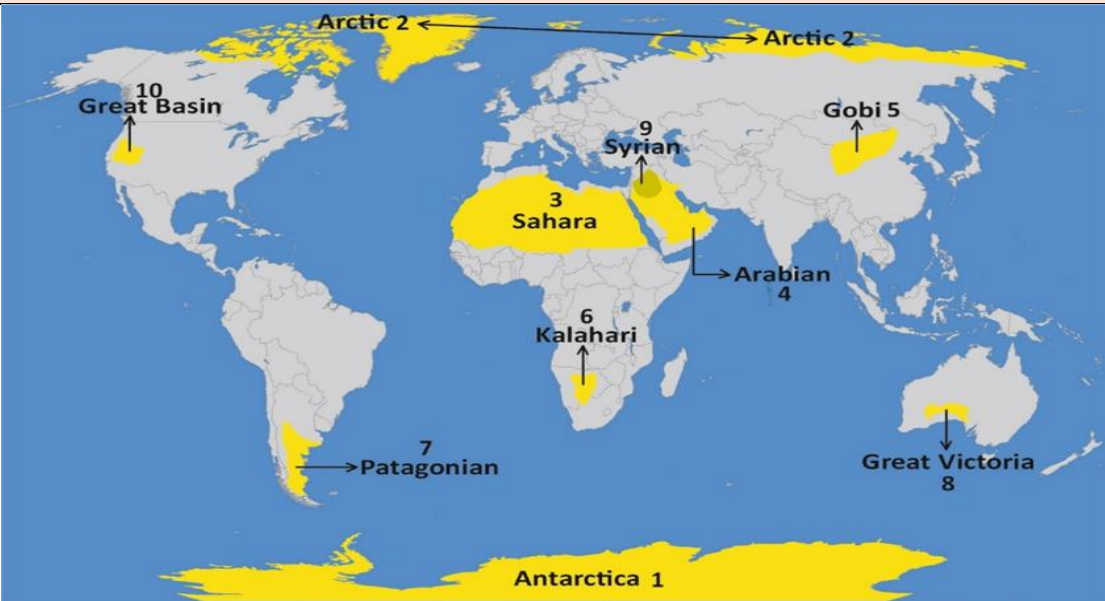
		which contributes to the Agulhas Current.
7	Bering Strait	- Narrow waterway separating Asia and North America, located between Russia's Chukchi Peninsula and Alaska's Cape Prince of Wales. - Positioned just south of the Arctic Circle, it acts as a biogeographic boundary. - Divides the flora and fauna of Asia and North America.
8	Bosporous Strait	- It is a narrow, natural strait in northwestern Turkey serving as a crucial link between the Black Sea and the Sea of Marmara, and connecting to the Mediterranean Sea. - It acts as the dividing line between Europe and Asia although both sides are part of Turkey.
9	Hormuz Strait	- Connects the Persian Gulf to the Gulf of Oman and the Arabian Sea, crucial for global oil transportation. - Separates Iran (north) from the Arabian Peninsula (south). - The world's most important oil chokepoint, with significant percentage of global oil supply passing through it.
10	Gibraltar Strait	- Located at the southern tip of the Iberian Peninsula, connecting the Atlantic Ocean to the Mediterranean Sea. - Separates Gibraltar and Peninsular Spain in Europe from Morocco in Africa. - On the northern side are Spain and Gibraltar (a British overseas territory), while the southern side includes Morocco and Ceuta (a Spanish autonomous city).

IMPORTANT LAKES IN INDIA

		
1	Pulicat Lake	A brackish water lagoon on the Andhra Pradesh-Tamil Nadu border , India's second-largest after Chilika. Separated from the Bay of Bengal by Sriharikota, it supports diverse aquatic life, including flamingos.
2	Kolleru Lake	A major freshwater lake in Andhra Pradesh , between the Krishna and Godavari deltas. A Ramsar site, it's a key habitat for migratory birds like pelicans and storks.

3	Deepor Beel	A freshwater lake in Guwahati, Assam , crucial for the Brahmaputra Valley ecosystem. A Ramsar site and Important Bird Area, supporting rich avian diversity.
4	Nagarjuna Sagar	A masonry dam in Telangana , built across the Krishna River for irrigation and hydropower. One of the world's largest masonry dams, serving Telangana and Andhra Pradesh.
5	Dal Lake	A scenic urban lake in Srinagar (Kashmir) , surrounded by the Pir Panjal mountains. Believed to be a remnant of an ancient lake that once covered the Kashmir Valley.
6	Wular Lake	One of Asia's largest freshwater lakes, in Jammu and Kashmir's Bandipora district. Fed by the Jhelum River, it acts as a natural flood reservoir and is a Ramsar site.
7	Tso Moriri	A high-altitude brackish lake in Ladakh's Changthang region. A Ramsar site, it supports migratory birds like bar-headed geese. Access requires Inner Line Permits.
8	Loktak Lake	Northeast India's largest freshwater lake in Manipur , famous for floating "phumdis." It's home to the endangered Sangai deer and the world's only floating national park, Keibul Lamjao.
9	Chilika Lake	Asia's largest brackish water lagoon in Odisha , separated from the Bay of Bengal by a barrier island. A Ramsar site, it's home to Irrawaddy dolphins.
10	Sambhar Lake	India's largest inland salt lake in Rajasthan , a crucial wintering site for migratory birds, including flamingos. A Ramsar site fed by rivers like Mantha and Rupangarh.

IMPORTANT DESERTS IN WORLD

		
1	Antarctic Polar Desert	- Located in Antarctica, it is the coldest and driest desert on Earth. - Covered mostly by ice, it receives very little precipitation, especially in the interior. - The McMurdo Dry Valleys are the driest part. It stores most of the world's freshwater in its ice sheets.
2	Arctic Polar Desert	- Found in the northernmost regions like Canada, Russia, and Greenland. - It is cold all year and receives very little rainfall. Vegetation is minimal, with mosses and lichens. - Wildlife includes polar bears, arctic foxes, and seals.

3	Sahara	• Largest hot desert in the world, located in North Africa. • It spans across 11 countries: Algeria, Chad, Egypt, Libya, Mali, Mauritania, Morocco, Niger, Sudan, Tunisia, and Western Sahara
4	Arabian	• It covers most of the Arabian Peninsula & is characterized by extremely hot and arid conditions. • It extends into parts of Saudi Arabia, Jordan, Iraq, Kuwait, Qatar, United Arab Emirates, Oman, and Yemen. • The landscape includes sand dunes, rocky plateaus, gravel plains, and wadis (dry riverbeds). It is rich in oil and natural gas reserves. • It features some of the world's largest continuous sand deserts, like the Rub' al Khali (Empty Quarter).
5	Gobi	• It stretches across parts of northern and north-western China and southern Mongolia. • It is a cold desert, with extreme temperature variations. Winters are very cold, and summers can be hot. It's known for its strong winds. • It is not just sand; it includes vast stretches of rocky terrain, gravel plains, and sparse vegetation.
6	Kalahari	• Spans Botswana, Namibia, and South Africa. • Though semi-arid, it gets more rain than typical deserts. • Features red sand, grasslands, acacia woodlands, and salt pans.
7	Pata-gonian	• It is situated primarily in Argentina and extends into parts of Chile, in the southern part of South America. • It is a cold desert, influenced by the rain shadow effect of the Andes Mountains. It experiences strong westerly winds. • The landscape consists of steppes, plateaus, and canyons.
8	Great Victoria	• It stretches across parts of Western Australia and South Australia. It's Australia's largest desert. • The landscape features sand dunes, grassland plains, areas of desert pavement (gibber plains), and salt lakes. • It has a very arid climate with low and irregular rainfall.
9	Syrian	• It covers parts of Syria, Jordan, Iraq, and Saudi Arabia. It has a hot and arid climate, with very low rainfall.
10	Great Basin	• A cold desert in the western U.S., covering Nevada and parts of Utah, California, and others. • Known for closed basins where water doesn't reach the ocean. Terrain includes mountains, valleys, and salt flats.