INDEX

- **Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA)**
- **Anti-Defection Law**
- **Broadcasting Bill**
- **Anti-conversion laws**

DEFENCE AND SPACE

- **Project-76**
- **In September, astronomers predict a rare nova explosion (explosion of T Coronae Borealis) will brighten our night sky.**
- **Jeff Bezos-led Blue Origin has partnered with the Space Exploration and Research Agency (SERA) to give common Indian citizens an opportunity to go into space in New Shepard spacecraft.**
- **Astronomers recently discovered a new radio galaxy using the LOw-Frequency ARray (LOFAR).**
- **Advanced Medium Combat Aircraft**
- **The Indo-Russian Rifles Private Limited (IRRPL), a joint venture between India and Russia, has successfully delivered 35,000 AK-203 Kalashnikov assault rifles to the Indian Army.**
- **Gallantry Medal**
- **Kargil War**
- **Khaan Quest exercise**
- **Defence Acquisition Council**
- **Pangong Tso lake**

19 years of Ethical IAS Coaching

INTERNATIONAL RELATIONS

- **Shanghai Cooperation Organisation (SCO) Summit 2024 in Astana, Kazakhstan.**
- **First Indian PM to visit Vienna in 41 years.**
- **India hosts BIMSTEC Foreign Ministers amid raging Myanmar crisis**
- **Quadilateral Security Dialogue - QUAD**
- **United Nations Security Council reform**

ECONOMY

- **The Reserve Bank of India (RBI) has signed an agreement with the ASEAN nations to join Project Nexus**
- **Modinomics**
- **The Ministry of Mines is designing a Production Linked Incentive (PLI) scheme to promote the recycling of critical minerals in India.**
- **"Money Mules"**
- **Producer Price Index (PPI)**
- **Bharat Bill Payment System (BBPS)**
- **Government reopens PLI scheme for white goods till October 12**
- **MSMEs need outlays for technology upgrades, to aid in green transition.**
- **Centre begins efforts to implement Labour Codes**
- **Vizhinjam port welcomes 1st mothership**
- **New species of dogfish shark discovered in Kerala harbour**
- **India shows good progress on SDGs: NITI Aayog report**

ENVIRONMENT

- ➢ **Zoological Survey of India recorded the forest-dwelling frog from the Talle Wildlife Sanctuary and named it as Xenophrys apatani.**
- ➢ **Short-term exposure to air pollution in India kills 33,000 people annually: Study**
- ➢ **First International Conference on Steel Slag Road jointly organized by CSIR-CRRI at New-Delhi.**
- ➢ **A rare brown palm civet discovered in the Koyna Wildlife Sanctuary**

- **Recently, the Union Cabinet, chaired by Prime Minister of India has approved India to sign the Biodiversity Beyond National Jurisdiction (BBNJ) Agreement.**
- **The Madhya Pradesh government has initiated an inquiry into the alleged poaching of tigers and irregularities in the newly established Veerangana Durgavati Tiger Reserve**
- **Climate Skills Seeds for Transition India**
- **Air pollution harms pollinators more than pests, study finds**
- **World's rarest whale: spade-toothed whales**
- **Indian flap shell turtle**
- **Miyawaki Forest**
- **Crop Residue Management**
- **Over 800 Elephants died in Kerala in 8 years**
- **Solid Waste Management Rules**
- **The Great Nicobar Island Development Project**
- **Project Tiger**
- **Coastal Zone Management Plans**

GEOGRAPHY

- **Alaska's glaciers near irreversible tipping point, study finds**
- **Wildfires have been a natural part of the Arctic's boreal forest or snow forest and tundra (treeless regions) ecosystems.**
- **On July 5, Earth reaches its farthest from the sun for the entire year, a moment astronomers call Aphelion.**

> ➢ **A painting created at least 51,200 years ago was discovered in the limestone cave of Leang Karampuang in the Maros-Pangkep region of the Indonesian island.**

> ➢ **Recently Goa & Karnataka are at loggerheads again over Kalasa-Banduri project as central body inspects Mahadayi river basin.**

> ➢ **Colour- Coded Weather Warning**

> ➢ **Koyna Dam**

> ➢ **Krishna river**

> ➢ **Mekedatu project**

> ➢ **Landslides flatten Wayanad villages.**

SCIENCE AND TECHNOLOGY

> ➢ **A new banking malware called 'Snowblind' is targeting Android users to steal banking credentials.**

> ➢ **Oran Knowlson, A UK-based teenager, has become the first person in the world to be fitted with a brain implant.**

> ➢ **Physicists at the Large Hadron Collider (LHC) in Europe reported the most precise mass measurement of the Top Quark at 172.52 GeV/c2 having implications for the whole universe.**

> ➢ **Scientists have identified a species of desert moss called "Syntrichia caninervis" that could be a game-changer for future space exploration and colonisation efforts.**

- **Using artificial intelligence, researchers have found potential cancer drivers hidden in so-called "junk" regions of DNA.**
- **Genetic engineering researchers have discovered a next generation genomic design method known as the Bridge Recombinase Mechanism.**
- **Recently, IIT Madras and the Jawaharlal Nehru Centre for Advanced Studies, Bengaluru broke minerals down into nanoparticles from microdroplets of water.**
- **AIIMS blood test offers hope and help in early Alzheimer's diagnosis.**
- **Zika virus: the need to improve surveillance and vector control**
- **Asphyxiation**
- **Wolbachia**
- **Late Blight Disease**
- **H1N1**
- **Zika virus**
- **Nipah virus**
- **Neutrino**
- **Phishing attacks**
- **Surprising 'dark oxygen' discovery could ensnarl deep-sea mining**
- **Brain-Eating Amoeba:** *Naegleria fowleri*
- **Dementia**

SOCIETY

- **Govt launches virtual systems for quality assessment in healthcare centres.**
- **The Union Minister for Coal and Mines recently launched the portal "Noble Initiative for Rewarding Mains Aspirants of National Civil Services Examination (NIRMAN)".**
- **Integrated Tribal Development Programme**
- **National Gopal Ratna Award**
- **U-Win portal: A digital vaccine card for every child**
- **Right to Education**
- **Project ASMITA**
- **Bhil Pradesh**
- **NPS Vatsalya Scheme**

ART AND CULTURE

- **Kharchi Puja**
- **Jagannath temple**
- **Project PARI**
- **Aanayoottu: an annual elephant feeding ritual held at the Sree Vadakkunnathan Temple, Thrissur**
- **Wagh nakh**
- **Kanwar Yatra**
- **Sangameswara temple**

- ➢ **Onam Festival**
- ➢ **Humayun's Tomb**
- ➢ **Royal burial mounds of Assam**

FACTS FOR PRELIMS

- ➢ **This year marks the 169th anniversary of the beginning of the Santhal Hul.**
- ➢ **Mercenary spyware**
- ➢ **Deakin university open doors to first PG batch at GIFT city.**
- ➢ **National Flag Day**
- ➢ **Abhinav Bindra awarded Olympic Order by IOC for outstanding services to Olympic Movement**

POLITY AND GOVERNANCE

NITI Aayog launched the 'Sampoornata Abhiyan' witnessing significant participation from citizens across the country.

Sampoornata Abhiyan:

- It is a 3-month campaign to undertake a sustained effort to achieve saturation of 6 key indicators in **Aspirational Districts** and 6 key indicators in **Aspirational Blocks** across the country.

- It seeks to achieve saturation in each of the 6 identified indicators in the 112 Aspirational Districts and 500 Aspirational Blocks under the Aspirational Districts Programme and Aspirational Blocks Programme.

Aspirational Districts Programme:

- **Introduction:** Introduced in **2018** by **NITI Aayog**.
- **Aim:** It Aims to rapidly and effectively transform 112 districts nationwide.
- **Focus areas:** It focuses on five areas: Health & Nutrition, Education, Agriculture & Water Resources, Financial Inclusion & Skill Development Infrastructure
- **Assessing Progress:** Progress is assessed using 81 development indicators.

Aspirational Blocks Programme:

- **Introduction:** Introduced by NITI Aayog in 2023.
- **Aim:** It aims to achieve full coverage of essential government services in 500 blocks (329 districts) nationwide.

  Key indicators of Aspirational Blocks include:

- Percentage of pregnant women registered for **Antenatal Care (ANC)** within the **first trimester**;
- Percentage of persons **screened for Diabetes** against the targeted population in the Block;
- Percentage of persons **screened for Hypertension against** the targeted population in the Block;
- Percentage of pregnant women taking **Supplementary Nutrition under the ICDS Programme** regularly;
- Percentage of **Soil Health Cards** generated against the soil sample collection target; and
- Percentage of SHGs that have received a **Revolving Fund** against the total SHGs in the block

Key indicators of Aspirational Districts :

- Percentage of pregnant women registered for **Antenatal Care (ANC) within the first trimester**;
- Percentage of pregnant women taking **Supplementary Nutrition under the ICDS Programme** regularly;
- Percentage of children fully **immunized (9-11 months) (BCG+DPT3+OPV3+Measles 1)**
- Number of **Soil Health Cards** distributed;
- Percentage of schools with **functional electricity** at the **secondary level**; and

- Percentage of schools providing textbooks to children within 1 month of the start of the academic session

- NITI Aayog, in collaboration with the relevant Central Ministries and Departments, as well as the Governments of States and Union Territories, will work together to ensure the effective and rapid development of these Districts and Blocks.

Digital Bharat Nidhi

Recently, the The **Department of Telecommunications (DoT)** released draft rules to operationalise the **Digital Bharat Nidhi** as Digital Bharat Nidhi would replace the erstwhile **Universal Service Obligation Fund (USOF).**

Universal Service Obligation Fund (USOF)
- The USOF was established through an Act of Parliament in December 2003 by amending the **Indian Telegraph Act, 1885.**
- **Objective:** To ensure equitable access to telecom services in rural and remote areas at affordable prices, thereby reducing the **digital divide** between urban and rural areas.
- **Funding:** The USOF is financed through a levy imposed on the revenue generated by telecom operators. Known as the **Universal Service Levy (USL)**, it is calculated as a percentage of their **Adjusted Gross Revenue (AGR)** and is collected and deposited into the USOF.
- **Administration:** The USOF is overseen by the Administrator, appointed by the Central Government to manage the fund. It operates as an attached office within the Department of Telecommunications (DoT), under the Ministry of Communications.

Introduction of Digital Bharat Nidhi (DBN)

- **Objective:** Switching from the USOF to the DBN aims to address past challenges and maximize resource utilisation.

- **Focus Areas:**

- Support research and development in telecommunication technologies.

- Facilitate pilot projects and consulting services to enhance connectivity.

- Finance telecommunications services benefiting underserved groups, including women and people with disabilities.

- Foster innovation and adoption of domestically developed technologies in the telecom sector.

- **Operational Framework of DBN:** Under the proposed rules, telecom companies will deposit their payments into the **Consolidated Fund of India**.

- From there, the DBN will receive funds. The operational model involves appointing an administrator to oversee the fund and selecting DBN implementers through bidding or direct applications.

- These implementers will execute various projects in accordance with DBN guidelines, emphasizing equitable and transparent service delivery.

- **Funding and Allocation Strategies:** The administrator will decide funding approaches case by case, offering full, partial, or co-funding options, along with risk mitigation strategies.

- This tailored approach aims to efficiently and effectively tackle varied connectivity challenges across different regions.

- **Goals:** DBN will fund projects to provide **targeted telecom access** to underserved groups like women, persons with disabilities, and economically weaker sections, as per draft rules.

- **Criteria for DBN Schemes and Projects:** Introducing next-generation telecommunication technologies in **underserved** rural, remote, and urban areas. Enhancing affordability of telecommunication services in these areas.

- Promoting innovation, research, and development.

- Supporting the promotion and commercialization of indigenous technology and associated intellectual property, including creating regulatory sandboxes.

- **DBN Implementation Requirements:** Any DBN implementer receiving funding for establishing, operating, maintaining, or expanding a telecommunication network must share and provide access to such networks and services on an open and non-discriminatory basis.

- They must comply with guidelines issued periodically by the administrator.

The Ministry of Ports, Shipping and Waterways plans to expand its shore-to-ship power infrastructure.

Shore Power

- In shipping parlance, shore power refers to the power supply given to a boat, ship, or any maritime vessel when it's **docked** at the port.
- **Benefit:** Shore power technology not only helps to minimise the climate impact of port operations, it also brings public health benefits by reducing the use of bunker fuels.

- It will not only save fuel, but also significantly reduce vessel emissions within the port area.

- **Grid Requirements:** Shore power has been used extensively for vessels with moderate power requirements—typically less than 50 to 100 KW. For larger vessels with higher power requirements — 100 KW up to 10 to 15 MW.

Initiatives Taken by Government to increase Shore Power

- **Power Guidelines for Indian Ports:** The **Directorate-General of Shipping (DGS)**, an autonomous institution under the Ministry of Ports, Shipping and Waterways, issued **'Standard Operating Procedures: Shore Electric Power Supply to Ships in Indian Ports'** in May 2018.

- The guidelines were "applicable for ships with power demand up to 150 KW" (small and medium-sized ships).

- The plan is to make it mandatory in a phased manner across all ports and for all vessels calling at those ports.

- **New Guidelines:** A set of interim guidelines for the safe operation of **Onshore Power Supply (OPS)** in ports covering the ship-shore interface requirements was issued by DGS in April 2024.

- **Harit Sagar Initiative:** Under the Ministry's **'Harit Sagar – Green Port Guidelines,'** the first phase, which covers switching port crafts (pilot boat, tugs, and so on) to electrical power or green power, was initiated in 2023.

Director General of shipping

- The Directorate General of Shipping, India, or DG Shipping, is an office of the Indian Ministry of Ports, Shipping, and Waterways.

- **Administration:** The Director General of Shipping has **statutory powers** under the Constitution's Section 7 of the **Merchant Shipping Act of 1958**.

- On the administrative side, he is assisted by Assistant Directors General of Shipping and Executive Officers. His technical help comes from his Nautical Advisor and nautical Surveyors.

   Objectives:

- Issues which affect merchant shipping, administration of law and navigation

- Implementing methods for ensuring the safety of life, property and ships at sea

- Developing the Indian shipping sector

- International conventions related to maritime

- Availability of facilities for training naval officers and ratings

- Seamen employment regulation and their welfare

- Developing the sailing ship industry

- Regulating ocean freight rates in overseas maritime trade

The Committee on Digital Competition Law (CDCL) with the current ex-post framework vs an ex-ante framework.

The Committee on Digital Competition Law (CDCL) came to the conclusion that there was a need to supplement the current **ex-post framework** under the **Competition Act, 2002** with an **ex-ante framework**

Draft Digital Competition Bill (DCB) 2024
- DCB seeks to regulate **Systemically Significant Digital Enterprises (SSDE)** and their **Associate Digital Enterprises (ADEs)** to prevent **Anti-Competitive Practices (ACPs).**
- **Digital markets:** Digital markets, also known as **online markets**, are commercial spaces where businesses and consumers interact through digital technologies.
- **Global Examples:** DCB draws inspiration from the **European Union's Digital Markets Act (DMA),** which was introduced to prevent **anti-competitive practices** by tech giants such as Google, Facebook, and Amazon.

Key Provisions-
- **Ex-Ante Regulation:** Empowers **the Competition Commission of India (CCI)** to intervene and prevent potential anti-competitive practices.
- **Forward-Looking Regulation:** The Digital Competition Bill introduces a forward-looking, preventive, and **presumptive** law **(an ex-ante framework)** that anticipates potential antitrust harms and establishes predefined no-go areas.

- For example, it sets clear rules to avoid conflicts in advance, similar to how **GDPR regulates data privacy**.
- Presently, India adheres to an **ex-post antitrust framework** under the **Competition Act, 2002**, which involves delays and disadvantages smaller competitors.
- **Listing Core Digital Services:** The bill enumerates *"core digital services"* under **Schedule I**, which includes:

1. Online search engines

2. Video-sharing platform services

3. Online social networking services

4. Interpersonal communications services

5. Operating systems

6. Web browsers

7. Cloud services

8. Advertising services

9. Online intermediation services (such as web hosting, service providers, payment sites, etc.)

- **Designation of Significant Entities:** The digital competition bill suggests designating specific enterprises as Systemically Significant Digital Enterprises (SSDEs).

Systemically Significant Digital Enterprises (SSDEs):

- SSDEs are companies that offer "core digital services" in India and are identified based on various quantitative and qualitative criteria such as turnover, user base, market influence, etc.

- The bill empowers the CCI to designate an enterprise as an SSDE based on its significant market presence in Core Digital Services (CDS).

- **Obligations of SSDEs:** SSDEs must report to the CCI regarding their **Associate Digital Enterprises (ADEs)** directly or indirectly involved in providing Core Digital Services (CDS). Additionally, SSDEs are prohibited from:

1. Favoring their products/services

2. Using non-public data of business users on their CDS

3. Restricting end users' ability to download, install, operate, or use third-party applications

- **Coverage:** The CCI is empowered to initiate an inquiry against such enterprises for non-compliance with this Act or the rules and regulations formulated under it.

- **Recognition of Associate Digital Enterprises:** Acknowledging the impact of data shared within a tech group that benefits other group companies, the Bill proposes to designate **associate digital enterprises (ADEs).**

- If an entity within a group is classified as an **associate entity**, they would bear similar obligations as SSDEs, contingent upon their involvement with the core digital service provided by the principal company.

Difference between ex-post law and ex-ante law

- **Ex-Post Law:** An ex-post law is reactive, addressing violations or wrongs after they have occurred. For example, **the Competition Commission Act, 2002.**
- **Ex-Ante law:** An ex-ante law prevents issues by identifying them beforehand and applying regulatory intervention before they occur, as seen in the Draft Digital Competition Bill.

Reasons for an Ex-Ante Digital Competition Law

- **Lengthy process of ex-post measures:** Ex-post measures include stages like the Competition Commission of India (CCI) forming a prima facie view, investigations conducted by the Director General, and the final order being issued, all of which are time-consuming.

- **Lengthy Adjudication of Competition Cases:** Some cases involving anti-competitive practices by digital enterprises before the CCI have taken more than four years to be resolved.

- For example, the CCI adjudicated on a complaint of abuse of dominant position filed in 2012, with a final resolution still pending after 11 years and currently under review by the appellate tribunal.

- Therefore, parties would endure irreparable harm by the time ex-post measures are ordered to address anti-competitive practices.

- **Efficiency:** In this context, it is believed that the ex-ante framework will be more effective in preventing anti-competitive behavior by large digital enterprises that wield substantial influence in the Indian digital market.

- **Market Tipping Challenges:** The current framework may struggle to effectively address the permanent dominance of large digital enterprises in markets, known as **market tipping**.

- **Big Tech practices:** Common practices among big tech giants include the collection of user data and self-preferencing, where platforms prioritize their own services.

- **Promoting Innovation and New Entrants:** The current structure of the digital market overly favors big tech, dissuading potential new competitors. The DCB aims to diminish these obstacles, fostering innovation and enhancing marketplace diversity.

Anand Marriage Act

- It provides statutory recognition to marriage rituals of **Sikh community** in India.

- The emergence of the **Anand Marriage Act** dates back to 1909 when the British Imperial Legislative Council passed a legislation for the recognition of the *Sikh wedding ceremony **Anand Karaj**.*

- The Act aimed to acknowledge and respect the customs and practices of the community.

- In 2012, the Parliament passed the **Anand Marriage (Amendment) Bill,** bringing Sikh traditional marriages under the purview of legal recognition.

- While the central government approved the amendments, it was left for individual states and Union territories to frame respective rules for the registration of Anand marriages.

- **Significance of the Act:** It provides statutory recognition to marriage rituals of Sikhs, fulfilling their long-standing demand to not have to solemnise their marriages under the **Hindu Marriage Act**.
- **Recent implementation: Jammu and Kashmir Anand Marriage Registration Rules, 2023**" has been framed for the registration of "Anand marriages", under which tehsildars concerned shall be the registrar of such marriages within their respective territorial jurisdiction, as per a government notification issued.

Centre declares June 25 as Samvidhaan Hatya Diwas

25th June **2024** marked the **49th anniversary** of the declaration of the national emergency in India.

What is an Emergency?

- It refers to legal measures and clauses within a country"s **constitution or laws** that enable the government to respond swiftly and effectively to **extraordinary situations, such as war, rebellion, or other crises** that threaten the nation"s stability, security, or **sovereignty and democracy of India.**
- The emergency provisions in the Indian Constitution draw inspiration from **Germany"s Weimar Constitution.**

Types of Emergencies in Indian Constitution
- The Indian Constitution provides for three types of emergencies as listed below:

1. **National Emergency (Article 352)**

A National Emergency refers to an emergency that is imposed due to **war, external aggression, or armed rebellion.**

2. **President's Rule (Article 356)**

President's Rule refers to an emergency that is imposed due to the **failure of the Constitutional Machinery in the States.** It is also known by two other names – **'State Emergency' or 'Constitutional Emergency'.**

3. **Financial Emergency (Article 360)**

- A Financial Emergency refers to an emergency that is imposed due to **a threat to the financial stability or credit of India.**

How Many Times Emergency was Imposed in India?
- National Emergency has been proclaimed 3 times so far in India:
- **Indo-China War (1962)**: Declared due to "external aggression" in 1962 during the Sino-Indian War.
- **Indo-Pak War (1971)**: Imposed on the grounds of "external aggression" in 1971 during the Indo-Pakistani War.
- (1975-1977): The third and **most controversial** national emergency was declared in 1975, primarily due to **"internal disturbance"** amidst internal

political unrest. This period witnessed a **significant suspension of civil liberties.**

Arguments in Favour of Emergency Provisions

- **National Security and Integrity**– Emergency Provisions are seen as necessary to safeguard the nation's security and territorial integrity in the face of external aggression, armed rebellion, or other threats to the constitutional order.
- **Effective Crisis Management**– The enhanced powers granted during emergencies enable the Central Government to quickly mobilize resources, coordinate responses, and take swift action to address urgent situations.
- **Maintaining Constitutional Order**– The emergency provisions, particularly the power to declare a President's Rule in a State, are seen as a crucial mechanism for maintaining the constitutional order in India.
- **Ensuring Effective Governance**– In situations of crisis or breakdown of normal governance mechanisms, emergency provisions allow for the centralization of power, ensuring swift and effective decision-making to address pressing issues.

Arguments in against of emergency:

- **Authoritarianism:** The declaration of Emergency was widely criticized for its authoritarian nature, with accusations of suppressing democratic freedoms.
- **Abuse of Power:** The government's actions during this period were criticized for being excessive and for infringing upon the rights of citizens.
- **Opposition and Resistance:** Many political leaders and activists, both from within and outside the Congress, resisted the Emergency and faced repression.

Gram nyayalayas: Paving the Path to Equality and Justice in India

- The Supreme Court has sought a full report from the States and High Courts on the establishment and functioning of gram nyayalayas.

- **Gram nyayalayas:** To provide access to justice to the citizen at their door steps, the Central Government has enacted the **Gram Nyayalayas Act, 2008**. It provides for establishment of Gram Nyayalayas at intermediate panchayat level. The State Governments are responsible for establishing Gram Nyayalayas in consultation with the respective High Courts. As per information made available by State Governments / High Courts, 476 Gram Nyayalayas have been notified so far by 15 States/UT. Out of these, 257 are operational in 10 States at present.

  From Constitutional Roots to Practical Challenges: Evolution and Implementation of Gram Nyayalayas in India

- **Article 39A:** Added **by 42nd CAA 1976** in DIRECTIVE PRINCIPLES OF STATE POLICY **(Part IV)** of Indian constitution directs the State "to ensure equal justice on a basis of equal **opportunity** and shall provide free legal aid".

- **114th Report of the Law Commission (1986):** recommended setting up Gram Nyayalayas (mobile village courts) at the grass root levels.

- **Gram Nyayalayas Act 2008:** The Gram Nyayalayas Act, 2008, came into effect on October 2, 2009, coinciding with Gandhi Jayanti.

Objectives of Gram Nyayalayas

   To provide access to Justice

- These courts" objective is to provide access to justice to the rural population at their doorsteps who may not be able to access the regular courts due to various reasons such as distance, cost, lack of awareness, etc.

To provide affordable justice

- These courts seek to provide justice at an affordable price, making it accessible to rural populations. These courts impose modest costs, and the process is simplified, reducing the need for lawyers.

To provide speedy disposal of cases

- To provide speedy justice, these courts are required to dispose of cases within a period of six months. This helps to reduce the backlog of cases while also ensuring that justice is delivered on time.

To promote alternative dispute resolution mechanisms

- These courts encourage cost-effective alternative dispute resolution mechanisms such as mediation, conciliation, and arbitration, which facilitate the resolving of disputes peacefully manner.

Limitations of the Act

- The risk of the improper dispensation of justice remains, as the judges are not chosen through merit-based examinations.

- Further, Nyayadhikaris, being state appointees, may not be accessible to the people.

- The Act seeks to establish Gram Nyayalayas as the lowest tier of the judiciary for rural areas. A similar provision should be made for urban areas too.

- The Act states that a Gram Nyayalaya shall be the lowest court of the subordinate judiciary in a state. According to the CrPC, the Court of a Magistrate of the Second Class is the lowest court. Both courts have jurisdiction over cases where punishment does not exceed imprisonment for a year. This issue of overlapping jurisdiction over cases where punishment does not exceed imprisonment for a year needs to be addressed.

Strategies for Strengthening Gram Nyayalayas in India

- **Proposed Amendment:** Act should be amended- Jurisdiction of the Gram Nyayalayas may be redefined in order to remove the ambiguities regarding the jurisdiction of Gram Nyayalayas.
- **Training of Gram Nyay Adhikari:** Apart from the legal and procedural requirements of Family Courts, training may also include the local language of the community amongst whom they are posted.
- **Awareness and Capacity Building:** Conduct programs to educate and enhance skills among stakeholders.
- **Creation of Regular Cadre of Gram Nyay Adhikari:** Introduce mandatory service for newly recruited judicial officers in the regular cadre of first-class judicial magistrates or civil judges.
- **Permanent Gram Nyayalayas:** Establish these courts at every intermediate-level Panchayat or in clusters of contiguous Panchayats, based on the typical number of disputes in the area.

Central Bureau of Investigation

- Central Bureau of Investigation (CBI) is the premier investigating police agency in India. It provides assistance to the **Central Vigilance Commission and Lokpal**. It functions under the superintendence of the Dept. of Personnel, Ministry of Personnel, Pension & Public Grievances, Government of India - which falls under the prime minister's office. It is also the nodal police agency in India which coordinates investigation on behalf of **Interpol Member countries.**

Functions of CBI

- Its important role is to prevent corruption and maintain integrity in administration.

- Investigate cases connected to infringement of economic and fiscal laws, i.e., breach of laws concerning customs and central excise, export and import control, income tax, foreign exchange regulations, etc. But cases of this nature are taken up by the CBI either at the request of the department concerned or in consultation with the concerned department.

- Investigate crimes of a serious nature, that have national and international ramifications, and committed by professional criminals or organised gangs.

- To coordinate the activities of the various state police forces and anti-corruption agencies.

- At the behest of a state govt., the CBI can also take up any case of public importance and investigate it.

- Maintaining crime statistics and disseminating criminal information.

Challenges faced by Central Bureau of Investigation

- **Political Interference**– Time and again, the CBI has been accused of being influenced by the political establishment and lacking true independence in its investigations.

- **Excessive political interference in its functioning has made the Supreme Court** call the CBI a "**caged parrot speaking in its master's voice".**

- **Allegations of Bias**– There have been allegations of the CBI being biased in its investigations, favouring certain political parties or individuals.

- There have been concerns about the selective nature of some of the CBI's prosecutions.

- **Misuse by the Central Government –**Critics argue that successive Central Governments have used the CBI to haunt political opponents and coerce state governments to fall in line.

- **Accountability Issues**– Questions have been raised about the CBI's accountability mechanisms, with concerns about the lack of proper oversight and transparency in its functioning.

- **Shortage of Manpower and Resources**– The agency has been plagued by a shortage of personnel, infrastructure, and financial resources, hampering its investigative capabilities.
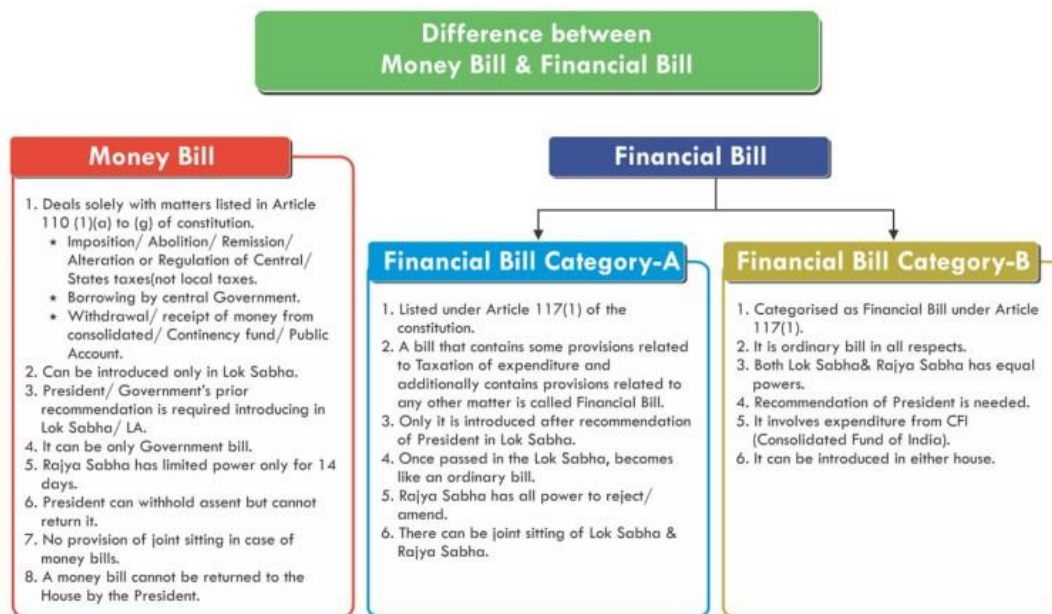
Money bills

- SC to consider setting up bench to hear pleas against passage of laws as money bills.

  What is a Money bill?

- In India, a Money Bill is a type of legislation that relates to the **appropriation of money** from the Consolidated Fund of India, which is the main fund of the government.

- Money Bills are typically related to **financial matters** such as taxation, public expenditure, and public debt.

Major Provisions for Money Bill in India

- **Only the Lower House (Lok Sabha) can introduce a Money Bill**. This provision grants the Lok Sabha **financial supremacy** over the Upper House (Rajya Sabha).

- A Money Bill needs only a **simple majority in the Lok Sabha** for its passage. The Rajya Sabha can only recommend amendments to the Bill, but the Lok Sabha is not bound to accept them.

- The Speaker of the Lok Sabha has the power to certify whether a Bill is a Money Bill or not. This power is final and cannot be challenged in court.

- The Rajya Sabha has **14 days to consider and return a Money Bill** to the LokSabha. If it is not returned within this period, the Bill is deemed to have been passed by both Houses.

- Once passed by the Lok Sabha, the Money Bill is sent to the President for his assent. He **cannot withhold** his assent to a Money Bill.

Significance of Money Bills

Deals with Financial Matters:

- They are specifically designed to address financial matters such as taxation, government expenditure, and related financial issues.

- Crucial for the effective functioning of the government and the implementation of its budgetary proposals.

Vote of Confidence:

- The passage of Money Bills is considered a de facto vote of confidence in the government.

- Its defeat in the Lok Sabha leads to the government's resignation.

- The Lok Sabha can convey its dissatisfaction with the government by refusing to pass a Money Bill, indicating a lack of confidence.

Constitutional Safeguard:

- The Constitution provides broad guidelines regarding what constitutes a Money Bill.

- This ensures that it pertains exclusively to financial matters.

- It prevents the misuse of Money Bills for non-financial legislation.

Time-Bound Process:

- Money Bills must be disposed of within a specific time frame.

- Prevents unnecessary delays in financial decision-making.

- Ensures the government can efficiently carry out its financial responsibilities without prolonged legislative debates.
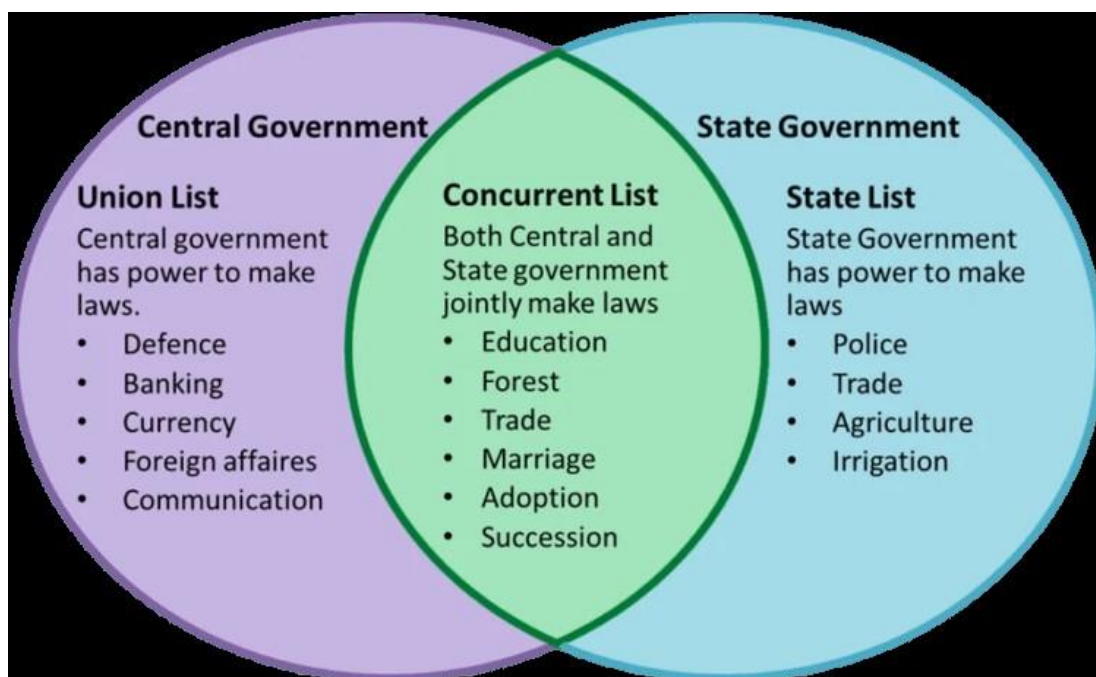
The issues pertaining to the misuse of the money bill:

- **Evading scrutiny:** Provisions of a money bill should not be used to bypass the legislative process or to evade the scrutiny of the Rajya Sabha.

- **Aadhaar Bill Controversy:** During the passage of the Aadhar Act 2016, Opposition has claimed that enabling a fair and equitable distribution of benefits and subsidies is not a money matter under Article 110. Hence, it has questioned the legality of the Aadhaar Bill as a money bill.

- **Certifying Authority:** There are allegations of partisan role by the speaker through the sole discretion given to the speaker for certifying the bill as a money bill.

- **Separation of Power:** For instance, **Finance Act 2017** was passed as a money bill. It amended various Acts to provide for new rules and appointments to various tribunals, such as National Green Tribunal.

- The **Supreme Court held** that a money bill should not contain provisions that are not directly related to the subjects listed in Article 110 of the Constitution of India (which defines the subjects that can be covered by a money bill).

Will Union govt. shift education to State List, asks Stalin

7th Schedule

- The seventh schedule under **Article 246** of the constitution deals with the division of powers between the union and the states.

- It contains three lists-**Union List, State List and Concurrent List.**

- The **union list** details the subjects on which Parliament may make laws while the **state list** details those under the purview of state legislatures.

- The **concurrent list** on the other hand has subjects in which both Parliament and state legislatures have jurisdiction.

Central Government   **State Government**

Union List
Central government has power to make laws.
- Defence
- Banking
- Currency
- Foreign affaires
- Communication

Concurrent List
Both Central and State government jointly make laws
- Education
- Forest
- Trade
- Marriage
- Adoption
- Succession

State List
State Government has power to make laws
- Police
- Trade
- Agriculture
- Irrigation

Why Should Education be on the State List?

- **Original Constitution Design:** Education was initially placed on the State List by the framers of the Constitution, recognising that local governments are better equipped to handle educational needs.

- **42nd Amendment Impact:** The unilateral shift of education to the Concurrent List during the Emergency undermined the federal structure.

- Allowing states to have exclusive control over education would restore the balance of power envisioned by the framers of the Constitution.

- **State-Specific Policies:** States can tailor their educational policies to their unique cultural, linguistic, and socio-economic contexts. This ensures that education is relevant and responsive to the needs of the local population and can be crucial for improving literacy rates and educational outcomes.

  For example, under Article 350A endeavour should be made to provide primary education in the mother tongue.

- **Divergent Policies:** The central government"s policies, such as neet, often conflict with state policies, leading to inefficiencies and disenfranchisement.

- **Resource Allocation:** States that invest significantly in their educational infrastructure should have the authority to regulate and benefit from their investments without interference from the central government.

- The Ministry of Education"s 2022 report indicates that states bear the majority of educational expenditure (85%).

- **Merit Determination:** Centralized entrance exams like NEET do not necessarily reflect the merit or potential of students from diverse educational backgrounds.

- States should have the flexibility to design admission criteria that better assess and foster student potential.

Arguments for "Education" in Concurrent List

- **Uniform Education Policy-** Advocates argue for a unified approach to education across the country to improve standards and ensure consistency.

- **Synergy Between Centre and States**- Central coordination is seen as beneficial for aligning national goals with state-level implementation.

- **Corruption and Lack of Professionalism-** Critics cite concerns about inefficiencies and ethical issues within state-level management of education.

Way Forward

- **Collaborative Federalism:** Focus should be on a "Collaborative Federalism" approach as suggested by the Kothari Commission (1964-66).

- This ensures national minimum standards set by the Centre while allowing states flexibility in curriculum, language, and pedagogy.

- **Outcome-based Funding**: Implement outcome-based funding mechanisms as recommended by the NITI AAYOGin its Strategy for New India @ 75 document.

- This allocates resources based on learning outcomes, incentivizing states to improve educational quality.

- **Decentralized School Management**: Promote decentralised school management structures as envisioned in the Right to Education Act (RTE) 2009.

- This empowers School Management Committees (SMCs) with community participation, fostering local ownership and responsiveness.

- **Teacher Training & Transfer Policy Reforms:** Advocate for reforms based on the recommendations of the TSR Subramanian Committee Report (2009).

- This includes improved teacher training programs, transparent transfer policies, and performance-based incentives to create a more motivated and effective teaching force.

- **National Curriculum Framework with State Adaptations**: Develop a flexible National Curriculum Framework (NCF) as suggested by the NCERT, allowing states to adapt it to their specific linguistic and cultural contexts. This ensures a balance between national goals and state needs.

Cauvery dispute

T.N. govt. to hold all-party meet on Cauvery dispute

What is the Cauvery water dispute ?

- The Cauvery Water Dispute is a dispute between the Indian states of **Karnataka and Tamil Nadu**, along with **Kerala and Puducherry**, over the sharing of the **Cauvery River's waters**. It involves issues of water allocation and usage rights, with historical agreements, tribunals, and court rulings playing a significant role in its resolution.

Background

- This dispute originated for the first-time way back in 1892 at the time of Britishers between the Presidency of Madras and Princely state of Mysore.

- In 1924 Mysore and Madras reached into an agreement which will be valid for 50 years. Hence, it ceased to be enforced in 1974.

- Since 1974, Karnataka started diverting water into its four newly made reservoirs, without the consent of Tamil Nadu.

- This resulted in dispute in post independent India.

The establishment of the Cauvery Water Disputes Tribunal and its final decision:

- **The Cauvery Water Disputes Tribunal (CWDT)** was established in June 1990 in compliance with Section 4 of the Inter-State Water Disputes Act, 1956.

- The CWDT gave its final award in February 2007, after 17 years, outlining the amount of water that each state should receive at different times of the year.

- Given that the total available water in the Cauvery basin throughout the four states is 740 TMC in a normal year, the Tribunal has apportioned the water as follows:

- Tamil Nadu: **419 TMC** (as opposed to 512 TMC),

- Karnataka**: 270 TMC** (as opposed to 465 TMC),

- Kerala has 30 TMCs, and 7 TMCs in Pondicherry

- The final award set aside 10 TMC for environmental purposes and 4 TMC for inevitable seawater exits.

- The tribunal ordered the formation of a monitoring authority to manage water releases.

- However, the final decision did not provide a specific methodology in circumstances where there is a water deficit owing to insufficient precipitation.

- It simply stated that in such cases, the assigned shares should be lowered accordingly.

  How is water being Shared currently?

- Water sharing in the Cauvery River is regulated by a monthly schedule between Karnataka and Tamil Nadu. In a typical year, Karnataka must release about 177 TMC of water to Tamil Nadu from June to May, including about 123 TMC during the monsoon months from June to September. Disputes often arise during the southwest monsoon season when rainfall is below expectations.

The way ahead:

- Passing a law to empower tribunals to enforce decisions is crucial for quicker and more effective resolution of these disputes.

- **In 2017, the Lok Sabha passed the Inter-State River Water Disputes (Amendment) Bill** to create a single permanent tribunal and a mediation committee, but the implementation has not yet been done.

- Allowing for **water harvesting** on a larger scale in both Karnataka and Tamil Nadu.

Kangaroo Courts

- It is defined as an unofficial court managed by a group of people to try someone as guilty even without good evidence.

- It ignores acknowledged standards of law or justice.

- The first kangaroo courts originated in the United States in 1849.

- It was first mentioned in 1853 in a book in the USA.

- It undermines the importance of the Judiciary and poses a serious challenge to the law and order situation.

- It also goes against the principle of "Rule of Law".

  Issues:

- The system does not work on the standards of law or justice.

- In Kangaroo Court, the procedure is **only conducted as a formality**.

- Kangaroo Courts are known for **working against** the phrase" innocent **until proven guilty"**.

- The court **does not allow** to appeal against its judgement.

Karnataka State Employment of Local Candidates in the Industries, Factories and Other Establishments Bill, 2024

- Karnataka halts **jobs Bill** as industry raises uproar
- **The Karnataka State Employment of Local Candidates in the Industries, Factories and Other Establishments Bill, 2024.**

- The Karnataka Cabinet has approved the Bill requiring industries, factories, and other establishments to appoint local candidates in **50% of management positions and 75% in non-management positions.**

Eligible Candidate

- **Birth and Domicile:** Born in the **State of Karnataka.** Domiciled in the State for a period of **15 years.**
- **Language Proficiency:** Capable of **speaking, reading, and writing Kannada** Passed a required test conducted by the nodal agency.
- **Educational Requirement:** Secondary school certificate with **Kannada as a language.** Alternatively, pass a **Kannada proficiency test** as specified by the nodal agency notified by the government.

Background and Demand:

- The Bill comes amid demands for 100% job reservation for Kannadigas.

- Earlier in July, Kannada organizations held rallies demanding the immediate implementation of the Sarojini Mahishi report, which recommended quotas for locals in government and private sector jobs.

- The Sarojini Mahishi Committee, led by former Union Minister Sarojini Mahishi, submitted a report in 1984 with 58 recommendations, including 100% reservation for locals in group C and D jobs in Central government departments and public sector undertakings (PSUs) operating in Karnataka.

Concern raised:

- **Industry Concerns**: Some industry representatives argue that the bill might lead to a talent shortage, especially in sectors requiring specialized skills.

- **Legal Challenges**: The bill could face legal scrutiny, especially concerning its alignment with national laws and constitutional provisions regarding the right to employment.

- **Implementation Issues**: Effective monitoring and enforcement of the bill's provisions could pose significant challenges.

Way Forward

- **Focus on Human development:** The government should **train the labour and also pose restrictions on the contract** by the industrial sector which pose a **"hire and fire" basis** and promote long-term contracts.

- **Shifting Government Focus from Employment Guarantees to Inequality Reduction**: The governments **should create an environment** through their policies such that those policies can **help minimize inequalities** in income, status, facilities, and opportunities. So, the government should **focus on its role rather than guaranteeing employment.**

- **Safeguarding Fundamental Rights in Policy Formulation :** It is crucial to guarantee that **any policy decision aligns with the Constitution of India, upholding the fundamental rights** of citizens and avoiding any violation thereof."

Leader of the Opposition

The leader of the **largest opposition party** having **not less than one-tenth seats** of the total strength of the Lok Sabha is recognised as the leader of the Opposition. The

'Leader of Opposition' is responsible for leading the Opposition party's efforts to critique and scrutinize the government, offering alternative policies, and ensuring a robust debate on legislative matters.

Role of Leader of Opposition in India

- To provide an alternative government i.e. being ready to form an **alternative government.**
- It is pretty much this role that made **Ivor Jennings** describe the Leader of Opposition as the **'Alternative Prime Minister'.**
- To **act as a bridge and facilitate communication** between the government and opposition, striving for consensus on critical issues.
- To **maintain the checks and balances** in the parliamentary system and ensure robust democratic discourse.
- To **uphold democratic principles** by ensuring robust debate, defending minority rights, and promoting democratic norms.

Status of Leader of Opposition in India

- The office of the Leader of Opposition in Lok Sabha and the Rajya Sabha was accorded statutory recognition in 1977 under **the Salary and Allowances of Leaders of Opposition in Parliament Act, 1977.**

- The rank of the Leader of Opposition in the Lok Sabha and the Rajya Sabha is equivalent to that of a Cabinet Minister. Hence, they are also entitled to a salary, allowances, and other facilities similar to that of a Cabinet Minister.

Article 361 of the Constitution

- Article 361 of the Constitution that deals with immunity to the President and the Governors.

- It states that they shall not be answerable:

- to any court for the exercise and performance of the powers and duties of his office; or

- for any act done or purporting to be done by him in the exercise and performance of those powers and duties.

Two crucial sub-clauses

- **Article 361 also has two crucial sub-clauses:**

(a) that no criminal proceedings whatsoever shall be initiated or continued against the President, or the Governor of a State, in any court during the term of his office.

(b) No process for the arrest or imprisonment of the President, or the Governor of a State, shall issue from any court during his term of office.

Immunity power of the Governor:

- **Ceases to be in office:** The police can act only after the Governor ceases to be in office, which is when either the Governor resigns or no longer enjoys the confidence of the President."

- **Rameshwar Prasad v Union of India:** In the landmark 2006 ruling in Rameshwar Prasad v Union of India, that outlined the immunity enjoyed by the Governor "even on allegation of personal malafides," the Supreme Court held that "the position in law, is that the Governor enjoys complete immunity."

Instance When Criminal Proceedings were Suspended till a Governor Completed Term in Office

- **Demolition of the Babri Masjid Case:** In 2017, the Supreme Court **allowed fresh charges of criminal conspiracy** against UP Chief Minister Kalyan Singh in the **1992 demolition of the Babri Masjid.**
- However, the **trial did not take place since he** was then the **Governor of Rajasthan.**
- **Ruling by Court:** The court held that, **being the Governor of Rajasthan, he is entitled to immunity under Article 361 of the Constitution as long as he remains Governor of Rajasthan.**
- The Court of Sessions will frame charges and move against him as soon as he ceases to be Governor.

Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA)

It is a law passed by the Indian government in 2005 that guarantees the "**right to work**" to rural citizens of India. Under this, the government assures a **minimum of 100 days of unskilled manual work** to an adult member of an eligible rural household. **The main objective** of the MGNREGA is to provide employment to rural citizens and improve their economic conditions.

Significance of MGNREGA

- **Infrastructure:** MGNREGA has helped to improve the infrastructure and natural resource base of the rural poor, which has had a positive impact on the

environment. The program has also helped to improve the accessibility of basic services in rural areas, such as water, sanitation, and housing.

- **Compensating income loss:** As per a study conducted by Azim Premji University across four states (Bihar, Karnataka, Maharashtra, and Madhya Pradesh), MGNREGA helped in compensating 20-80% of the income loss incurred because of the Covid-19 induced lockdown.

- **Preventing migration to urban areas:** The goal is also to decrease migration from rural areas to urban areas by utilizing the untapped labor in rural areas.

- **Livelihood:** It seeks to improve the livelihoods of the rural poor and create durable assets such as wells, ponds, roads, and canals.

Challenges and issues

- **Corruption:** There have been instances of corruption, particularly in the form of embezzlement of funds and manipulation of records. For example, a recent example of an IAS officer in Jharkhand was accused of corruption in MGNREGA.

- **Limited job opportunities:** MGNREGA provides only 100 days of employment per person per year, which may not be enough to meet the needs of all rural citizens.

- **Lack of awareness:** Many rural citizens are not aware of their rights under MGNREGA, and as a result, they do not take advantage of the benefits it offers.

- **Bureaucratic delays:** The program is often bogged down by bureaucratic delays and inefficiencies, making it difficult for citizens to access benefits in a timely manner. For example, delay in payments in Andhra Pradesh.

MGNREGs CONTRBUTION TO SUSTAINABLE DEVELOPMENT GOALS (SDGs)

Anti-Defection Law

- The Anti-Defection Law (ADL) in India is a legal framework that seeks to curb the practice of political defection by members of the legislature, with the goal of promoting political stability and maintaining party discipline. Its primary aim is to deter the Members of Parliament and Members of State Legislatures from switching parties or voting against their party's directives by imposing the threat of disqualification.

- The Anti-Defection Law (ADL) in India was introduced through the **52nd Amendment Act of 1985.**

- It added the **Tenth Schedule** to the Indian Constitution, which contains the provisions related to the Anti-Defection Law.

- Later, **the 91st Amendment Act of 2003** made some changes to certain provisions of the Anti-Defection Law

Grounds for Defection:

- **Voluntary Give Up:** If an elected member voluntarily gives up his membership of a political party.

- **Violation of Instructions:** If he votes or abstains from voting in such House contrary to any direction issued by his political party or anyone authorized to do so, without obtaining prior permission.

- **Elected Member:** If any independently elected member joins any political party.

- **Nominated Member**: If any nominated member joins any political party after the expiry of six months.

Judicial observations regarding defection in India:

- **Viswanathan vs. Hon''ble Speaker, Tamil Nadu Legislative Assembly (1995):** In this case, the Supreme Court ruled that the Speaker of a legislative assembly has the power to decide on cases of defection and that the decision of the Speaker is final and cannot be challenged in a court of law.

- **Kihoto Hollohan vs. Zachillhu and Others (1992):** In this case, the Supreme Court of India upheld the constitutionality of the law and ruled that the provisions were necessary to prevent the destabilization of governments and to ensure the integrity of the electoral process.

- **Ravi S. Naik vs. Union of India (1994):** In this case, the Speaker or Chairman of the relevant legislative body can disqualify an elected representative for defection.

Advantages of Anti-Defection Law:

- It prevents political defections motivated by the lure of some benefits.

- It provides for greater stability in the body politic by checking the propensity of legislators to change parties.

- It facilitates the democratic realignment of parties in the legislature by way of the merger of parties.

- It reduces corruption at the political level as well as non-developmental expenditure incurred on irregular elections.

- It gives a clear-cut constitutional recognition of the existence of political parties.

Criticism of Anti-Defection Law:

- It bans individual defection but allows group defection through a merger. This distinction seems irrational.

- It does not provide for the expulsion of a legislator from his/her party for his/her activities outside the legislature.

- Its discrimination between an independent member and a nominated member is illogical. If the former joins a party, he/she is disqualified while the latter is allowed to do the same.

Broadcasting Bill

The Bill proposes to scrap the Cable Television Networks (Regulation) Act of 1995, which regulates the broadcast sector, in favour of unified regulation for broadcasting, OTT, Digital Media, DTH, IPTV.

Broadcasting Services (Regulation) Bill

- The Ministry of Information and Broadcasting in India proposed the **Broadcasting Services (Regulation) Bill, 2023**, recognizing the need for a comprehensive law to streamline the regulatory framework in the digitized broadcasting sector.

- The bill, seemingly a **forward-looking and adaptable framework** for the evolving media industry, sets the tone for the future of broadcasting regulation in India.

- The Bill comprises of Six Chapters, 48 Sections and three Schedules.

Key Highlights:

- **Consolidation and Modernization:** It addresses a long-standing need of consolidating and updating the regulatory provisions for various broadcasting services under a single legislative framework. It extends its regulatory purview to encompass broadcasting over-the-top (OTT) content and digital news and current affairs currently regulated through IT Act, 2000 and regulations made there under.

- **Strengthens the Self-Regulation Regime:** It enhances self-regulation with the introduction of 'Content evaluation committees' and evolves the existing Inter-Departmental Committee into a more participative and broader 'Broadcast Advisory Council'.

- **Differentiated Programme Code and Advertisement Code:** It allows for a differentiated approach to Programme and Advertisement Codes across various services and require self-classification by broadcasters and robust access control measures for restricted content.

- **Accessibility for Persons with Disabilities:** The bill addresses the specific needs of persons with disabilities by providing for enabling provisions for issue of comprehensive accessibility guidelines.

- **Statutory Penalties and Fines:** The draft Bill introduces statutory penalties such as: advisory, warning, censure, or monetary penalties, for operators and broadcasters. Provision for imprisonment and/or fines remains, but only for very serious offenses, ensuring a balanced approach to regulation.

- **Equitable Penalties:** Monetary penalties and fines are linked to the financial capacity of the entity, considering their investment and turnover to ensure fairness and equity.

Concerns Around Released Draft of Broadcasting Services (Regulation) Bill, 2023

Concerns about Erasure or Selective Representation

- The draft raises concerns that the proposed bill could lead to the erasure or selective representation of Indian minority communities.

- The regulatory framework might influence how minority communities are portrayed in broadcasting, potentially shaping a dominant narrative.

Ambiguous Framing of Point 36

- There are specific concerns about the broad and ambiguous framing of point 36 in the draft bill.

- The language used in this section is an example of the potential ambiguity and broad scope of the regulatory powers.

- It gives the authorised officer the ultimate power to prohibit the transmission of any program or channel not in conformity with prescribed codes or likely to promote disharmony.

Re-enforces Government Influence

- Experts have expressed concerns about the potential influence of the government in the regulatory process and the independence of the authorised officer working under government directions.

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- Such a connection could compromise the impartiality of decisions related to program prohibition.

- Hiring an authorised officer under government directions cannot be separated from the government's sphere of influence.

- The regulatory process, as outlined in the draft bill, may not be entirely independent from governmental oversight.

  Way Forward: A Regulation on Conflict of Interest

- The Indian government has not effectively managed conflicts of interest in the media industry, especially the connections between MSOs (Multi-Service Operators), politicians, and vertical integration.

- This has led to a loss of trust and the issues with the CTRN Act show a significant lack of trust.

- Therefore, a regulation on conflicts of interest is the need of the hour.

Anti-conversion laws

Anti-conversion laws refer to laws that are designed to **prevent or prohibit the conversion of one religion to another**. These laws may be used to prevent individuals from leaving a particular religion or to prevent religious groups from proselytizing or recruiting members from other religious groups.

- The specific provisions of anti-conversion laws vary from place to place and may be enforced through criminal or civil penalties. In some cases, anti-

conversion laws are used to protect the dominant religion in a particular society or to suppress minority religions.

Need for Anti-Conversion Laws:

- **Protection of cultural and social cohesion**: Some people believe that these laws are necessary to prevent conflicts and divisions within a community that can arise from religious conversions.

- **Preservation of traditions and beliefs**: Supporters argue that anti-conversion laws help safeguard the influence and power of a particular religion by preventing erosion due to conversions.

- **Prevention of coercion and deception**: Advocates claim that these laws are essential to protect individuals from being forced or deceived into converting to another religion.

- **Instances of fraudulent marriages**: There have been cases where individuals were forced to convert after marrying someone from a different religion, leading to concerns about deceitful practices.

- **Judicial recognition**: The Supreme Court has acknowledged incidents of forced conversion, highlighting their violation of an individual's right to freedom of religion, as well as their impact on the secular foundation of society.

Challenges of conversion laws:

- **Freedom of conscience –** The petitioners argued that restrictions on conversion contravened their fundamental rights since **Article 25(1) of the Constitution** should include the right to convert under the word **'propagation'.**

- However, the court held that **Article 25** does not give the right to convert but only "to transmit or spread one's religion by an exposition of its tenets".

- **Judicial criticisms:** In 1977, a five-judge upheld the constitutionality of India's first two anti-conversion laws: the **Orissa Freedom of Religion Act, 1967** and Madhya Pradesh's MP Dharma Swatantrya Adhiniyam, 1968.

- But the verdict in this case, Stainislaus vs State of Madhya Pradesh, has been criticised by constitutional experts because the court held that this right does not include voluntary conversions.

- Burden of proving that the conversion was 'lawful' lies on the person who 'caused' the conversion. This provision ignores the opinion of those who converted and the focuses only on the "converter.

- **Substance over form:** It is also difficult to ascertain whether a religious conversion is truly conducted solely for the purpose of marriage.

- **Watering down provisions:** In 2021, both the Gujarat and Allahabad High Courts have watered down the provisions relating to inter-faith marriages in the anti-conversion laws of their states.

- **Pending matters:** The constitutional validity of the anti-conversion laws in at least four states – Uttar Pradesh, Uttarakhand, Himachal Pradesh and Madhya Pradesh – has been pending before the Supreme Court since February 2021.

- **Vagueness in laws:** The UP-ordinance law is criticised for the ambiguous terms used like "undue influence", "coercion", "allurement or marriage" for specifying the grounds for criminalising conversions.

- **Human rights:** Several petitions have been filed before several High Courts challenging anti-conversion laws.

Way Forward

- **Reviewing the existing laws:** The current anti-conversion laws in India should be reviewed to ensure that they are consistent with international human rights standards and the Indian Constitution. This review should be carried out by experts in the field of human rights and religious freedom and should consider the views and concerns of all relevant stakeholders.

- **Limiting the scope of the laws:** The scope of anti-conversion laws should be limited to prohibit only forced or fraudulent conversions while allowing genuine and voluntary conversions. This would help to ensure that the laws are not used to violate the right to freedom of religion or to discriminate against certain religious groups.

- **Prioritize dialogue and education:** There should be more efforts made to promote dialogue and understanding between different religious groups, with a focus on education and awareness-raising about different religions. This could help to reduce tensions and conflicts between religious groups and promote greater respect for diversity and freedom of religion.

- **Monitoring and Reporting:** To ensure that the laws are not being misused, there should be an independent body that will monitor the law's implementation and take complaints, to ensure that they are being implemented fairly and with transparency and also to report any abuses to the authorities.

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DEFENCE AND SPACE

Project-76.

The Defence Research and Development Organisation (DRDO) has taken up a preliminary study on the design and development of an indigenous conventional **submarine under Project-76.**

- A formal case for project sanction will be put up to the **Cabinet Committee on Security (CCS)** after the initial preliminary study is completed.

Submarines

- Submarine are naval vessels or ships that is capable of **propelling itself beneath the water** or underground as well as on the water's surface.
- Submarines missiles or weapon systems are called a **torpedo**
- **First used:** Submarines were first employed in naval warfare during **World War I (1914–18),** when **Germany employed** them to destroy surface merchant vessels.
- **Submarines in Indian Navy:** The Navy has a 30-year submarine building programme and after the **P-75I,** it intends to design and build conventional submarines indigenously.

    1. **Nuclear ballistic missile submarines (SSBN):**

- The **Arihant class submarines** comprising INS Arihant (S2) and INS Arighat (S3) are developed under the **Advanced Technology Vessel (ATV)** project to design and build nuclear-powered submarines.

   2. Convention Diesel Electric submarines:

- **Kalvari Class:** INS Kalvari is the first of the **six Scorpene class** submarines built under Project 75, commissioned on 14 December 2017.

- **Sindhughosh Class:** Sindhughosh class submarines are the Kilo class diesel-electric submarines and have a displacement of 3,000 tonnes.

- **Shishumar Class:** The Shishumar class vessels (Type 1500) are **diesel-electric submarines** being developed by the *German yard Howaldtswerke-Deutsche Werft.*

   Project-76

- **Project-76** is a program to design & develop a new generation of indigenous conventional **Air Independent Propulsion** equipped diesel-electric attack submarines for the navy.

- The Project-76 will be a continuation of the **Advanced Technology Vessel (ATV)** project, to build a conventional submarine

- The **Arihant** series of **nuclear ballistic missile submarines (SSBN)** are being built under the project.

- **Successor to:** The project will be a successor to **Project-75 (France)** and **Project 75I (German/ Spanish)** and harness the learning and the best of their technology.

- **Built by:** The project will be a joint effort by **DRDO** and the **Warship Design Bureau** of Indian Navy (design of the submarine is expected to be completed by 2026)

- **Fleet Size:** The Indian Navy is anticipating to build 6 submarines under Project 76 with the weight ranging from 3000-4000 tons.

- **Technology:** It is expected to features some of the very advance technologies such as AIP technology, indigenous Weapon Control system, & Lithium-ion batteries, advanced acoustic absorption techniques, low radiated noise levels, long-range guided torpedoes, tube-launched anti-ship missiles, sonars and sensor suites.

- **Indigenous Content:** The Project will have close to **70-80% indigenous content**, including weapons, missiles, combat management system, sonars, communications, Electronic Warfare suite, mast and periscope.

Project-75I (India)

- It is a military acquisition initiative which aims to procure The **Scorpene class diesel-electric attack submarines** with fuel cells and Air-Independent Propulsion System (AIP) for the Indian Navy to build India's naval strength and develop indigenous submarine-building capabilities.

- **Stealth capability:** The AIP technology in Project 75I enables the submarines stay submerged for up to two weeks as opposed to the scorpene class submarines under Project 75 which has to come up the **surface every 48 hours**.

- **Strategic Partnership model: Mazagaon Dock Limited** has signing an agreement with German shipbuilder ThyssenKrupp Marine Systems (TKMS) in June 2023 to bid for the project.
- Larson & Toubro also signed a teaming agreement with **Spain's Navantia** submitting a techno-commercial bid for the project.

Scorpene Class Submarines

- **Project-75:** The MDL has built six Scorpene class submarines under the Project-75, as part of a $ 3.75 billion deal signed in October 2005.
- **Strategic Partner:** The French defence firm, Naval Group allowed for transfer of technology.

Air Independent Propulsion

- It is a marine propulsion technology that increases the stealth and endurance of a **non-nuclear submarine** to operate without access to atmospheric oxygen (by surfacing or using a snorkel)
- **Significance:** An AIP module acts as a force multiplier as it enables conventional submarines to remain submerged for longer duration thereby increasing their endurance and reducing chances of detection.
- **Types: Closed cycle diesel engine (CCD), autonomous submarine energy module (MESMA), stirling engine and fuel cells.**
- **Indigenous AIP technology: Fuel Cell-based Air Independent Propulsion (AIP)** system of DRDO's Naval Materials Research Laboratory (NMRL) will soon be fitted onboard **INS Kalvari.**
- **Fuel cells:** The AIP module is **phosphoric acid based** and has a stack of fuel cells generating hydrogen with the power output of each fuel cell being

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13.5 kW which will eventually be scaled up to 20 kW to meet future submarine requirements of Project-76

Commissioning Status:

- **The first four: INS Kalvari, INS Khanderi, INS Karanj and INS Vela** were commissioned between 2017 and 2021.
- **INS Vagir,** was commissioned in January this year.
- **INS Vagsheer:** The sixth submarine **INS Vagsheer** began her sea trials.

In September, astronomers predict a rare nova explosion (explosion of T Coronae Borealis) will brighten our night sky.

T Coronae Borealis:

- T Coronae Borealis is known as the **"Blaze Star"** or **"T CrB."**

- The T CrB nova was last observed from Earth in 1946.

- This event will occur approximately **3,000 light-years from Earth**.

Nova Explosion:

- *What is a Nova Explosion?*
- A nova explosion occurs when a **star explodes** due to its **interaction with a nearby star**.
- **Explosion Trigger:** When the heat and pressure become excessive, a thermonuclear explosion occurs.
- **Brightness Change:** This explosion makes the white dwarf appear much brighter in the sky.

- **Post-Explosion:** After the explosion subsides, the star returns to its original brightness.
- **Mechanism:** It is a recurring event during the prolonged death of two neighbouring stars within the same system.

Visibility of the Nova:

- **Naked Eye Observation:** The nova can be seen without a telescope for about a week.
- **Appearance:** During this time, it will look like a new star has appeared in the sky.

Nova:

- **Origin of Name:** The term "nova" comes from the Latin word for **"new."**
- A nova is a **transient astronomical event**.
- In this event, a new bright star appears suddenly and then fades over weeks or months.
- Nova occurs with a system of two stars.
- Red giant
- White dwarf
- It revolves around each other.
- White dwarf attracts matter from red giant's atmosphere when they are close
- This causes nuclear explosions and ejection of gases.

Causes and Characteristics:

- **Star Involvement:** All observed novae involve white dwarfs in close binary systems.
- **Variations:** The appearance of a nova depends on the circumstances of the two progenitor stars.
- **Main Sub-Classes:** Novae are categorised into **classical novae, recurrent novae (RNe),** and **dwarf novae**. All are types of cataclysmic variable stars.

Supernova:

- A supernova is the explosion of a **massive star.**

Main Types of Supernovae

- Supernovae are broadly categorised into **two main types** based on their explosion mechanisms.

   Type 1: Thermonuclear Runaway (Type Ia SNe)

- **Occurrence:** Happens in binary star systems where at least one star is a white dwarf.
- **Mechanism:** The white dwarf undergoes a thermonuclear explosion.

   Type 2: Core-Collapse

- **Occurrence:** Occurs in stars with masses greater than **eight times the mass of our sun**.

- Mechanism: The star collapses in on itself and explodes.

Subtypes of Supernovae

- **Classification by Spectra:** Each main type has various subtypes, which are classified based on the elements observed in their spectra.

Causes of Supernovae

Supernova from a Dying Massive Star

- One type of supernova occurs when a massive star ends its life with a huge explosion.

- **Mass Requirement:** This happens in stars at least five times the mass of our sun.

- **Fuel Consumption:** Massive stars burn a lot of nuclear fuel in their cores, producing immense energy and heat.

> *Balance of Forces:*
>
> **Gravity:** Tries to compress the star into a tight ball.
>
> **Nuclear Pressure:** The burning fuel creates outward pressure, balancing the inward pull of gravity.

Collapse and Explosion:

- When the star runs out of fuel, it cools, reducing pressure.

- Gravity takes over, causing the star to collapse rapidly.

- This rapid collapse creates shock waves, leading to an explosion of the outer part of the star.

Supernova from a Binary Star System

- **Binary Systems:** Another type of supernova can occur in systems where two stars orbit each other.

- **White Dwarf:** Involves at least **one Earth-sized white dwarf,** the remnant of a star similar to our sun after it has run out of fuel.

Collision or Accretion:

- If a white dwarf collides with another star or accumulates too much matter from its companion, it can explode.

- This explosion is a powerful event, resulting in a supernova.

Jeff Bezos-led Blue Origin has partnered with the Space Exploration and Research Agency (SERA) to give common Indian citizens an opportunity to go into space in New Shepard spacecraft.

New Shepard Spacecraft:

- It is a **suborbital space travel vehicle**, offering a unique experience for both scientific research and space tourism.

- It is named after **Alan Shepard**, the **first American in space**, New Shepard is a fully reusable rocket system designed for human spaceflight.

- It consists of two main components: a reusable booster and a pressurized crew capsule.

- The capsule can accommodate six passengers, providing each with a window seat to witness breathtaking views of Earth.

- Among its notable features are the largest windows ever flown in space, offering an unparalleled visual experience for astronauts.

- New Shepard''s 11-minute journey takes passengers beyond the **Karman line**. During the flight, passengers experience several minutes of weightlessness before making a controlled descent back to Earth aided by parachutes.

- In addition to its **space tourism potential**, New Shepard serves as a valuable platform for scientific research.

What is the Karman line?

- Located at **100 km (62 miles) above sea level**, it is an imaginary line that demarcates the earth's atmosphere from space.

- It was established in the 1960s by a record-keeping body called the **Fédération Aéronautique Internationale (FAI).**

- It was named after aerospace pioneer **Theodore von Kármán.**

- Though not all scientists and spacefarers accept it (for example, the Federal Aviation Administration, NASA, and the U.S. military place the line between outer space and the atmosphere at 80 km (50 miles) above the Earth's surface) , a majority of countries and space organisations recognise this boundary between earth sky and space.

- Anything traveling above the Kármán line needs a propulsion system that doesn't rely on lift generated by Earth's atmosphere—the air is simply too thin that high up.

Astronomers recently discovered a new radio galaxy using the LOw-Frequency ARray (LOFAR).

LOw-Frequency ARray (LOFAR):

- It is a highly innovative, pan-European distributed **radio interferometer** and the first of its kind.

- It observes the Universe at low radio frequencies, close to the FM radio band, from **90 to 200 MHz.**

- It was developed by the **Dutch Institute for Radio Astronomy (ASTRON)** with the goal of exploring the early, distant universe, solar activity, and the terrestrial atmosphere.

- LOFAR can observe in several directions simultaneously, which allows for a multi-user operation.

- For this reason, LOFAR is novel in its design because it is the first telescope that can look at the entire sky at the same time, unlike other telescopes which you have to point.

- LOFAR does not have moving parts; steering and tracking across the sky are achieved by treating the signal from the individual antennas in each station with advanced digital beam-forming techniques that make the system agile, allowing for rapid repointing of the telescope as well as giving the potential for multiple simultaneous observations in different directions.

- The LOFAR main core is based in the north of the Netherlands, with other stations located in France, Germany, and the United Kingdom.

  What are Radio Galaxies?

- Radio Galaxies, also known as **radio-luminous galaxies** or **radio-loud galaxies**, are a particular type of active galaxy that emits more light at **radio wavelengths** than at **visible wavelengths**.

- These happen through the interaction between charged particles and strong magnetic fields related to **supermassive black holes** at the galaxies' center.

- They are driven by **non-thermal emissions**.

- They are much bigger than most of the other galaxies in the universe.

- The first radio galaxy to be discovered, and still the brightest, is called **Cygnus A**.

Advanced Medium Combat Aircraft

The **Defence Ministry** is working on a model to involve private industry in the works of Advanced Medium Combat Aircraft (AMCA).

- The design of the AMCA is ready and the prototype is expected to roll out by 2028-29 and the production is expected to begin from 2032-33.

   Advanced Medium Combat Aircraft (AMCA)

- Advanced Medium Combat Aircraft (AMCA) is India's **fifth-generation multirole fighter jet** that will put India in a select group of nations that have their own fifth-generation fighter aircraft.

- **Size:** This aircraft will be bigger than other fighters in the Indian Air Force inventory.

- **Organizations Involved:** Aeronautical Development Agency & Hindustan Aeronautics Limited

- The development of AMCA is planned to be carried out in two phases, a **MK1** with the General Electric F414 engine and a **Mk2** with a more powerful engine planned to be co-developed in partnership with Saran of France for which discussions are underway.

Features:

- **Stealth:** The 25-tonne twin-engine aircraft will have advanced **stealth features** to avoid detection by enemy radar.

- **Fuel & Weapons:** The aircraft will have a large, concealed internal fuel tank of **6.5-tonne capacity**, and an internal weapons bay for a range of weapons, including indigenous weapons, to be buried in its belly.

- **Engine Specifications:** The AMCA Mk1 variant will have the US-built GE414 engine of the 90 kilonewton (kN) class.

- The more advanced AMCA Mk2 will fly on the more powerful 110kN engine.

- This will be developed **indigenously** by **DRDO's Gas Turbine Research Establishment (GTRE)** in collaboration with a foreign defence major.

- **Specialized Design Features:** To maximize engine performance and reduce radar emissions, the AMCA will use cutting-edge design elements like a serpentine air intake duct and a diverterless supersonic inlet.

Significance of Advanced Medium Combat Aircraft (AMCA)

- The AMCA project is particularly critical as it is India's only FGFA that is planned for induction at a time when a series of such FGFA development projects are making progress worldwide. China has made great progress in the development and deployment of FGFAs, and has recently deployed its ***twin-engine J-20 FGFA in Tibet bordering India.***

- **Boost to Self Reliance (Atmanirbharta):** After India withdrew from its *Fifth Generation Fighter Aircraft (FGFA) partnership with Russia in 2018,* the AMCA project highlights India's pursuit of self-reliance in defense technology.

- **Advantages of Stealth:** As a fifth-generation fighter, the AMCA will have **a low electromagnetic signature**, increasing survivability and lethality in modern combat conditions.

- **Enhanced Capabilities:** Using enhanced sensors and weaponry, the AMCA will be able to detect and engage hostile aircraft while remaining undetected, providing a major edge over fourth-generation equivalents.

- **Operational Implications:** The IAF's need for seven AMCA squadrons emphasizes the importance of increasing India's air combat capability in the face of diminishing fighter squadron numbers.

- **Enhancing Strategic Posturing:** While countries like the **United States, China, and Russia have fifth-generation stealth fighters**, the AMCA will add India to this exclusive list, strengthening its strategic position in the region.

- **Addressing Operational Gaps:** As older aircraft are retired, the induction of AMCA squadrons will fill crucial operational gaps, guaranteeing a capable air combat force in the future.

Stealth Technology

- Stealth is the combination of **passive low observable (LO)** features and active emitters such as *low-probability-of-intercept radars, radios and laser designators.*

- **Features:** These are usually combined with active measures such as carefully planning all mission maneuvers in order to minimize the aircraft's radar cross-section, since common actions such as hard turns or opening bomb bay doors can more than double an otherwise stealthy aircraft's radar return.

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Generations of Jet Fighters

First Generation Fighters: Subsonic fighter planes constructed between the mid-1940s and mid-1950s are considered first generation fighters.

- The planes possessed a *basic avionic system*, but **no radar or self-protection equipment**.

Second Generation Fighters: In contrast to the previous generation of aircraft that carried out their attacks with **cannons, machine guns, unguided bombs, and rockets**, these jets were capable of reaching **supersonic speed** and were outfitted with **semi guided missiles**.

- The most well-known second-generation fighter is probably the **MiG-21.**

Third Generation Fighters: The third generation of aircraft, produced in the early 1960s and early 1970s, featured more sophisticated weaponry and maneuverability.

- These aircraft, which included the **Mirage III and MiG-23,** had the ability to fire at targets that were outside of the pilot's field of vision.

Fourth Generation Fighters: Conceptualized in the 1970s, fourth generation fighters went into service in the early 1980s. Additionally, these aircraft had **fly by-wire systems** installed, which substituted electronic flight control for human combat control.

- The **French Mirage 2000**, the **Soviet MiG29**, the **American F15**, and the **French F16** are notable fighters from this generation.

Fifth-generation multi-role fighters: They have features such as all-aspect stealth, **Low Probability of Intercept Radar (LPIR)**, high-performance airframe, engine capable of **supercruise without afterburner**,

- The **Lockheed Martin F-22 Raptor**, **the world's first combat-ready fifth-generation fighter, joined the US Air Force in 2005.**

The Indo-Russian Rifles Private Limited (IRRPL), a joint venture between India and Russia, has successfully delivered 35,000 AK-203 Kalashnikov assault rifles to the Indian Army.

AK-203 Rifle:

- It is a modern firearm originating from Russia, designed by the renowned engineer Mikhail Kalashnikov between 2007 and 2010.

- It is a **gas-operated**, **magazine-fed**, select fire assault rifle.

- It is a version of the AK-200 rifle chambered for the 7.62x39mm cartridge used in the Indian Army.

- The weapon has the traditional advantages of **Kalashnikov assault rifles**: reliability and ease of maintenance.

- These AK-203 rifles are produced in India using proprietary Russian technologies and certified equipment, ensuring high product quality and adherence to specifications.

- It will be manufactured by **Indo-Russian Rifles Private Limited (IRRPL).**

- IRRPL is a joint venture between India and Russia, set up in 2019 to produce AK-203 rifles in the **Korwa Ordnance Factory in Amethi district, Uttar Pradesh.**

- The joint venture plans to ensure **100% localisation of the production** of AK-203 rifles in India.

- India is the first country outside Russia which has started the production of the AK-200 series assault rifles.

Features of AK-203 Rifle:

- **Weighing 3.8 kg**, this rifle measures between 880 and 940 mm in length with the stock extended, while its barrel is 415 mm long.

- Its mechanism is based on a gas-operated action with a rotating bolt, allowing a firing rate of approximately **700 rounds per minute**.

- With an initial velocity of **715 m/s**, the AK-203 offers an effective firing range between 400 and 800 meters, depending on sight adjustments.

- The weapon is fed by a 30-round detachable box magazine, although a 50-round quad-column magazine can also be used for increased capacity.

- It is equipped with adjustable iron sights, and picatinny rails allow the addition of various optical sighting systems.

UGRAM

'Ugram' is a state-of-the-art indigenous assault rifle. It has been developed by the **Armament Research and Development Establishment (ARDE),** a unit of DRDO, in collaboration with a private industry partner. It was developed in less than 100 days. It has been developed as per the General Staff Qualitative Requirements (GSQR) of the army into consideration.

Gallantry Medal

- Haryana seeks gallantry medal for 6 cops.

  Gallantry Awards

- **Gallantry Awards in India are prestigious honours bestowed upon personnel of the Indian armed forces and occasionally civilians, recognizing their bravery, valor, and sacrifice.**

- These awards are given for displaying conspicuous gallantry, indomitable courage, and extreme devotion to duty.

- The President of India confers these awards in the name of the Republic of India.

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Gallantry (Military) Awards of India

Wartime Awards

(Awarded for most conspicuous bravery in the presence of enemy)

(Eligibility – Army, Navy and Airforce officers, Nursing Members in Armed Force, Civilian Citizens)

Param Vir Chakra

Highest Military Award

Established – 1950

Maha Vir Chakra

Second Highest Military Award

Established – 1950

Vir Chakra

Third Highest Military Award

Established – 1950

Peacetime Awards

(Awarded for most conspicuous bravery other than in the presence of enemy)

(Eligibility – Army, Navy and Airforce officers, Nursing Members in Armed Force, Civilian Citizens)

Ashoka Chakra

Highest Peacetime Military Award

Established – 1952

Kirti Chakra

Second Highest Peacetime Military Award

Established – 1952

Shaurya Chakra

Third Highest Peacetime Military Award

Established – 1952

Eligibility-

The following categories of persons shall be eligible for the Param Vir Chakra, the Maha Vir Chakra and the Vir Chakra:

- Officers and men and women of all ranks of the Naval, Military and Air Forces, of any of the Reserve Forces, of the Territorial Army, Militia and of any other lawfully constituted Armed Forces.

- Matrons, Sisters, Nurses and the Staff of the Nursing Services and other Services pertaining to Hospitals and Nursing, and Civilians of either sex serving regularly or temporarily under the orders, directions or supervision of any of the above-mentioned Forces.

Conditions of Eligibility

- The Param Vir Chakra is awarded for most conspicuous bravery or some daring or pre-eminent act of valour or self-sacrifice, in the presence of the enemy, whether on land, at sea, or in the air.

- The Maha Vir Chakra is awarded for acts of conspicuous gallantry in the presence of the enemy whether on land, at sea or in the air.

- The Vir Chakra is awarded for acts of gallantry in the presence of the enemy, whether on land or at sea or in the air.

The following categories of persons shall be eligible for the Ashoka Chakra, the Kirti Chakra and the Shaurya Chakra:

- Officers and men and women of all ranks of the Army, the Navy and the Air Force, of any of the Reserve Forces, of the Territorial Army, Militia and of any other lawfully constituted forces.

- Members of the Nursing Services of the Armed Forces.

- Civilian citizens of either sex in all walks of life and members of Police Forces including Central Para-Military Forces and Railway Protection Force.

Conditions of Eligibility:

- The Ashoka Chakra is awarded for most conspicuous bravery or some act of daring or pre-eminent act of valour or self-sacrifice otherwise than in the face of the enemy.

- The Kirti Chakra is awarded for conspicuous gallantry otherwise than in the face of the enemy.

- The Shaurya Chakra is awarded for gallantry otherwise than in the face of the enemy.

- All the gallantry awards may be awarded posthumously.

- Persons recommended for the award shall not be involved in any adverse report or should not have been conveyed any displeasure or censure or given any punishment in a court martial proceeding or through administrative action.

INS Brahmaputra

INS Brahmaputra is the first of the indigenously built "Brahmaputra" class-guided missile frigates. The Brahmaputra class, which replaces the Talwar class, is an

indigenous upgrade on the Godavari class of frigates. The class's next two ships, INS Betwa and INS Beas, were similarly given river names; INS Brahmaputra is the class lead ship. It was **built by state-run Garden Reach Shipbuilders and Engineers Limited** (GRSE).

- The ship has a displacement of 5,300 tonnes, a length of 125 metres, and a beam of 14.4 metres

- It is capable of speeds of more than 27 knots.

- The ship is manned by a crew of 40 officers and 330 sailors.

- The ship is fitted with **medium-range, close-range and anti-aircraft guns**, **surface-to-surface** and **surface-to-air missiles,** and **torpedo launchers.**

- The ship has a wide **array of sensors** covering all facets of maritime warfare and is **capable of operating Seeking and Chetak helicopters.**

Kargil War

The Kargil War, also known as the Kargil conflict, occurred between **May and July 1999.** During this time, Pakistani soldiers and militants illegally crossed the Line of Control (LoC) and occupied strategic positions within Indian territory to launch attacks. In response, the Indian armed forces-initiated Operation Vijay to reclaim these positions. The conflict officially ended on **26 July 1999,** with India declaring victory over Pakistan, leading to the establishment of **Kargil Vijay Diwas.**

Kargil Vijay Diwas:
- Kargil Vijay Diwas, or Kargil Victory Day, is a significant day observed annually on July 26 in India.
- The Kargil war of 1999 was the first military confrontation in a nuclearized South Asia, and arguably the first real war between two nuclear states.

INDIA'S KARGIL TRIUMPH

3 May 1999:
Pakistan intrudes atop heights of Kargil; local shepherds alert Indian Army of intruders

Mid May 1999:
Indian Army mobilizes troops from Kashmir to Kargil as Pakistan denies any involvement of intrusion

23 May 1999:
Army Chief General Ved Prakash Malik visited the Kargil sector and reviewed the modalities of the operation

26 May 1999:
IAF launches air strikes against Pakistani infiltrators

31 May 1999:
Then-PM Atal Bihari Vajpayee declares 'war-like situation' with Pakistan

2-4 July 1999:
India recaptures Tiger Hill after 11-hour long battle

15 June 1999:
Then-POTUS Bill Clinton urges Pak PM Nawaz Sharif to pull troops out of Kargil

13 June 1999:
India recaptures Tololing peak

6-9 June 1999:
India regains 2 positions in Batalic sector

5 June 1999:
Pakistan's involvement confirmed by Indian Army through documents

3 June 1999:
Lieutenant K Nachiketa handed over to India by Pakistan

5 July 1999:
Then Pak PM Nawaz Sharif announces Pak Army's withdrawal from Kargil after meeting with Bill Clinton

11 July 1999:
Pakistan forces begin to retreat as India recaptures major peaks in Batalic region

14 July 1999:
Then-PM Vajpayee declares 'Operation Vijay' successful

26 July 1999:
Kargil War officially comes to an end

DUTY. COURAGE. VALOUR.

Significance of Kargil Vijay Diwas:

- Kargil Vijay Diwas is a day of national pride and remembrance. It marks the successful culmination of the Kargil War. The war was characterized by intense combat in challenging mountainous terrain and adverse weather conditions. Despite these hardships, the Indian Army's perseverance led to the eventual withdrawal of Pakistani forces and the restoration of Indian control over the territory.

- The day is dedicated to honouring the 527 Indian soldiers who lost their lives during the conflict. Their sacrifices are a testament to their courage and commitment to defending the nation's sovereignty.

Impact of Kargil War:

- **Global Recognition of the Line of Control (LoC):**The international community largely recognized the LoC as the de facto border between India and Pakistan, reinforcing India's stance on the territorial integrity of Jammu and Kashmir.

- **Strengthened Strategic Partnerships:** Kargil also marked the turning point in Indo-US relations. India was regarded as a responsible nuclear actor in the international arena leading to the next step in strategic partnership, culminating in the Indo- US nuclear deal.

- **Diplomatic Gains:** The war placed significant diplomatic pressure on Pakistan, culminating in a high-profile visit by Pakistan's Prime Minister Nawaz Sharif to the U.S. on July 4, 1999, where he faced strong criticism from the US President. This international condemnation of Pakistan's actions helped isolate it diplomatically.

- **Highlighting Nuclear Diplomacy:** The conflict brought global attention to the volatile relationship between India and Pakistan, especially concerning nuclear risk. The war underscored the potential for conflict escalation in a nuclear-armed region.

Khaan Quest exercise

- Army contingent in Mongolia for 21st Khaan Quest exercise.

Exercise KHAAN QUEST-
- It is a **multinational military exercise** which will bring together military forces from around the world to collaborate and **enhance their peacekeeping capabilities.**
- Last edition of Exercise KHAAN QUEST was conducted in **Mongolia** from 19th June to 2nd July 2023.
  Historical Background
- The 1st KHAAN QUEST took place in **2003** as a partnership between the **US and Mongolia.** Since then, it has grown into major Multinational peacekeeping exercise. In July 2023, the last drill took place. The **U.S. Indo-Pacific Command** is one of the sponsors of the drill, which is being held by the Mongolian Armed Forces. This shows that it involves forces from many countries.
- **Aim of Exercise KHAAN QUEST** is to prepare Indian Armed Forces for peacekeeping missions while operating in a multinational environment, thereby increasing interoperability and military readiness in peace support operations

under Chapter VII of United Nations Charter. The exercise will focus on high degree of physical fitness, joint planning and joint tactical drills.

Key Activities and Training Modules:

▪ The exercise typically includes various training modules designed to cover a wide range of scenarios encountered during peacekeeping missions. These can include:

▪ **Field Training Exercises (FTX):** These are hands-on, practical exercises focusing on realistic scenarios that peacekeepers might encounter.

▪ **Command Post Exercises (CPX):** These are simulation-based exercises that test the decision-making processes and coordination among different units and command structures.

▪ **Humanitarian Assistance and Disaster Relief (HADR):** Training modules focusing on providing aid and managing disasters, which are crucial for any peacekeeping force.

▪ **Combating Improvised Explosive Devices (C-IED):** Training to detect and neutralize IED threats, which are common in conflict zones.

Benefits of Participation

▪ Engagement in KHAAN QUEST provides the Indian Army with several advantages:

▪ Enhanced peacekeeping skills for UN missions

▪ Valuable international exposure collaborating with diverse military forces

▪ Improved tactical proficiency through rigorous training exercises.

Defence Acquisition Council

What is the Defence Acquisition Council?
- The DAC is the **highest decision-making body in the Defence Ministry** for deciding on new policies and capital acquisitions for the three services (Army, Navy and Air Force) and the **Indian Coast Guard.**
- The Minister of Defence is the **Chairman of the Council.**
- It was formed, after the Group of Ministers recommendations on "**Reforming the National Security System", in 2001, post Kargil War (1999).**

Composition:
- Chaired by the Defence Minister of India, the DAC includes members from the armed forces, Ministry of Defence, and other relevant departments. The Chief of Defence **Staff and the three Service Chiefs are also part of the council.**

Objective:
- The main objective of the defence acquisition procedure is to provide the military with the products or weapons according to their needs. The products have to be specific to increase their mission capabilities.

- Another objective of introducing DAP is to ease the business proceedings. And to promote the making of weaponry and military equipment in India. Supporting domestic defence manufacturing will not only provide us security it will also be beneficial for our economy. So, our government wants to decrease the import of weapons and military platforms in our country. The military

products which will come under the Defence Acquisition procedure are light tanks, communication equipment, airborne stand-off jammers, stimulators, etc.

Functions:

- Give in-principle approval of a 15-year Long Term **Integrated Perspective Plan (LTIPP)** for defence forces.

- Accord of acceptance of necessity to acquisition proposals.

- Categorization of the acquisition proposals relating to 'Buy', 'Buy & Make', and 'Make'.

- Look into issues relating to single vendor clearance.

- Take decisions regarding 'offset' provisions in respect of acquisition proposals above Rs 300 crore.

- Take decisions regarding the transfer of technology under the 'Buy & Make' category of acquisition proposals.

- Field trial evaluation.

Pangong Tso lake

- It is one of the most famous lake in Leh Ladakh, derives its name from the Tibetan word, "Pangong Tso", which means **"high grassland lake".**
- It is also known as Pangong Lake which is a long narrow, **endorheic (landlocked) lake** situated at a height of more than 14,000 ft (4,350 meters) in the Ladakh Himalayas.

- It is the world''s **highest saltwater lake.**

  Who controls Pangong Tso?

- Nearly two-thirds of the lake is controlled by China, with **just about 45 km under Indian control**.

- The LAC, running north-south, cuts the western part of the lake, aligned east-west.

- India and China have unsettled borders, and the perception of the LAC differs in multiple sectors, including in Pangong Tso.

The Fingers of Pangong Tso:

- The Pangong Tso is a lake located in eastern Ladakh, and it has a unique shape resembling a boomerang, stretching for about 135 kilometres.

- The lake is characterized by mountain spurs that protrude into the water, known as **"fingers".**

- The fingers of Pangong Tso are numbered from 1 to 8, with Finger 1 being the closest to the eastern end of the lake and Finger 8 the farthest.

- India and China have differing perceptions of the **Line of Actual Control (LAC),** which serves as the de facto border between the two countries.

Border Dispute at Pangong Tso:

- India claims control over the lake until Finger 4 but believes its territory extends up to Finger 8.

- The north bank, where the fingers are located, has been the center of clashes and tensions between the two countries.

- Indian troops are stationed **near Finger 3**, while the Chinese have a base east of Finger 8, claiming territory up to Finger 2.

INTERNATIONAL RELATIONS

Shanghai Cooperation Organisation (SCO) Summit 2024 in Astana, Kazakhstan.

- Recently, the Indian **External Affairs Minister** attended the Shanghai Cooperation Organisation (SCO) Summit in **Astana**, Kazakhstan.
- He also held bilateral meetings with his counterparts from SCO members **Tajikistan and Russia**, and the newest member **Belarus**.

Issues Highlighted by India in the SCO Summit 2024

- **On Rising Tensions:** Ongoing conflicts, rising tensions, trust deficits and increasing number of hotspots around the world have put significant strain on international relations and global economic growth.

- The SCO gathering is aimed at finding common ground to mitigate the consequences of these developments.

- **On Terrorism:** Priority must naturally be given to combating terrorism, one of the original goals of the SCO. Terrorism challenge has been faced by many countries, often originating beyond our borders.

- Terrorism in any form or manifestation cannot be justified or condoned. International community must isolate and expose those countries that harbour terrorists, provide safe havens and condone terrorism.

- Cross-border terrorism requires a decisive response and terrorism financing and recruitment must be resolutely countered.

- There is also a need to take proactive steps to prevent the spread of radicalization among the youth.

- **On Climate Change:** Members need to work towards achieving committed reduction in emissions, including transition to alternate fuels, adoption of electric vehicles, and building climate-resilient infrastructure.

- **On Connectivity:** Economic development requires robust connectivity. That can also pave the way for cooperation and trust between the societies.

- Respect for sovereignty, territorial integrity, **non-discriminatory trade rights** and transit regimes is essential for connectivity and infrastructure projects.

- **On Technology:** The 21st century is the century of technology and the SCO has to make technology creative and apply it to the welfare and progress of the societies.

- India is among the countries to formulate a **National Strategy on Artificial Intelligence** and the launch of an **AI Mission**.

- India's commitment to **'AI for All'** is also reflected in working within the SCO framework on a Roadmap on AI cooperation.

- **On Central Asia:** India shares deep civilizational ties with the people of this region. Recognizing the centrality of Central Asia to SCO, India has prioritized their interests and aspirations. It is reflected in greater exchanges, projects and activities with them.

- **On Cooperation:** Cooperation in the SCO has **been people-centric**. SCO provides a unique platform to unite people, collaborate, grow and prosper together, practicing the millenia old principle of *Vasudhaiva Kutumbakam* which means *'The World is One Family'*.

- **India organized SCO Millet Food Festival**, **SCO Film Festival**, **SCO Surajkund Craft Mela**, *SCO Think-Tanks Conference, and International Conference on Shared Buddhist Heritage during its presidency.*

Shanghai Cooperation Organisation (SCO)

- With the dissolution of the USSR in 1991 into **15 independent countries**, there were concerns in the region about extremist religious groups and ethnic tensions coming to the fore. To manage these issues, a grouping was created for cooperation on security matters.

- **Origin:** Its origins lie in the **"Shanghai Five",** formed in **1996** and consisting of **China, Russia, Kazakhstan, Kyrgyzstan and Tajikistan.**

- **Establishment:** The SCO was established on **June 15, 2001**, in Shanghai as an international organization, and also included **Uzbekistan as a sixth member.**

- **Members:** Before the inclusion of Belarus, it had nine members: _India, Iran, Kazakhstan, China, Kyrgyzstan, Pakistan, Russia, Tajikistan, and Uzbekistan._

- **Observer Status:** _Afghanistan and Mongolia_

- **Significance:** SCO is one of the few international organizations which deal with **security issues and primarily has Asian members.**

- **Alternative to Western International Order:** Both Russia and China have stressed its position as an alternative to a "Western" international order.

- Along with the BRICS grouping, which has India, South Africa and Brazil as well, the two countries are seen positioning against US influence.

- **Challenges:** The opaque parameters it uses to launch its initiatives and institutions allows countries to look past the rivalries they have with others in the group. But it does nothing to heal the rifts.

- Example: SCO embraces both Pakistan and India, which acknowledge their mutually hostile ties. India's relationship with China itself is also tense on several fronts.

SHANGHAI COOPERATION ORGANIZATION MEMBERSHIP

Source: Shanghai Cooperation Organization   Credits: Eleanor Albert, Julia Ro

MEMBER STATES   OBSERVER STATES   DIALOGUE PARTNERS   ACCEDING MEMBERS

COUNCIL on FOREIGN RELATIONS

Relevance of SCO for India

- The SCO provides a platform for India to enhance economic cooperation and communicate with security concerns.

- **A Forum to Enhance Cooperation with Central Asian Countries:** SCO membership allows India to participate in a forum which enhances its scope of

cooperation with Central Asian countries, which have not had particularly close relations with India since their formation in 1991.

- **Communicate on Security Issues:** It also matters for maintaining communication with major actors in the region on common security issues.

- **Regional Anti-Terrorist Structure (RATS):** An important permanent structure within the SCO that assists members in the preparation and staging of counter-terrorism exercises, analyzes key intelligence information coming in from the member states, and shares information on terrorist movements and drug trafficking.

India's Concerns with SCO

- Although the SCO provides significant economic opportunities to India, its internal contradictions are a cause for concern.

- **Difficulty in Managing ties:** India shares tense relationships with China and Pakistan at present. Last year, when the summit was to be held under India's presidency as part of the rotation, it decided to hold a virtual summit instead.

- **Belt and Road Initiative (BRI):** The **New Delhi Declaration** issued at the end of the leaders' summit saw *India refuse to sign off* on a paragraph supporting the BRI.

- **Reason for Disapproval:** India's opposition to the BRI comes from its constituent **China-Pakistan Economic Corridor (CPEC),** which is proposed to pass through **Pakistan-occupied Kashmir.**

- India sees it as a violation of its territorial integrity and sovereignty.

Initiative on Critical and Emerging Technologies (iCET)

- Challenges persist in implementing the bilateral **Initiative on Critical and Emerging Technologies (iCET)** despite recent productive discussions between National Security Adviser Ajit Doval and his U.S. counterpart Jake Sullivan.

Critical and emerging technologies (CETs)

- Critical and emerging technologies **(CETs)** represent a category of advanced technologies that hold considerable importance for India.
- These technologies are rapidly reshaping the global landscape and have the **potential to redefine future industrial and economic growth**, alongside presenting significant security challenges.

Initiative on Critical and Emerging Technology (iCET)

- The framework for the Initiative on Critical and Emerging Technologies provides a comprehensive platform for collaboration between India and the US.

- **Aim:** The iCET aims to establish India and the United States of America. as reliable technology partners, fostering supply chain development and supporting collaborative production and development of goods.

- It was launched by **India and the US in May 2022**, and is being run by the **National Security Councils** of both the countries.

- Under iCET, both countries have identified 6 areas of cooperation which will include co-development and co-production.

- Establishing common AI standards.

- Creating a roadmap to enhance defense technology cooperation and an 'innovation bridge' linking defense startups.

- Supporting the growth of a semiconductor ecosystem.

- Strengthening collaboration in human spaceflight.

- Advancing joint efforts in 5G and 6G development.

- Implementing OpenRAN network technology in India.

- Under iCET, India and the US will share their many core technologies with each other.

- These efforts are set to expand gradually from **QUAD to NATO**, Europe, and globally over time.

Limitations in executing iCET

- **Intellectual Property Rights:** The U.S. government does not presume to act on behalf of its defence companies that own the IPRs for their sundry wares.
- **Shareholder Influence on Technology Transfer:** Besides, U.S. defence vendors, he cautioned, were answerable to their shareholders, whose motivations were largely commercially driven. This, in turn, could adversely impact the quantum of technology they were willing to transfer
- **Constraints on Acquisition:** India's agreements with the U.S. prior to acquiring these assets restricted the traditional and sometimes necessary jugaad approach.
- Acquisitions through the **Foreign Military Sales (FMS)** route were particularly constrained by the stringent **'Golden Sentry'** end-use monitoring program, which prohibits jugaad entirely.

First Indian PM to visit Vienna in 41years.

India-Austria relations-

- **India-Austria relations** have been traditionally close and very friendly since **1949** and is celebrating **75 years of bilateral relationships in 2024.**

Political and Security Cooperation:

- Prime Minister Modi and Chancellor Nehammer underscored the importance of democratic countries such as India and Austria working together to contribute to international and regional peace and prosperity.

- They prioritise efforts towards restoring peace and avoiding armed conflict as well as rigorous adherence to **international law and the UN Charter**.

Sustainable Economic Partnership:

- The two leaders recognised the vital importance of research, scientific tie-ups, technology partnerships and innovation in driving forward the bilateral partnership and called for all such opportunities to be explored in mutual interest.

- They emphasised the need for stronger collaboration to develop and commercialise technologies in identified areas through new business, industry and R&D partnership models.

Skills for a Shared Future

- They welcomed the operationalisation of the **bilateral Migration and Mobility Agreement**, which provides an institutional framework to facilitate such exchanges, while at the same time combating irregular migration.

Scientific and Technological Cooperation

- **Joint Research Projects**: India-Austria have cooperated on various scientific and technological projects. This includes collaboration in areas like **renewable energy, environmental technology, and space research.**
- **Innovation and Technology**: Both countries are keen on fostering innovation and technology development. Austria's expertise in sectors like renewable energy and India's strengths in information technology offer opportunities for collaborative ventures.

India hosts BIMSTEC Foreign Ministers amid raging Myanmar crisis

BIMSTEC

The BIMSTEC is **a regional organisation comprising seven Member States:** five deriving from South Asia, including Bangladesh, Bhutan, India, Nepal, Sri Lanka and two from Southeast Asia, including Myanmar and Thailand.

- This sub-regional organisation came into being on **6th June 1997** through the **Bangkok Declaration.**

- The BIMSTEC Secretariat is in Dhaka, Bangladesh.

Principles of BIMSTEC

1. Sovereign Equality

2. Territorial Integrity

3. Political Independence

4. No-interference in Internal Affairs

5. Peaceful Co- existence

6. Mutual Benefit

7. Constitute an addition to and not be a substitute for bilateral, regional or multilateral cooperation involving the Member States.
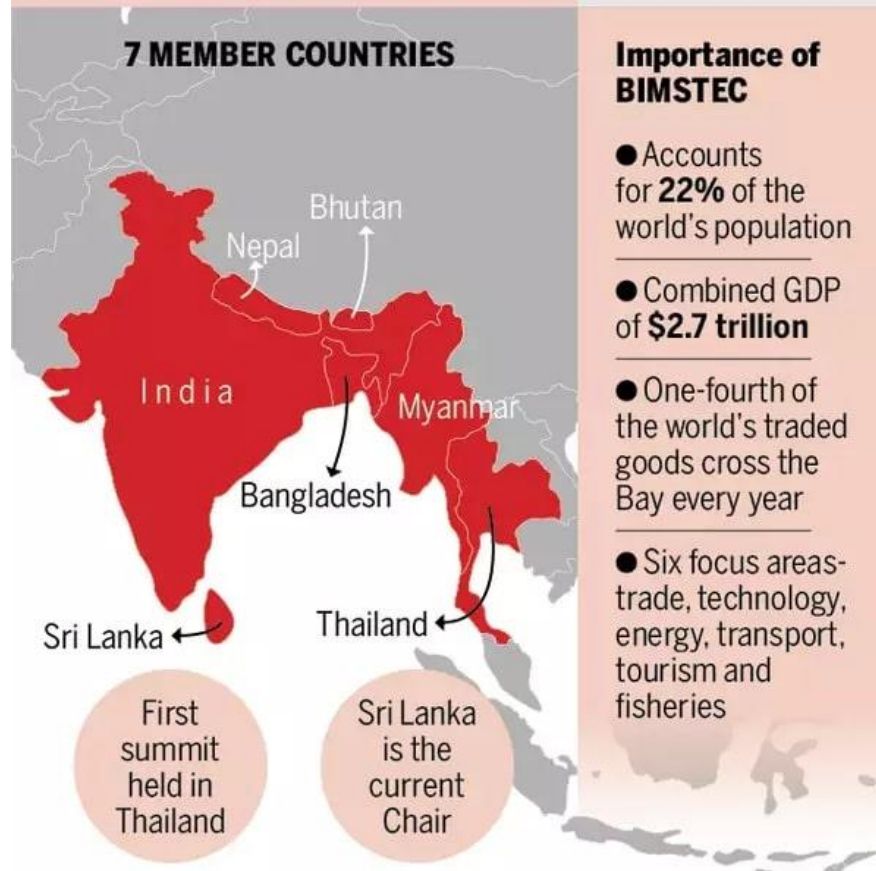
BIMSTEC
WHAT YOU SHOULD KNOW
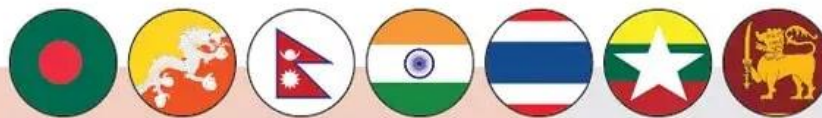
Stands for **The Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation**

Founded in 1997 through **Bangkok Declaration**

7 MEMBER COUNTRIES

Bhutan
Nepal
India
Myanmar
Bangladesh
Thailand
Sri Lanka

First summit held in Thailand

Sri Lanka is the current Chair

Importance of BIMSTEC

● Accounts for **22%** of the world's population

● Combined GDP of **$2.7 trillion**

● One-fourth of the world's traded goods cross the Bay every year

● Six focus areas- trade, technology, energy, transport, tourism and fisheries

Myanmar crisis:

- The Myanmar crisis refers to the political turmoil and military coup in Myanmar since February 2021, impacting regional stability, international relations, and humanitarian issues.

HIGHLIGHTS:

- External Affairs Minister S Jaishankar host his counterparts from the BIMSTEC member countries at a two-day retreat beginning Thursday 11 July in the national capital.

  2. The retreat will present an opportunity for the foreign ministers to discuss avenues to deepen cooperation across various sectors including in the fields of security, connectivity and trade, the Ministry of External Affairs (MEA) said.

  3. Myanmar's Deputy Prime Minister U Than Swe is also joining it.

Quadilateral Security Dialogue – QUAD

The Quad, short for the **Quadrilateral Security Dialogue**, is an informal strategic dialogue between four democratic countries: the United States, Japan, India, and Australia.

Areas of Cooperation:

- The Quad is aimed at promoting **regional security** and economic cooperation in the Indo-Pacific region.

- The four countries share a common interest in maintaining a **free and open Indo-Pacific**, promoting democracy, human rights, and the rule of law, and countering China"s expanding influence in the region.
- The Quad has held several meetings at the ministerial and leaders" level to discuss issues such as **maritime security, infrastructure development, and supply chain resilience**.
- The Quad is seen as a mechanism for **balancing China"s influence in the region**, although its members have stressed that it is not a military alliance and is open to other countries who share their values and interests.
- **Humanitarian Assistance and Disaster Relief (HADR):** Cooperating in disaster response and humanitarian assistance to support regional stability and resilience.

Issues-

- **Undefined Vision:** Although there is potential for cooperation, the **Quad remains a mechanism without a defined strategic mission.**
- **Maritime Dominated:** The entire focus on the Indo-Pacific makes the **Quad a maritime, rather than a land-based grouping**, raising questions whether the cooperation extends to the Asia-Pacific and Eurasian regions.
- **India's Aversion of Alliance System:** The fact that India is the only member that is averse to **a treaty alliance system**, has slowed down the progress of building a stronger **Quadrilateral engagement.**

United Nations Security Council reform

What is the United Nations Security Council?

- The **United Nations Security Council**, established under the **UN Charter in 1945,** constitutes one of the UN''s six principal organs.
- Comprising 15 members, it includes **5 permanent members (P5)** and **10 non-permanent** members elected for two-year terms.
- India''s participation in the Security Council has been as a non-permanent member during the periods of 1950-51, 1967-68, 1972-73, 1977-78, 1984-85, 1991-92, 2011-12, and 2021-22.

UNSC Reform

- UNSC reform refers to the process of revising and updating the structure, composition, and functioning of the United Nations Security Council (UNSC).
- The UNSC is one of the six principal organs of the United Nations and is primarily responsible for maintaining international peace and security.
- However, its current configuration and decision-making processes is not representative of the current geo-political realities.
- Hence, there is a demand for reform in the UNSC.

Source: UN (un.org/en/sc/) | October 19, 2017   ® DW
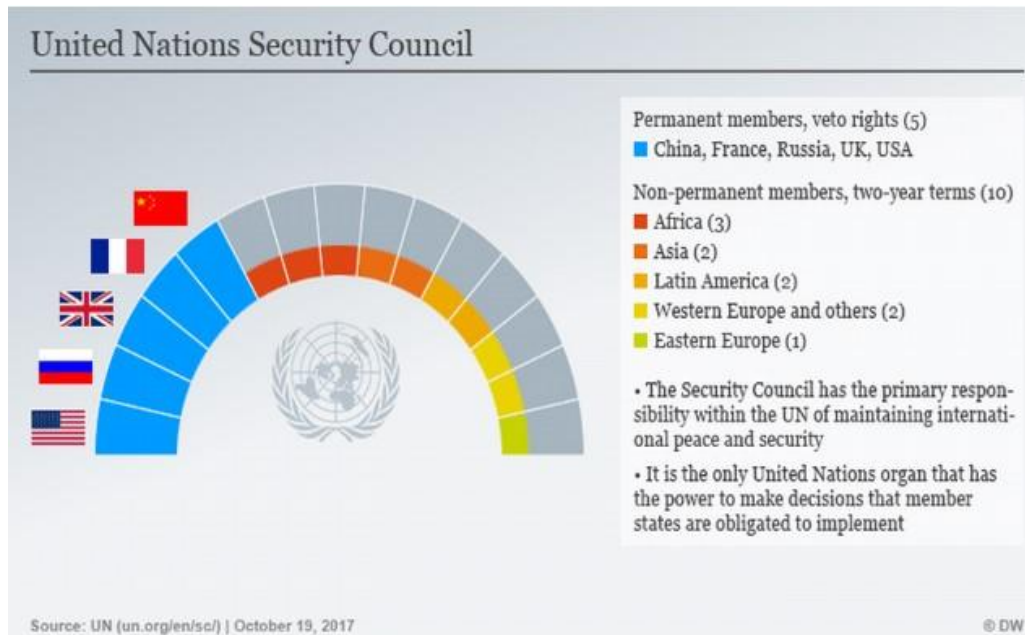
Why does the UN Security Council Need to be Reformed?

- **Representation and Legitimacy**: The Security Council plays a crucial role in peacekeeping and conflict resolution, with binding decisions that impact all member states.

- To ensure these decisions are respected and implemented universally, the Council must possess the necessary authority and legitimacy, which requires **representation reflecting the current global landscape.**

- **Outdated Composition**: The current composition of the Security Council, based on the geopolitical situation of **1945** and expanded marginally in **1963/65**, no longer accurately represents the world stage.

- With 142 new countries joining the United Nations since its inception, regions like **Africa, Asia, Latin America, and the Caribbean** lack adequate representation, necessitating adjustments to the Council"s composition.

- **Recognition of Contributions:** The UN Charter acknowledges that countries making substantial contributions to the organisation should have a role in the Security Council.

- This recognition underscores the candidacy of nations like **India, Germany and Japan for new permanent seats**, reflecting their meaningful contributions to the UN"s mission.

- **Risk of Alternative Decision-Making Forums:** Without reform, there"s a risk that decision-making processes could shift to **alternative forums, potentially diluting the Security Council"s effectiveness.**

- Such competition for influence is counterproductive and not in the collective interest of member states.

- **Misuse of Veto Power:** The utilisation of veto power has consistently faced **criticism** from numerous experts and the majority of states, labelling it as a "**self-selected group of privileged nations"** that lacks democratic principles and hinders the Council"s ability to take essential decisions if it conflicts with the interests of any of the P-5 members.

- In today"s global security landscape, relying on **exclusive decision-making frameworks is deemed unsuitable.**

Way Forward

- **Engagement and Consensus Building:** Fostering inclusive dialogues and consultations among member states, particularly focusing on the perspectives of underrepresented regions like Africa, Asia, Latin America, and the Caribbean.

- **Amending the UN Charter:** Encourage cooperation and coordination among all stakeholders, including the five permanent members, to facilitate the ratification process and ensure the amended Charter reflects contemporary global realities.
- **Addressing Veto Power:** Exploring avenues for reforming the use of veto power within the Security Council, considering proposals that balance the need for decisive action with concerns about fairness and inclusivity.

ECONOMY

The Reserve Bank of India (RBI) has signed an agreement with the ASEAN nations to join Project Nexus.

Founding Members and Future Expansion

- **Founding Members:** The FPSs of Malaysia, the Philippines, Singapore, Thailand, and India are the founding members and first movers of Project Nexus.
- **Future Member:** Indonesia is expected to join the platform in the future.

What is Project Nexus?

- It is a multilateral international initiative

- Project Nexus is initiated by the **Innovation Hub of the Bank for International Settlements (BIS).**

- **First in Payments Area:** It is the first Bank for International Settlements (BIS) Innovation Hub project in the payments area to move towards live implementation.
- **Objective:** To enable instant cross-border retail payments.
- **Interlinking Systems:** Domestic Fast Payments Systems (FPSs) will be interconnected.
- **Countries:**

  India's Unified Payments Interface (UPI)
- *Fast Payments System (FPS) of Malaysia, the Philippines, Singapore, and Thailand*

India's Role in Project Nexus

- **Bilateral Collaborations:** The RBI has been linking **India's UPI with FPSs** of various countries for cross-border **Person to Person (P2P)** and **Person to Merchant (P2M)** payments.
- **Multilateral Approach:** While bilateral connections are beneficial, a multilateral approach like **Project Nexus** will further expand the international reach of Indian payment systems.

Benefits of Project Nexus

- **Standardization:** Nexus standardizes the way instant payment systems connect with each other, eliminating the need for custom connections for every new country.

- **Single Connection:** Operators can make one connection to the Nexus platform, which then allows them to reach all other countries in the network.
- **Speed and Cost Efficiency:** The platform aims to enable cross-border payments within 60 seconds at near-zero cost to the sender or recipient, leveraging the existing instant payment systems.

Challenges of Project Nexus

- Technical Challenges

- **Interoperability:** Ensuring smooth communication between different real-time payment networks.

- **Security and Fraud Prevention:** Protecting cross-border transactions from fraud and security threats.

- Regulatory Hurdles

- **Compliance:** Adhering to different regulatory frameworks across countries.

- **Legal Clarity:** Defining legal responsibilities and liabilities clearly.

- Funding

- **Allocation of resources:** Efficiently allocating resources for the development and implementation of the project.

Bank for International Settlements (BIS)

It is an international financial institution.

Objective: It promotes monetary and financial cooperation globally.

It acts as a bank for central banks.

Establishment: 1930

Headquarters: **Basel**, Switzerland

Modinomics

Modinomics are the set of economic policies announced and led by the Prime Minister Narendra Modi since 2014 till now.

- The main principle: Modinomics aims to encourage investment to **"Make in India".** To transform India into a global hub of manufacturing, innovation and creating a market based economy for development.

The Status of Private Investment in India

- As per the latest data from investment tracking firm Projects Today,

- Fresh Private sector investment plans: It **fell by 15.3%** in 2023-24

- **Manufacturing sector:** The proposed outlays dropped an alarming 40% from ₹19.85 lakh crore in 2022-23 to under ₹11.9 lakh crore in 2023-24

- **Foreign investment:** The proposed outlays fell 31.7% or ₹1.5 lakh crore to a little more than ₹3.23 lakh crore in 2023-24.

- **Economic Survey 2022-2023:** Private sector investment in India **has been falling** as a proportion of Gross Domestic Product (GDP) since 2012

- **FY 2020-21:** Private sector investment as a percentage of GDP had fallen to **19.6 per cent**

The Private sector Investment

- It is the Investment made in the economy by all **for-profit businesses** not owned or operated by the government.

- **Determinants:** There are 5 determinants of of private sector investment ie.

- **Consumer Demand:** Private Final Consumption Expenditure (PFCE), which is the amount households spend on consumption, as a percentage of GDP fell 61 per cent by 2019 from 89 per cent in 1950-51.

- **Access to credit:** Since 2016, while bank credit to the private sector has increased, albeit at a marginal rate, private sector investment has dipped.

- **Corporate profitability:** Listed corporate profits (measured by profit after taxes, PAT) have been stable at 4.0-4.5 per cent of GDP during the past nine quarters and almost doubled from the pre-Covid period (FY18-FY20) average of 2.1 per cent of GDP.

- But it is only an anemic view of the economy as the profitability of about 45 per cent of the economy ie. informal sector businesses is not being measured.

- **Capacity utilisation:** It is basically a measure of the extent to which the installed capacity in a company or economy is being utilised to produce the output. The higher the capacity utilisation, the more likely are fresh investments being made

- It is an indication of not just current demand, but also a company's confidence in future demand.

- **Overall business confidence:** Reforms, certainty and stability in the tax and labour laws of the country driving investor confidence.

Government Measures to encourage private investment

- **Ensuring Macroeconomics stability:** To restore macroeconomic stability by introducing an inflation targeting regime and fiscal deficit targeting regime.

- **The IBC framework:** The government tried to reduce risks for banks by providing them with legal recourse via the IBC in case the loans went wrong. Also providing investors with easy exit option.

- **Increased investment in Capital Expenditure:** and boosting infrastructure linkages in the form of investment in transportation; electricity; irrigation; food processing etc

- **Reduction of the corporate tax rate:** In September 2019, the government announced a cut in base corporate tax for then existing companies to 22 per cent from 30 per cent; and for new manufacturing firms, to 15 per cent from 25 per cent.

- **Production subsidies and Incentives schemes:** Generous production subsidies have been made available through schemes like **Production linked Incentive scheme** or the **RoDTEP scheme etc**.

- **Atmanirbhar Bharat:** Tariffs have been imposed to provide protection to domestic producers, with schemes such as Make in India; stand up India; encouraging domestic production.

- **Ease of Doing Business:** India ranks 63rd in the **World Bank's Doing Business Report (DBR),** 2020

Reason for stagnant private investment

- **Overlooking The Risk component of Investment:** Most of the measures are catering to a common goal ie. Increasing the returns to investment by reducing costs, increase revenues, and others to enhance after-tax profits while ignoring the risk mitigation component.

- **Reversibility and Scalability of Investments:** Investments in Manufacturing sectors are large, indivisible, and difficult to reverse ie. involving a greater risk factor with it which calls for a careful consideration of the risks of any investment before approving any significant project.

- **Uncertain and unstable laws:** Frequent changes in laws and rules related to tax (example: GST) and labour laws leads to uncertainty bringing down investment risk appetite.

Investment Risk

- Risks emanate from three types of state action that favor competitors, are directly coercive, or jeopardize the supply chain from an investor's perspective,

- **National champions risk:** The abrupt changes in the policy framework to favor certain national champions in a case of stigmatized capitalism has deterred other domestic firms from investing out of fear that their irreversible investment has to account for the risk of discretionary policy changes.

- Example: It has materialized in online and physical retail, airports, cement, ports, telecoms, and media.

- **Direct and coercive state action:** Risk perception of investors deteriorates sharply when there is a climate of Tax Terrorism with selective raids by ED or tax authorities, arbitrary verdicts by regulatory agencies, or pure extortionary actions (electoral bonds saga) resulting in destroying lakhs of crores of investment.

- Example: Invoking bilateral investment treaties to challenge the government's retrospective imposition of taxes by Cairn/Vedanta and Vodafone.

- **Supply chain risk:** Discretionary and abrupt changes in the tariff structure of raw materials and components or worse product bans imposed by the government decreases the risk perception among investors about access to low-cost supplies.

- For Make in India to succeed, manufacturing firms need to be assured about the access to raw materials and inputs from anywhere in the world.

- Example: Vietnam has sought to mitigate supply chain risks by signing FTAs with all the major trading powers, thereby assuring investors that they can count on having access to supplies, both now and in the future.

The Ministry of Mines is designing a Production Linked Incentive (PLI) scheme to promote the recycling of critical minerals in India.

- The PLI scheme is yet to be finalized.

Critical minerals

- Critical minerals are the minerals **essential** for **economic growth** and **national security**.

- If these minerals aren't available or are concentrated in a few places, it can create vulnerabilities in supply chains.

Significance of critical minerals for India

Economic Growth and Industrial Development

- **Resource Base:** Critical minerals are vital raw materials for industries like electronics, automotive, aerospace, and renewable energy.
- **Manufacturing:** They are essential in making semiconductors, batteries, and magnets.

National Security and Strategic Importance

- **Defense Sector:** Critical minerals are indispensable for defense technologies such as missile guidance systems and radar.
- **Reducing Dependence:** Developing local sources of these minerals can reduce India's dependence on imports from politically sensitive regions.

Transition to Clean Energy

- **Renewable Energy:** Minerals like **lithium, cobalt, and rare earth elements (REEs)** are crucial for EV batteries and renewable energy storage.

- Access to these minerals helps India reduce carbon emissions and adopt cleaner energy sources.

Technological Advancements

- **Innovation:** Critical minerals drive innovations in technologies like 5G networks and advanced medical devices.

- A strong supply chain promotes research and development in cutting-edge technologies.

Job Creation and Skill Development

- **Mining and Processing:** Developing critical mineral resources creates jobs and enhances skills.

- This includes both mining operations and processing facilities.

PLI Scheme for Recycling Critical Minerals

- The PLI scheme will focus on **recycling e-waste**, also known as **"urban mining,"** to recover important minerals.

- The proposed PLI scheme aligns with recommendations from NITI Aayog.

- The rules complement the **Battery Waste Management Rules (BWMR), 2022.**

- BWMR, 2022 requires phased recycling of used EV lithium-ion batteries.

- Recycling of these batteries will start gradually from 2026.

- **Objective:** To foster a circular economy and strengthen domestic supply chains.

- Key minerals to be targeted include **lithium, copper, cobalt, graphite, chromium, and silicon.**

  These minerals are essential for:

1. Clean energy technologies like solar PV modules and wind turbines

2. Energy storage systems and electric vehicles (EVs)

3. Consumer electronics

4. Benefits of Recycling minerals

- **Reducing Mining Needs:** Research shows that effectively recycling critical minerals can greatly reduce the need for new mining activities.

- **Environmental Conservation:** Recycling helps conserve the environment and avoid the social and economic impacts of opening new mines.

  Challenges of PLI Scheme for Recycling Critical Minerals

- ***Disagreements on Beneficiaries***

- **High-Purity Extraction:** Some recyclers believe only those who extract high-purity critical minerals, similar to virgin ores, should be rewarded by the scheme.

- **Black Mass Production:** Others argue the scheme should also support the production of "black mass," a **less pure mixture of minerals** from shredded e-waste.

- Most Indian recyclers currently can't extract battery-grade minerals from black mass.

- ***India's Growing E-Waste Problem***

- **Increase in E-Waste:** The amount of e-waste in India is increasing rapidly due to the growth of solar panels, wind turbines, and electric vehicles (EVs).
- **Projections:** By 2030, India is expected to have:
- 340,000 tonnes of solar panel waste (up from 100,000 tonnes in 2023)
- 500,000 tonnes of used EV batteries needing recycling

"Money Mules"

Several high-street banks have either stopped or slowed down opening **sole proprietorship** and **individual current accounts** of firms that are less than a year old amid suspicion that they could be **"money mules" for laundering and digital frauds.**

Money Mule:

- A money mule is someone who transfers or moves **illegally acquired money** on **behalf of someone else**.
- **Criminals recruit money mules** to help launder proceeds derived from online scams and frauds or crimes like human trafficking and drug trafficking.
- Money mules **add layers of distance** between **crime victims and criminals**, which makes it harder for law enforcement to accurately trace money trails.

- Money mules can move funds in various ways, including through bank accounts, cashier's checks, virtual currency, prepaid debit cards, or money service businesses.

- Criminals will often use fake job adverts, or create social media posts about opportunities to make money quickly, in order to recruit potential money mules.

- Some money mules know they are supporting criminal enterprises; others are unaware that they are helping criminals' profit.

- Money mules often receive a commission for their service, or they might provide assistance because they believe they have a trusting relationship with the individual who is asking for help.

- When such frauds are reported, the money mule becomes the target of police investigations.

- Even if money mules are not directly involved in the crimes that generate the money, they are accomplices, as they launder the proceeds of such crimes.

Producer Price Index (PPI)

The **Department for Promotion of Industry and Internal Trade (DPIIT)** is nearing the completion of a model to introduce a **Producer Price Index (PPI)** in India, which could potentially replace the **Wholesale Price Index (WPI).**

Wholesale Price Index (WPI)

- The Wholesale Price Index (WPI) represents the price of goods at the **wholesale level**, meaning **goods sold in bulk and traded between organisations** rather than directly to consumers. It is used as a measure of inflation in some economies.
- **Calculation:** WPIs are reported monthly to reflect average price changes of goods. The total costs of goods in a given year are compared to the total costs in the base year.
- The base year's total prices are set at **100** on the scale. Prices from other years are compared to this total and expressed as a percentage change.
- **Wholesale Price in India:** The Wholesale Price Index (WPI) is an important measure of inflation in India, focusing solely on changes in the prices of goods.
- **Published by:** WPI data is published by the **Office of Economic Adviser**, Ministry of Commerce and Industry, Government of India.
- **Revisions:** The current WPI series, with a base year **of 2011-12**, is the seventh revision and has been in use since 2017.
- **Importance:** It is a simple and convenient method for calculating inflation, and changes in WPI greatly influence fiscal and monetary policy decisions.

Components of Wholesale Price Index (WPI)
- **Primary Articles:** This category is divided into **Food Articles** and **Non-Food Articles** (such as Oil Seeds, Minerals, and Crude Petroleum).
- **Fuel & Power:** This component tracks price movements in Petrol, Diesel, and LPG.
- **Manufactured Goods:** This is the largest basket and includes Textiles, Apparel, Chemicals, Cement, Metals, Sugar and Tobacco Products, Vegetable and Animal Oils, among others.

- **WPI Food Index:** This sub-index within the WPI includes Food Articles from the Primary Articles category and food products from the Manufactured Products category.

Challenges with WPI

- **Public Relevance:** It does not reflect inflation at the consumer level, as ordinary people do not buy products at wholesale prices.
- **Exclusion of Service Sector:** WPI excludes the service sector, which accounts for about **55% of GDP**.
- **Bias and Double Counting:** WPI has an inherent bias due to double counting of products and does not include exports and imports.

	Consumer Price Index	**Producer Price Index**	**Wholesale Price Index**
Measurement	Average change in price of consumer goods and services	Average change in sale prices of domestic goods and services for consumers and businesses	WPIs are reported monthly to reflect average price changes of goods. The total costs of goods in a given year are compared to the total costs in the base year.
Composition	All goods and services purchased by	All output of producers, not including imports	This category is divided into Food Articles and Non-

	urban households, including imports		Food Articles (such as Oil Seeds, Minerals, and Crude Petroleum). This component tracks price movements in Petrol, Diesel, and LPG.
Prices	Out-of-pocket expenditure, including taxes	Revenue received by the producer, not including taxes	The Wholesale Price Index (WPI) is an important measure of inflation in India, focusing solely on changes in the prices of goods.

Producer Price Index (PPI)

- The Producer Price Index measures the average **change in prices received by producers** for goods and services **sold domestically or exported.**

  Types:

- **Output PPI**, which measures the prices of goods and services leaving production sites.

- **Input PPI**, which measures the prices of goods and services entering production processes.
- **Advantages:** It examines inflation from the perspective of industry and business, measuring price changes before consumers purchase final goods and services.
- It has supplanted WPI in many countries because it aligns conceptually with the internationally recognized **System of National Accounts (SNA)** for compiling measures of economic activity.

Need for a new Model of Producer Price Index (PPI)

- **Addressing Biases:** The updated PPI model seeks to replace WPI, addressing issues like double counting, exclusion of exports/imports, and the omission of the service sector (which constitutes 55% of GDP).

- It has been presented to the IMF, and discussions are ongoing to shift from WPI to PPI, in line with practices adopted by most G20 economies.

- **Proposed Changes:** Discussions are underway within the government to change the base year of the Wholesale Price Index (WPI) from 2011-12, involving the Ministry of Statistics and Programme Implementation (MoSPI) and the National Statistical Commission.

Bharat Bill Payment System (BBPS)

- The **Reserve Bank of India (RBI)** recently announced that **all credit card bill payments** via third-party applications must now be routed through the Bharat Bill Payment System (BBPS).

Bharat Bill Payment System (BBPS):

- It is a payment channel system conceptualized by the RBI and driven by the **National Payments Corporation of India (NPCI), a subsidiary of RBI.**

- It is a one-stop payment platform for all bills providing an interoperable and accessible "Anytime Anywhere" bill payment service to all customers across India with certainty, reliability and safety of transactions.

- The system will provide **multiple payment modes** and instant confirmation of receipt of payment.

- It is an integrated platform **connecting banks and non-banks** in bills aggregation business, billers, payment service providers, and retail bill outlets.

- It offers customers the convenience of payment by cataloguing various utility providers on one platform.

- BBPS offers bill collection categories like electricity, telecom, Mobile Postpaid, DTH, gas, water bills etc. through a single window.

- Other types of payments, like school / university fees, municipal taxes/ payments, mutual funds and insurance premium, various government taxes, etc. as decided from time to time by the RBI will be incorporated in BBPS.

Different Payment Channels:

- Customers can make payments via physical payment collection outlets (bank branches, agent collection stores etc) and digital channels (apps, websites etc) across India.

- It provides instant confirmation of payment via an SMS or receipt.

Government reopens PLI scheme for white goods till October 12

White Goods:

- White goods refer to **large consumer durables** or major home appliances that were traditionally available only in white. Examples include **washing machines, air conditioners, stoves, and refrigerators**.
- **Composition:** These consumer durables are made of **enamel-coated sheet steel**.
- **Indian White Goods Industry:** The Indian appliance and consumer electronics (ACE) market reached INR 76,400 crore in 2019 and is projected to double to INR 1.48 lakh crore by 2025.

PLI Scheme For White Goods (Air Conditioners and LED Lights):

- **Nodal Agency: Ministry of Commerce**
- **Tenure:** 5 years, from FY 2021-22 to FY 2028-29
- **Objective:** To establish a comprehensive component ecosystem for the air conditioner and LED light industries in India, making the country an integral part of global supply chains
- **Target Segments:** High-value and/or low-value intermediaries for the production of ACs and LED lights.
- **Incentives:** The scheme will provide a **4-6% incentive** on incremental turnover over the base year (2019-20) for goods sold in India and exported globally, available to eligible companies for a period of 5 years.

MSMEs need outlays for technology upgrades, to aid in green transition.

MSME-

- **Micro, Small, Medium Enterprises (MSMEs) are** entities that are involved in the production, manufacturing and processing of goods and commodities. The concept of **MSME** was first introduced by the government of India through the **Micro, Small & Medium Enterprises Development (MSMED) Act, 2006.**

Significance of MSMEs

- **DP Contribution and Employment Generation:** MSMEs currently contribute approximately **30% to India's Gross Domestic Product (GDP),** playing a crucial role in driving economic growth.

- MSMEs contribute significantly to the country's manufacturing output, particularly in sectors like food processing, engineering, and chemicals.

- The Khadi and Village industries sector, consisting of small-scale units, has been instrumental in providing employment opportunities in rural areas and empowering local communities**.**

Existing and Revised Definition of MSMEs

Existing MSME Classification			
Criteria : Investment in Plant & Machinery or Equipment			
Classification	Micro	Small	Medium
Mfg. Enterprises	Investment<Rs. 25 lac	Investment<Rs. 5 cr.	Investment <Rs. 10 cr.
Services Enterprise	Investment<Rs. 10 lac	Investment< Rs. 2 cr.	Investment<Rs. 5 cr.

Revised MSME Classification			
Composite Criteria : Investment And Annual Turnover			
Classification	Micro	Small	Medium
Manufacturing & Services	Investment< Rs. 1 cr. and Turnover < Rs.5 cr.	Investment< Rs. 10 cr. and Turnover < Rs.50 cr.	Investment< Rs. 20 cr. and Turnover < Rs.100 cr.

Green transition

- **The green transition** is essential for a better future. Its aim is to ensure that the key industries for the development of humankind pair their economic activity with greater environmental awareness.

- **The MSME Green Investment and Financing for Transformation Scheme (MSME GIFT Scheme)** intends to help MSMEs adopt green technology with interest subvention and credit guarantee support.

Centre begins efforts to implement Labour Codes

LABOUR CODES

- In an effort to codify the numerous labour laws in the nation, the Parliament recently passed three labour codes on industrial relations, social security,

occupational safety, health, and working conditions, along with the wage code passed in 2019. The four Codes are part of the government's labour law reforms agenda.

- The streamlining of labour laws has been a work in progress, with the Centre notifying **four broad labour codes** to replace 29 sets of labour laws:

1. The Code on Wages, 2019;

2. The Industrial Relations Code, 2020;

3. The Code on Social Security, 2020; and

4. The Occupational Safety, Health and Working Conditions Code, 2020.

- **The objective is to encompass over 500 million organized and unorganized sector workers—90% of the workforce which has been outside labour laws.**

The Benefits of Labour Codes-

- **Simplification of the Complex laws:** The Labour Codes simplify labour laws by consolidating **29 central laws** that have been on the table for at least 17 years.

- It will provide a big boost to industry & employment and will reduce multiplicity of definition and authority for businesses.

- **Easier Dispute Resolution:** The codes simplify archaic labour laws and revamp adjudication processes, which will lead to quicker **dispute resolution**.

- **Ease of Doing Business:** Several economists and industry experts say these reforms will **boost investment and make doing business easier.**

- They predict that these reforms will reduce internal contradictions, **increase flexibility, and modernise safety** and working conditions regulations.
- **Gender Parity:** All <u>sectors must allow women to work at night,</u> but employers must ensure that security arrangements are made for them, and women must consent before working at night.

Concerns-

Implementation:

- It was deliberated whether it should be implemented phase-wise.

- A part of the discussion was that the Wage Code and the Social Security Code could be brought in first, but then it was felt that if the remaining two are not brought in simultaneously, their turn may not come.

- It has to be wholesome, for both workers and the industry

Impact take-home pay:

- A key change in the definition of "wage" would impact take-home pay, but increase retirement savings, something that a section of employers is opposed to as it may increase their employee costs.

The burden on firms & companies:

- Firms will have to bear a higher provident fund liability.

- Companies would also need to adjust their payroll operations if the wage code were to become law, working around the deadlines and methods for determining the full settlement of salaries within two working days.

Strikes may become harder:

- Due to these new changes, industrial strikes may become harder which is a negative impact on the workers.

Political challenge:

- Early-2023 is being considered a feasible option for rolling out these codes.

- But the fact is that it cuts too close to the 2024 general elections.

- The current government might show hesitation in taking this step as these are expected to introduce sweeping changes that would affect both businesses and workers.

Conclusion

- While industries are entitled to make a reasonable profit on investment, workers are equally entitled to reasonable wages and good and safe working conditions.

- It is an uphill task to enact and codify rules that satisfy both parties and the mid path, taking care of the interest of both should be the goal of any labour legislation. To that end, the four labour codes have been rightly grouped together.

- While the labour codes could be called "historic" because they come after nearly a century, the exuberance of the Union govt terming them as "landmark" and "game-changer" is an exaggeration.

- The laws have adapted to the prevailing industrial and economic activity, but there is a long way to go to achieve a fine balance in the interest of workers and the industry.

- The government needs to work more to recognise that focusing on economic growth without redistribution of wealth leads to jobless growth and socially unaccountable prosperity.

- Every law has to aim to maintain the best possible balance between competing interests and should try to give as much comfort to the weaker of the two sides, as much possible in the larger interest of our nation.

- Ultimately these laws will be as good as their implementation, mere letters of law have no meaning.

Vizhinjam port welcomes 1st mothership

Vizhinjam International Seaport

- It is India's first deep-water container transshipment port.

- Location: It is located at Vizhinjam, a coastal town in Thiruvananthapuram District,

- It is located around 10 nautical miles from the international shipping route connecting Europeand the Persian Gulf with East Asia**,** through which around 30 percent of global maritime cargo passes.

- It is developed in a landlord model with a public-private partnership component on a **design, build, finance, operate, and transfer ("DBFOT") basis.**

- It is being built by **Adani Vizhinjam Ports Private Ltd.,** a subsidiary of Adani Ports and SEZ Ltd. (APSEZ), India's largest private sector port operator.

- Construction of the port began in December 2015.

- It is being designed to **primarily cater to the transshipment and gateway container business,** with provision for a cruise terminal, liquid bulk berth, and facilities for additional terminals.

- It has a natural draft of 18-20 meters, which means that some of the **largest container vessels**in the world will be able to dock here.

- There would be about 30 berths, most of which would **be capable of handling mother vessels.**

Significance of the port

- The port is the only **transshipment hub in the Indian subcontinent**, strategically located close to international shipping routes and centrally on the

Indian coastline. Around 95% of India's foreign trade is conducted via the sea route, accounting for 70% of the trade in value terms.

- Nearly **30% of freight movement** occurs through the international shipping route south of the Indian peninsula, passing just **10 NM off Vizhinjam**.

Mothership Also known as San Fernando-

- "**San Fernando**", a vessel of the world''s second-largest shipping company Maersk, arrived at the port country with over 2,000 containers on it, thus creating history.

- The giant vessel was given the traditional water salute following which it berthed successfully.

- With the arrival of the first mother ship, Adani Group''s Vizhinjam Port has catapulted India into the world port business as globally this port will rank 6th or 7th.

India shows good progress on SDGs: NITI Aayog report

The SDG India Index 2023-24 reveals India's overall score improved to 71, up from 66 in 2020-21 and **57 in 2018**. Significant advances were noted in poverty alleviation, health, water, sanitation.

   Key highlights and results from the fourth edition of the SDG India Index:

- The composite score for India improved from **57 in 2018 to 66 in 2020-21 to further to 71 in 2023-24.**

- India has taken significant strides in accelerating progress on the SDGs between the 2020-21 and 2023-24 editions of the Index. Noteworthy

advancements have been observed in **Goals 1 (No Poverty), 8 (Decent Work and Economic Growth), 13 (Climate Action)**. These are now in the "Front Runner" category (a score between 65–99).

- Among these, **Goal 13 (Climate Action)** has shown the most substantial improvement, with its score increasing from 54 to 67. **Goal 1 (No Poverty)** follows closely, with its score rising significantly from 60 to 72. The progress underscores the effects of the focused programmatic interventions and schemes of the Union and State Governments in improving the lives of citizens.
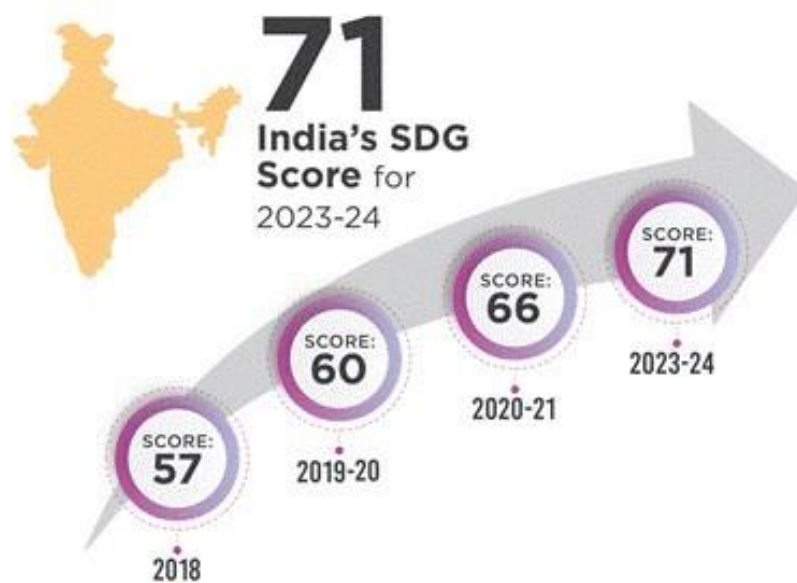
- Since 2018, India has witnessed substantial progress in several key SDGs. Significant progress has been made in **Goals 1 (No Poverty), 3 (Good Health and Well-being), 6 (Clean Water and Sanitation), 7 (Affordable and Clean**

Energy), 9 (Industry, Innovation and Infrastructure) and 11 (Sustainable Cities and Communities).

- Government''s focus on ensuring food & nutrition security, health, education, electrification, housing for all, sanitation, clean cooking fuel & energy has significantly contributed to the improvements.

State and UT results

- The SDG India Index 2023-24 reports a positive trend in the performance of States and UTs in their SDG journey. The scores for **States now range from 57 to 79, while UTs score between 65 and 77.** This represents an improvement over the 2020-21 scores, where the range was 52 to 75 for States and 62 to 79 for UTs.

- The Index records a significant increase in the number of States and UTs achieving Front Runner status. This year, 32 States/UTs have scored between 65 and 99, up from 22 in the 2020-21 edition. Notably, there are **10 new States and UTs in the Front Runner category**. These include Arunachal Pradesh, Assam, Chhattisgarh, Madhya Pradesh, Manipur, Odisha, Rajasthan, Uttar Pradesh, West Bengal, and Dadra and Nagar Haveli and Daman and Diu.
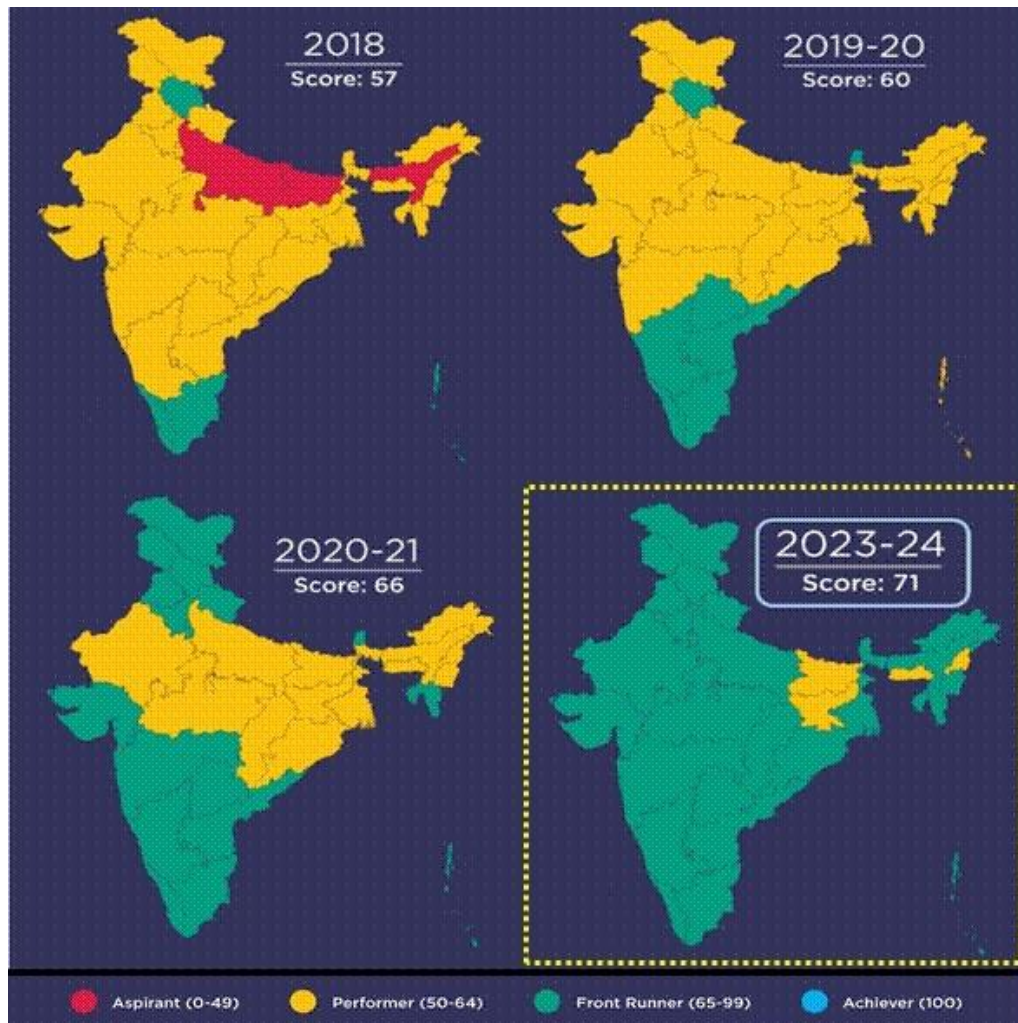
- The SDG India Index 2023-24 demonstrates the increase in composite scores across all States, with improvements ranging from 1 to 8 points. Leading the way in terms of score improvement are **Assam, Manipur, Punjab, West Bengal, and Jammu and Kashmir, each achieving a positive change of 8 points since the 2020-21 edition.**

RBI's Financial Inclusion Index

The **Financial Inclusion Index (FI-Index)**, which measures the extent of financial inclusion across India, reached **64.2 in March 2024**, up from **60.1 in March 2023**, according to the **Reserve Bank of India (RBI)**.

Financial Inclusion Index (FI-Index)
- The FI-Index is a comprehensive measure of financial inclusion, ranging from **0 to 100**, with 0 representing complete financial exclusion and 100 indicating full financial inclusion.
- The FI-Index is published **annually in July** every year.
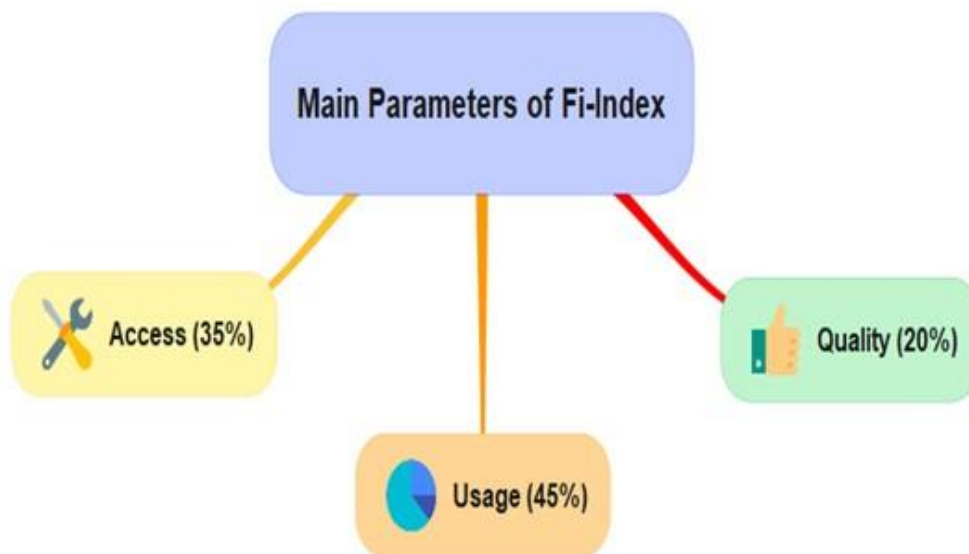
RBI"s Perspective:

- The FI-Index supports inclusive growth by facilitating access to credit and safety nets, crucial for economic stability.

- Enhanced by digital initiatives like Aadhaar and mobile proliferation, it underscores the role of payment systems in fostering financial inclusion.

Internationalisation of the Rupee

A **Reserve bank of India** -appointed working group recommended **inclusion of the rupee in the Special Drawing Rights (SDR) basket** and **recalibration of the foreign portfolio investor (FPI)** regime to accelerate the pace of **international of the rupee.**

Advantages of Internationalisation of the Rupee:

- Currency risk is **reduced** for Indian enterprises when using the rupee in international dealings. It is the ability to effectively build a business while being protected from currency volatility which will increase the likelihood that Indian companies will expand internationally.

- De facto domestic tightening occurs as a result of excessive foreign currency liabilities of domestic businesses. Significantly lessening one's exposure to currency risk would lessen the impact of capital flow reversals.

- The requirement for maintaining foreign exchange reserves decreases. Reserves have an impact on the economy even though they help control exchange rate volatility and project external stability.

- India becomes **less susceptible to outside shocks** by reducing its reliance on foreign money.

- Improved rupee acceptability and commerce would give Indian companies more negotiating leverage, which would weigh down the Indian economy and raise India's standing and respect around the world. This would allow India to diversify its trading basket and avoid western sanctions and limitations. To avoid sanctions:

- The **value of the rupee** will increase with its internationalisation. In other words, it will increase demand for the rupee in global trade.

Challenges in Internationalisation of Rupee:

- It results in the **Trilemma** of an open economy, which states that no nation can pursue the objectives of unrestricted capital flow, stable exchange rates, and independence from external financial influence at the same time.

- Increased refinancing risk as a result of the rupee holdings of non-residents worsening the risks associated with the external stimulus that is transferred to local financial markets.

- Increased volatility of the rupee's exchange rate (value) in the event that global inflation exceeds local inflation or as a result of unchecked capital flows.

Rural road scheme: Pradhan Mantri Gram Sadak Yojana (PMGSY)

- Centre plans Rs 1.9-lakh crore **4th phase** of rural road scheme

- **The Pradhan Mantri Gram Sadak Yojana (PMGSY)** is a flagship scheme of the Indian government. The program aims to provide all-weather road connectivity to unconnected rural habitations. PMGSY was launched in 2000 as part of a poverty reduction strategy. The Ministry of Rural Development implements the program in collaboration with state governments. The program aims to connect eligible unconnected habitations with all-weather roads. The scheme has been implemented in three phases since its launch in 2000.

Objectives:

- **To connect unconnected Habitations with adequate all-weather roads.** A habitation which was previously provided all-weather connectivity would not be eligible even if the current condition of the road is bad.

- The program's unit is a Habitation, not a revenue village or a panchayat. A population concentration whose location remains constant throughout time is referred to as a "habitation."

Latest Funding Pattern:

- The fund allocation to states has been made in subsequent years commensurate with the value of projects sanctioned to states.

- The **Union Government bears 90% of the project cost** in respect of projects sanctioned under the scheme in **North-Eastern and Himalayan**

States, whereas **for other states** the Union Government bears **60% of the cost.**

PMGSY - Phase I

- It was launched in December 2000.
- **Targets:** Providing road connectivity to 1,35,436 habitations and upgradation of 3.68 lakh km of existing rural roads.

Phase II of PMGSY

- It was initiated in 2013 to upgrade the existing 50,000 km rural road network.
- PMGSY Phase I was still in progress, and PMGSY phase II called for upgrading the roads that had previously been constructed for village connectivity to improve rural infrastructure.

PMGSY - Phase III

- It was launched in July 2019.
- The duration of the scheme is 2019-20 to 2024-25.
- It gives priority to facilities like; Gramin Agricultural Markets (Grams), Higher Secondary Schools and Hospitals.
- **Grams** are retail agricultural marketplaces for agricultural products located close to the farm that supports and facilitate a more effective exchange of the farmers'' supply.
- It is proposed that 1, 25,000 km of road in the States be integrated under the PMGSY-III Plan.

Challenges Associated with PMGSY:

- The inadequate availability of funds poses a major challenge for PMGSY.

- Road construction is a costly endeavour.

- Regular funding is necessary for the maintenance and upkeep of these roads.

- Government revenues are strained, making it difficult to allocate dedicated funds for the program. More funding can lead to project delays.

- Inefficient planning and management can result in material wastage.

- Excessive use of materials and exceeding the project budget can cause project delays.

- Efficient management and careful planning can prevent material wastage.

- Challenging terrains and harsh weather conditions in rural areas make road construction and maintenance difficult.

Way Forward

- Rural Road Connectivity is a key component of Rural Development as it promotes access to economic and social services.

- Further, it helps in generating increased agricultural incomes and productive employment opportunities in India.

- In this regard, the government can consider engagement with international financial institutions to construct basic rural infrastructure.

Modified Interest Subvention Scheme

- Government looks to raise limit of crop loans from 3 lakh to 5 lakhs.

- **The interest subvention scheme for farmers** aims at providing short term credit to farmers at subsidised interest rate. The policy came into force with

effect from Kharif 2006-07. The scheme is being implemented for the year 2022-23 to 2024-25.

- The interest subvention will be given to Public Sector Banks (PSBs), Private Sector Banks, Small Finance Banks, Cooperative Banks and Regional Rural Banks (RRBs) on use of own funds and to NABARD for refinance to RRBs and Cooperative Banks.

- The Interest Subvention Scheme is being implemented by NABARD and RBI.

Eligibility

- Farmers, individuals/ Joint borrowers who are owner cultivator;

- Tenant farmers, oral lessees & share croppers;

- Self Help Groups (SHGs) or Joint Liability Group (JLG)s of farmers including share croppers etc.

Features of MISS

- Under this scheme, short term agriculture **loan upto Rs. 3.00 lakh** is available to farmers engaged in Agriculture and other allied activities including Animal Husbandry, Dairying, Poultry, fisheries etc. at the rate of 7% p.a.

- An additional 3% subvention (**Prompt Repayment Incentive – PRI)** is also given to the farmers for prompt and timely repayment of loans.

- Therefore, if a farmer repays his loan on time, he gets **credit at the rate of 4% p.a.**

- For enabling this facility to the farmers, GoI provides **Interest Subvention (IS)**to the Financial Institutions offering this scheme.

- This support is **100% funded by the Centre**, it is also the second largest scheme of DA&FW as per budget outlay and coverage of beneficiaries.

- Significance of the scheme:

- This scheme is the second-largest scheme of the Department of Agriculture and Farmers' Welfare (DA&FW) as per budget outlay and coverage of beneficiaries.

- Increase in Interest Subvention will ensure the sustainability of credit flow in the agriculture sector as well as ensure the financial health and viability of the lending institutions.

- This will also lead to a generation of employment since short-term Agri-loans are provided for all activities including Animal Husbandry, Dairying, Poultry, and fisheries.

EU Carbon Border Adjustment Tax

The **Carbon Border Adjustment Mechanism (CBAM),** which would impose a carbon tax on imports of goods created using **non-green or environmentally unsustainable technologies,** will be implemented by the **European Union (EU) starting in October 2023.**

Challenges in Implementation of CBAM:
- Contrary to the principles of equity and **common but differentiated responsibilities and respective capabilities.**
- **Lack of Global Consensus:** The EU''s pursuit of a uniform global environmental standard faces criticism in light of the global consensus

outlined in **Article 12 of the Rio Declaration. This** article asserts that **standards applicable to developed countries should not be imposed on developing nations.**

- **Issues in Greenhouse Gas Inventories:** Additionally, **the policy's requirement to adjust the greenhouse content of imports in the inventories of importing countries challenges the conventional approach** to greenhouse gas accounting.

Implications for India Due to CBAM:

- India's exports of energy-intensive goods including steel, aluminium, cement, and fertilizers are anticipated to suffer significantly from the EU's adoption of the CBAM.

- In the EU market, Indian exporters are expected to see **increased pricing, less competitiveness, and decreased demand for their products**.

- Implementing the CBAM is expected to pose a significant challenge to India's metal sector. In 2022, **27 percent of India's exports of Iron, steel and aluminium products went to the EU.**

- Starting January 1, 2026, the EU will begin collecting carbon tax on each consignment of steel and aluminium, which will result in Indian firms paying an amount equivalent to 20-35 percent of tariffs.

Economic survey

- The Economic Survey of India is an annual document prepared by the Ministry of Finance, Government of India. It serves as a comprehensive report on the

state of the economy, offering insights into economic trends, policy developments, and future prospects.

Objectives

- **Evaluation of Economic Performance**: Provides an assessment of economic growth, inflation trends, fiscal health, and sectoral performance over the past year.
- **Policy Analysis and Recommendations**: Offers policy insights and recommendations to address economic challenges and promote sustainable growth.
- **Data Transparency**: Enhances transparency by presenting detailed economic data, facilitating informed decision-making by policymakers and stakeholders.

Key Components

- **Macroeconomic Overview**: Includes analysis of GDP growth, inflation rates, fiscal deficits, and monetary policy measures.
- **Sectoral Analysis**: Covers performance and challenges in agriculture, industry, services, and infrastructure sectors.
- **Social Sectors and Inclusiveness**: Highlights developments in education, healthcare, gender issues, and poverty alleviation efforts.
- **External Sector**: Examines trade balances, foreign exchange reserves, and implications of global economic trends on India.

BUDGET HIGHLIGHTS

- The focus of the budget remains on four major groups: **"Garib" (Poor), "Mahilayen" (Women), "Yuva" (Youth), and "Annadata" (Farmers)**.

- The Union Budget 2024-25 **emphasises employment, skilling, support for MSMEs, and the middle class**. A significant allocation of Rs 1.48 lakh crore is earmarked for education, employment, and skilling.

Productivity and resilience in Agriculture

- **Transforming Agriculture Research**- Comprehensive review of the agriculture research setup to bring focus on raising productivity and developing climate resilient varieties.
- **Natural Farming** - **1 crore farmers** across the country will be initiated into natural farming, supported by certification and branding in next 2 years. **10,000 need-based bio-input resource** centres to be established.
- **Shrimp Production & Export** - Financing for Shrimp farming, processing and export will be facilitated through NABARD.

Employment & Skilling

- 20 lakh youth will be skilled over a 5-year period.

- 1,000 Industrial Training Institutes will be upgraded in hub and spoke arrangements with outcome orientation.

- Course content & design aligned as per skill needs of industry.

- Facilitate higher participation of women in the workforce through setting up of working women hostels in collaboration with industry, and establishing creches.

- Financial support for loans up to ₹10 lakh for higher education in domestic institutions.

Inclusive Human Resource Development and Social Justice

- **Pradhan Mantri Janjatiya Unnat Gram Abhiyan**: Improving the socio-economic condition of tribal communities covering 63,000 villages benefitting 5 crore tribal people.

- More than 100 branches of **India Post Payment Bank** will be set up in the North East region.

Manufacturing & Services

- Twelve industrial parks under the **National Industrial Corridor Development Programme**.

- Scheme for providing internship opportunities in 500 top companies to 1 crore youth in 5 years.

- Allowance of ₹5,000 per month along with a one-time assistance of ₹6,000 through the CSR funds.

- *Rental housing with dormitory type* accommodation for industrial workers in PPP mode with VGF support.

Urban Development

- **PM Awas Yojana Urban 2.0** Needs of 1 crore urban poor and middle-class families will be addressed with an investment of ₹10 lakh crore.

- Enabling policies and regulations for efficient and transparent rental housing markets with enhanced availability will also be put in place.

- Envisioning a scheme to develop 100 weekly **'haats' or street food hubs** in select cities.

- Promote water supply, sewage treatment and solid waste management projects and services for 100 large cities through bankable projects.

Energy Security

- **AUSC Thermal Power Plants** - A joint venture between NTPC and BHEL will set up a full scale 800 MW commercial plant.

- Energy Audit - Financial support for shifting of micro and small industries to cleaner forms of energy and Facilitate investment grade energy audit in 60 clusters, next phase expands to 100 clusters.

Infrastructure

- Provision of ₹11,11,111 crore for infrastructure (3.4% of GDP).

- ₹1.5 lakh crore to states as long-term interest free loans to support resource allocation.

- Phase IV of PMGSY will be launched to provide all-weather connectivity to 25,000 rural habitations.

Irrigation and Flood Mitigation

- Financial support for projects with estimated cost of ₹11,500 crore such as the **Kosi-Mechi intra-state link** and 20 other ongoing and new schemes.

- Assistance for flood management and related projects in Assam, Sikkim & Uttarakhand.

- Assistance for reconstruction and rehabilitation in Himachal Pradesh.

Tourism

- Development of **Vishnupad Temple Corridor** and **Mahabodhi Temple Corridor** modelled on Kashi Vishwanath Temple Corridor.

- Comprehensive development initiative for Rajgir will be undertaken which holds religious significance for Hindus, Buddhists and Jains.

- The development of Nalanda as a tourist centre besides reviving Nalanda University to its glorious stature.

- Assistance to development of Odisha's scenic beauty, temples, monuments, craftsmanship, wildlife sanctuaries, natural landscapes and pristine beaches making it an ultimate tourism destination.

Innovation, Research & Development

- Private sector-driven research and innovation at commercial scale with a financing pool of ₹1 lakh crore Space Economy.

- A venture capital fund of ₹1,000 crore is to be set up.

- Operationalization of the **Anusandhan National Research Fund** for basic research and prototype development.

Rationalisation of capital gains

- Short term gains of financial assets to attract 20% tax rate.

- Long term gains on all financial an non-financial assets to attract a tax rate of 12.5%.

- Increase in limit of exemption of capital gains on financial assets to ₹1.25 lakh per year

Employment and Investment

- Abolish **ANGEL tax** for all classes of investors.

- Simpler tax regime to operate domestic cruise.

- Provide for safe harbour rates for foreign **mining companies** (Selling raw diamonds).

- Corporate tax rate on foreign companies reduced from **40% to 35%.**

19 years of Ethical IAS Coaching

19 years of Ethical IAS Coaching

Rupee Comes From

- Income Tax (19%) — 19%
- Borrowing and Other Liabilities (27%) — 27%
- Union Excise Duties (5%) — 5%
- Non-Tax Receipts (9%) — 9%
- Non-Debt Capital Receipts — 1%
- Customs (4%) — 4%
- GST & other taxes (18%) — 18%
- Corporation tax (17%) — 17%

Rupee Goes To

- Pensions (4%) — 4%
- Other Expenditure (9%) — 9%
- Interest Payments (19%) — 19%
- Centrally Sponsored Scheme (8%) — 8%
- Central Sector Scheme (excluding capital outlay on Defence and Subsidy) (16%) — 16%
- Finance Commission and other transfers (9%) — 9%
- Subsidies (6%) — 6%
- States' share of Taxes and Duties (21%) — 21%
- Defence (8%) — 8%

Pradhan Mantri Mudra Yojana

Mudra stands for **Micro Units Development and Refinance Agency**, launched by the Government of India to provide funding to micro-enterprises. It Aims to promote entrepreneurship and address financial inclusion.

Objectives

- Provide loans to micro and small enterprises (MSEs).

- Encourage small business activities and income generation.

- Facilitate employment generation.

Categories of Loans

- Shishu Loans up to Rs. 50,000.

- Kishor Loans from Rs. 50,001 to Rs. 5 lakhs.

- Tarun Loans from Rs. 5 lakhs to Rs. 20 lakhs.

Target Beneficiaries

- Small business owners, vendors, shopkeepers, fruit/vegetable vendors, artisans, etc.

- Non-farm income-generating activities in rural and urban areas.

Benefits

- Promotes economic growth by supporting small businesses.

- Encourages self-employment and entrepreneurship.

- Contributes to reducing unemployment and poverty.

Challenges

- Awareness and reach in remote areas.

- Ensuring proper end-use of funds.

- Addressing repayment issues and defaults.

Namo Drone Didi

NAMO Drone Didi — an initiative that **aims to supply drones to 15,000 women Self Help Groups (SHGs)** to rent to farmers for agriculture purposes. This multifaceted scheme effectively addresses the need to **modernize our agricultural practices** and **increase agricultural productivity** by placing cutting-edge technology in the hands of rural women.

- The scheme approves holistic interventions by converging the resources and efforts of the Department of Agriculture & Farmers Welfare (DA&FW), Department of Rural Development (DoRD) Department of Fertilizers (DoF), Women SHGs, and Lead Fertilizer Companies (LFCs).

- It is envisaged that the approved initiatives under the scheme will provide sustainable business and livelihood **support to 15,000 SHGs** and they would be able to earn additional income of at least Rs. One lakh per annum.

Benefits

- **Empowerment of Rural Women:** It enables women's Self-Help Groups, to rent these drones to farmers for agricultural purposes, thus playing a key role in rural economies.
- **Modernizing Agriculture:** It introduces advanced technology in agriculture. **For example,** the use of drones for the foliar application of innovative liquid fertilizers like Nano Urea and Nano DAP.
- **Employment Opportunities:** Creates jobs for rural women in drone operation and maintenance, supporting the government's push for indigenous drone aeronautics development.

- **Safety and Efficiency in Farming:** Replaces traditional, hazardous methods like hand-held pumps for spraying pesticides and fertilizers, reducing risks and increasing efficiency. This will enhance crop yield and reduce cost of operation for the benefit of farmers.
- **Reduced Physical Hardship for Farmers:** The use of drones for agricultural tasks alleviates the physical strain traditionally associated with farming activities.

Vivad se Vishwas

It is a **voluntary settlement scheme** to resolve long-standing contractual disputes involving government agencies. It is designed **specifically for disputes where the Arbitral Award** is under challenge in a court. Arbitral Award is an award that brings **finality to the arbitral proceeding.** Under the scheme, standardised terms will be introduced, and **graded settlement options will be provided** based on the level of pendency of the dispute.

- **Implementation:** It will be implemented through an online functionality on the **govt marketplace portal.**
- **Coverage:** The scheme will cover all disputes with Central government agencies, including autonomous bodies, public sector banks and financial institutions, central public sector firms, union territories, and the National Capital Territory of Delhi, along with their respective agencies. However, organizations such as metro corporations, where the Centre holds a 50% stake, can choose to opt out of the scheme at their discretion, provided they secure board approvals.

- **Settlement Amount:** For cases involving Court awards, the settlement amount offered to the contractor will be up to 85% of the net amount awarded or upheld by the court, while the same threshold will be "up to" 65% of the net amount in case of arbitral awards.

Swaminathan Commission

Swaminathan Commission: An Overview

- The Swaminathan Committee refers to the **National Commission on Farmers (NCF),** which was headed by Professor M.S. Swaminathan, a renowned agricultural scientist.
- **Formation:** The NCF was constituted on November 18, 2004, by the Ministry of Agriculture of the Government of India.
- **Membership:** Alongside Professor M.S. Swaminathan, the committee had two full-time members, four part-time members, and a member secretary.
- **Objective:** The Commission was tasked with creating a sustainable and viable farming system in India by addressing issues such as food and nutrition security and enhancing productivity, profitability, and sustainability.
- **Reports:** The NCF submitted five reports between December 2004 and October 2006.

Recommendations of Swaminathan Commission

- **Support for Farm Women:** Establishing a National Board for New Deal for Women in Agriculture under the Union Food and Agriculture Minister, with the

Union Ministers for Women and Child Development, Rural Development, and Panchayati Raj as co-chairs.

- **Farm Schools:** Recommending the establishment of Farm Schools to spread innovative farming methods.

- **Grain and Fodder Banks:** Proposing the establishment of a grain bank and community food and fodder banks.

- **Insurance and Soil Testing:** Advocating for promoting insurance and setting up a national network of advanced soil testing labs.

- **Market Reforms**: Suggesting a code of conduct for contract farming, and amendments in the state APMC Acts and the Essential Commodities Act.

- **Agricultural Costs and Prices:** The Commission made **suggestions for the Commission for Agricultural Costs and Prices (CACP),** which recommends MSPs, to consider various factors in deciding the level of MSP, including the weighted average cost of production and risk factors.

- **Minimum Support Prices (MSP):** Recommending timely issuance and better implementation of MSP across regions, but not supporting the specific formula of C2 cost plus 50%.

Way forward

- To address the ongoing agricultural crisis, a balanced approach is needed that combines the Swaminathan Commission's recommendations with the current demands of farmers. This includes legally ensuring MSP, enhancing productivity, and improving market reforms while focusing on sustainability and support for farm women and innovative farming practices.

ENVIRONMENT

Zoological Survey of India recorded the forest-dwelling frog from the Talle Wildlife Sanctuary and named it as Xenophrys apatani.

Recently, a team of researchers from the **Zoological Survey of India** recorded the forest-dwelling frog from the **Talle Wildlife Sanctuary** and named it as **Xenophrys apatani.**

Xenophrys apatani:

- It has been named after the dominant **Apatani community** in recognition of their ingenuity in the conservation of wild flora and fauna.
- **Distribution:** It is distributed along the Eastern Himalayan and the Indo-Burma biodiversity hot spots of the country.

Apatani community:

- The Apatani are a tribal group of people living in the **Ziro valley in Arunachal Pradesh**.
- **Language:** They speak a local language called **Tani** and worship the sun and the moon.
- **Festivals:** They have major festivals like **Dree, Myoko, Yapung and Murung.**
- **Dree** is celebrated with prayers for a bumper harvest and prosperity of all humankind and Myoka celebrates friendship similar to modern friendship day.
- They have been practising integrated rice-fish farming in their mountain terraces of Arunachal Pradesh since the 1960s.
- They principally use three rice varieties: Emeo, Pyape and Mypia.
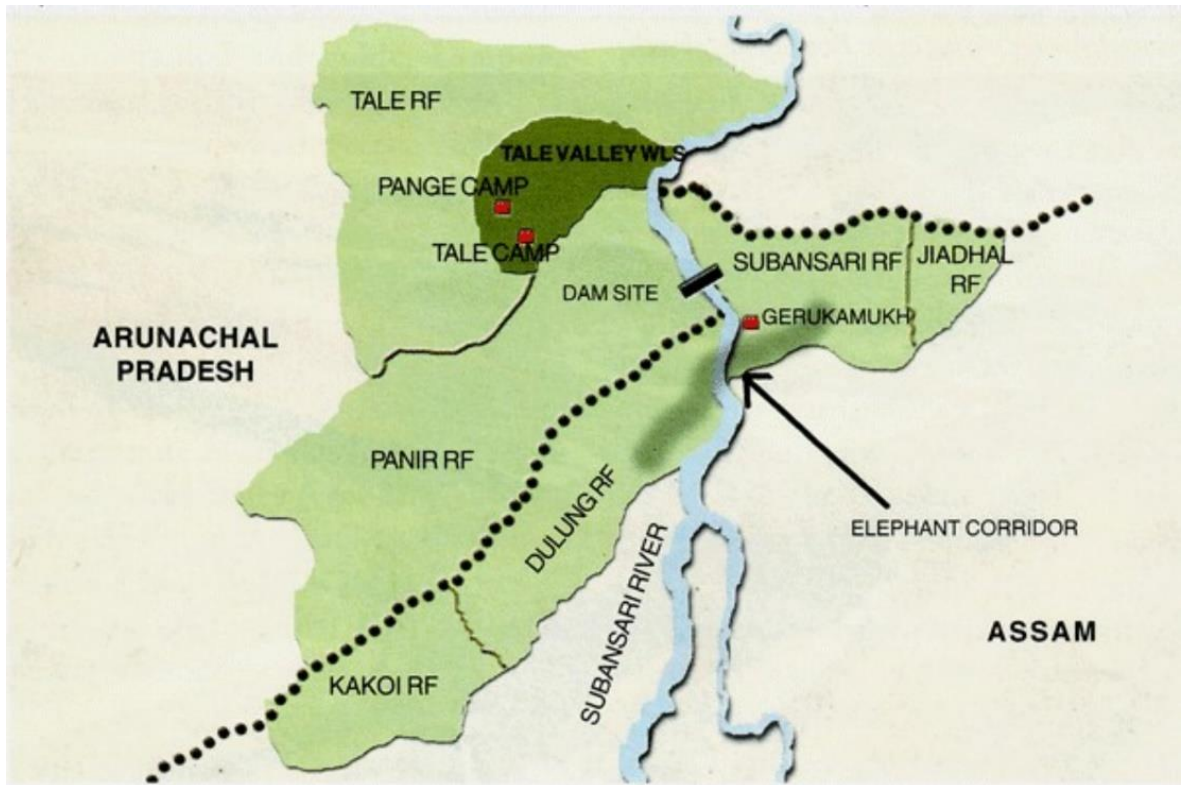
Tale Valley Wildlife Sanctuary:

- It is located near the beautiful Apatani cultural landscape in the **Lower Subansiri District** of Arunachal Pradesh.

- Rivers like **Pange, Sipu, Karing, and Subansiri** flow through this sanctuary.

- *Flora:* It has a stunning spectrum of subtropical and alpine forests like silver fir trees, ferns, orchids, bamboo, and rhododendron.

- *Fauna:* **Clouded leopard**, Himalayan squirrel, Himalayan Black Bear etc.

Short-term exposure to air pollution in India kills 33,000 people annually: Study

Recently, a first-of-its kind multi-city analysis in India that studied the health **effects of short-term exposure** to air pollution published in the peer-reviewed Lancet Planet Health.

- The scientists analyzed pollution and death registry data from Ahmedabad, Bengaluru, Chennai, Delhi, Hyderabad, Kolkata, Mumbai, Pune, Shimla, and Varanasi.

    Findings of the Lancet Study

- The researchers looked at 3.6 million deaths between 2008 and 2019 across the sample areas, and overlapped them with a detailed map of the distribution of **PM 2.5**, a compound of **cancer-causing pollutants** so small they can penetrate the bloodstream.

- **Rise in Death Trolls:** The death toll from India's air pollution is elevated even in cities previously thought to have relatively clean air, underscoring how the problem extends beyond megacities such as Delhi.

- It reinforces the message that there is no safe level of exposure to air pollution, even in highly polluted regions.

- Even in the **Himalayan town of Shimla**, which had the cleanest air among the cities studied, **3.7% of all deaths** were pollution related.

- **11.5% of Delhi's annual deaths** are attributable to air pollution, and 4.8% in Bengaluru and had 30% more exposure to daily air pollution than the average Delhi resident.

- **Threatening Particles Exposure:** An exposure as short as 48 hours to high levels of the particles could worsen life expectancy at a collective level, with 7.2% of all fatalities linked to PM 2.5 concentrations above the **World Health Organization** standard of **15 micrograms per cubic meter**.

- Daily deaths totalled across the 10 cities rose by 1.42% for every 10 µg/m3 increase in the average PM2.5 exposure over a two-day period.

- **Risk of Mortality:** It found a **"much stronger link"** between air pollution and mortality than the traditional approach of correlating annual air pollution readings with mortality.

- The risk of mortality rose more quickly at lower PM2.5 levels but became constant as levels increased.

- The mortality risk is very high (2.65%) even when analyzing days with PM2.5 levels below the current Indian national air quality standard of 60 µg/m3.

- **Comparison with Global Level:** The variation in mortality in different cities in India mirrors findings from similar studies in other countries.

- Example: A 272-city study in China reporting a 0·22% increase, per 10 µg/m³ increase in PM2·5. However, death rates were higher in Greece (2·54%), Japan (1·42%), and Spain (1·96%), which had lower base pollution levels.

- **Use of Instrumental Variable Approach:** Through this approach, researchers isolate the effect of locally generated air pollution since the used instruments are linked to dispersal and transport of air pollution.

- **Instrumental Variable Approach:** Researchers identified three weather-related parameters — planetary boundary layer height or mixing height; wind speed; and atmospheric pressure that are directly related to variations in daily air pollution, but are unrelated to daily deaths except through air pollution changes.

Conclusion

- The sharper mortality spike in cities with lower pollution loads than more polluted cities as an example of the **'harvesting effect'**, in epidemiology. This does not mean that risk is low at higher levels, it is just that the increase in risk slows down. There is a need to address dispersed local sources of air pollution in addition to traditional fixed and line sources.

First International Conference on Steel Slag Road jointly organized by CSIR-CRRI at New-Delhi.

- **First International Conference on Steel Slag Road** jointly organized by **CSIR-CRRI** (Central Road Research Institute) and **PHDCCI** (PHD Chamber of Commerce and Industry) **at New-Delhi.**

- It released the **Guidelines for Utilization and Processing of Steel Slag** as Processed Steel Slag Aggregates in Road Construction.

    Steel Slag
- Steel Slag is a **by-product of steel making**, produced during the **separation of the molten steel** from impurities in steel-making furnaces.
- The slag occurs as a molten liquid melt and is a complex solution of **silicates and oxides** that solidifies upon cooling.
- **Uses of Steel Slag:** It is used as an **aggregate** and is considered a standard practice with applications that include its use in granular base, embankments, engineered fill, highway shoulders, and **hot mix asphalt pavement.**
- Steel slag can be used in the agricultural sector as It has the ability to **correct soil acidity**.

- In fact, developed countries like Japan, the USA have taken the lead in **making fertilisers using steel-making slag.**

Steel Slag Road Technology:

- The Steel Slag Road Technology has been developed by the **Central Road Research Institute** under a research project in collaboration with the Ministry of Steel, Government of India and four major steel manufacturing companies of the country

Advantages:

Eco-friendly waste management:

- Utilises steel slag waste in road construction, providing an environmentally friendly solution.

- Reduces landfill burden and environmental impact from steel slag disposal.

Cost-effective and long-lasting:

- Steel slag roads are approximately **30 per cent cheaper** to construct than traditional paving methods.

- These roads are **highly durable and weather-resistant**, leading to significantly **lower maintenance costs**.

Minimising natural resource depletion:

- Reduces the reliance on natural ballast and aggregates, conserving valuable resources.

- Helps preserve natural ecosystems by eliminating the need for traditional road construction materials.

Managing steel slag waste:

- India produces around **19 million tonnes of steel slag annually**, expected to reach 60 million tonnes by 2030.

- Inefficient disposal methods have led to large slag piles around steel plants, causing pollution.

- **Challenging terrain success:** Border Roads Organisation (BRO), in collaboration with CRRI and Tata Steel, **constructed a steel slag road in Arunachal Pradesh**, showcasing the technology's suitability for difficult terrains and essential infrastructure.

- **"Waste to Wealth":** This technology is making significant contributions to realize the vision of "Waste to Wealth".

Waste to Wealth

- It seeks to **convert wastes from environmental and economic liabilities** to valuable resources that create livable jobs and provide community development opportunities.

- It includes **take-back, recycling and final disposal** at the end of their useful life, in a way promoting **circular economy**.

**A rare brown palm civet discovered in the Koyna Wildlife Sanctuary**

Recently, the **Discover Koyna group,** renowned for their discoveries of rare owls and butterflies, observed a **rare brown palm civet in the Koyna Wildlife Sanctuary**

Brown Palm Civet:

- It is also known as **Jerdon's palm civets**, are **endemic to the Western Ghats** and play a vital ecological role as seed dispersers.
- It is solitary and **nocturnal**, small carnivores that thrive in the high altitude tropical rainforests
- **Distribution:** Its distribution extends from **Castle Rock in Goa** to the southern tip of the Western Ghats in **Kalakkad Mundanthurai Tiger Reserve**. It inhabits rainforest tracts at an elevation of 500–1,300 m.
- **Food Habit:** It is predominantly **frugivorous**, foraging over a wide range, but has one of the smallest diet ranges among South Asia's small carnivores.

Conservation status

- IUCN: **Least Concern**

- CITES : **Appendix III**
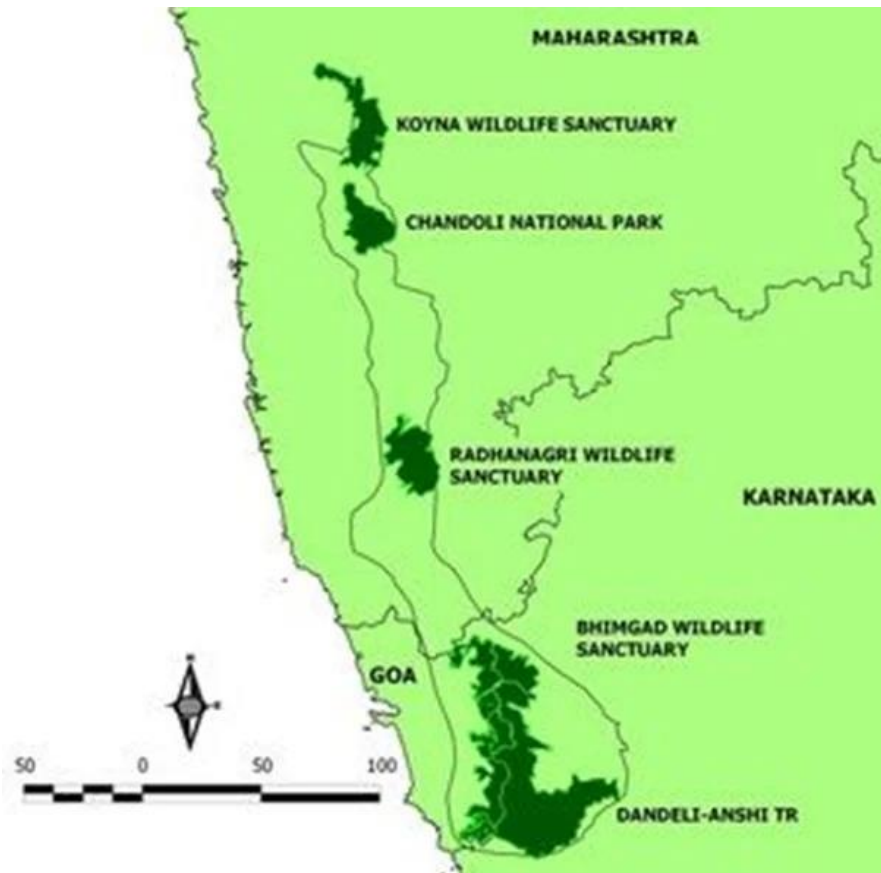
Koyna Wildlife Sanctuary

- It is situated in the **Western Ghats of Maharashtra**.

- It is a significant protected area within the larger Western Ghats, a **UNESCO World Heritage Site**.

- The sanctuary is closely associated with **the Koyna Dam**, which is one of the **largest dams in Maharashtra**. The dam is built on the **Koyna River** and serves as a crucial water reservoir for the region.

- **Flora:** It is characterized by a variety of vegetation types, including evergreen forests, semi-evergreen forests, and deciduous forests. The flora includes valuable tree species like teak, shisham, and ain, along with a diverse understorey of shrubs and herbs.
- **Fauna:** It is home to a variety of wildlife, including Indian bison (gaur), Indian elephants, Indian leopards, sloth bears, sambar deer etc.
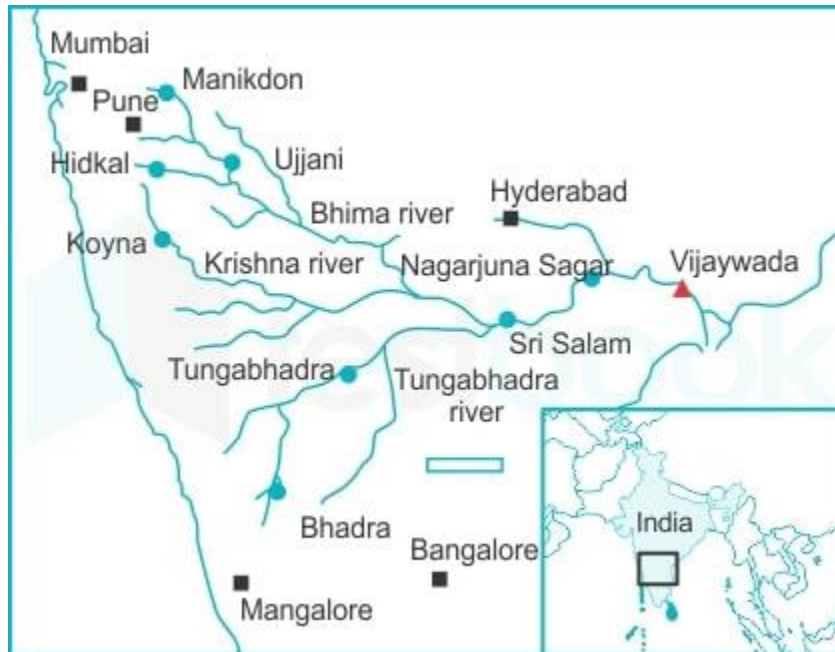
Recently, the Union Cabinet, chaired by Prime Minister of India has approved India to sign the Biodiversity Beyond National Jurisdiction (BBNJ) Agreement.

*Biodiversity Beyond National Jurisdiction (BBNJ) Agreement:*

- The BBNJ Agreement, or the '**High Seas Treaty',** is an international treaty under the **United Nations Convention on the Law of the Sea (UNCLOS).**

- It aims to address the growing concerns over the long-term protection of **marine biodiversity** in the high seas.

- It sets precise mechanisms for the sustainable use of marine biological diversity through international cooperation and coordination. Parties cannot claim or exercise sovereign rights over marine resources derived from the high seas and ensure fair and equitable sharing of benefits.

- It follows an **inclusive, integrated**, **ecosystem-centric approach** based on the precautionary principle and promotes using traditional knowledge and the best available scientific knowledge.

- It helps minimise impacts on the marine environment through area-based management tools and establishes rules for conducting environmental impact assessments. It would also contribute to achieving several SDGs, particularly **SDG14 (Life Below Water).**

- The BBNJ Agreement will be the third implementation agreement under UNCLOS if and when it enters into force, alongside its sister implementation agreements: the **1994 Part XI Implementation Agreement (**_which addresses the exploration and extraction of mineral resources in the international seabed area_**)** and the **1995 UN Fish Stocks Agreement** (_which addresses the conservation and management of straddling and highly migratory fish stocks_).

- The BBNJ Agreement was agreed upon in March 2023 and is open for signature for two years starting September 2023.

- It will be an international legally binding treaty after it enters force 120 days after the 60th ratification, acceptance, approval or accession.

The Madhya Pradesh government has initiated an inquiry into the alleged poaching of tigers and irregularities in the newly established Veerangana Durgavati Tiger Reserve

Veerangana Durgavati Tiger Reserve:

- **Location:** It is spread across Sagar, Damoh, and Narsinghpur districts of Madhya Pradesh.
- Covering an expansive area of 2,339 square kilometres, it encompasses areas within the **Nauradehi Wildlife Sanctuary and Durgavati Wildlife Sanctuary.**
- It is the *seventh tiger reserve in Madhya Pradesh*.
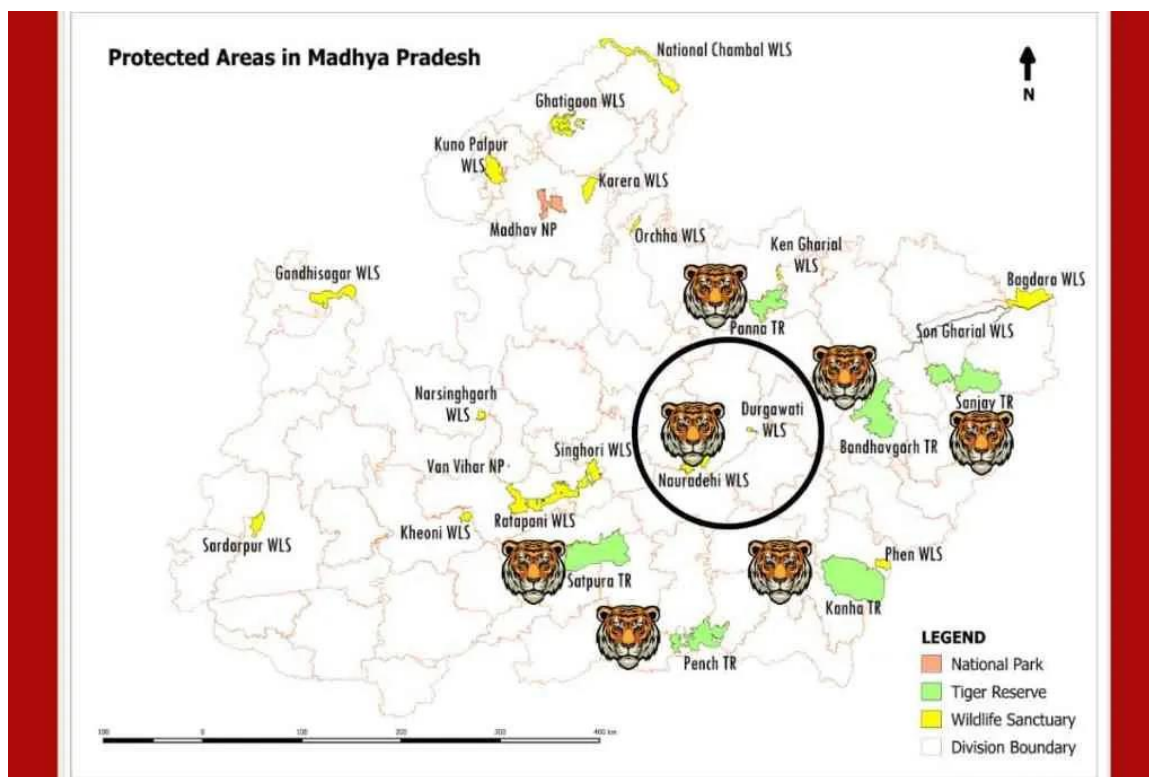
- It is named for **Rani Durgavati**, the queen of the **Gondi people**.

- The reserve also boasts a diverse landscape, with hills, valleys, rivers, streams, waterfalls, and grasslands.

- **Rivers:** It straddles parts of the *Narmada and Yamuna River* basins.

- The **Singorgarh Fort** is located within the reserve.

Vegetation: Dry deciduous type

- **Flora:** The chief floral elements include Teak, Saja, Dhaora, Ber, Amla, etc.

- **Fauna:**Tiger, leopard, wolf, jackal, Indian fox, striped hyena, Nilgai, Chinkara, Chital, Sambhar, Black Buck, Barking deer, Commom Langur, Rhesus Macaque, etc.

- It is one of the few remaining strongholds for the **White-Rumped** and the **Indian Vultures, critically endangered raptors** of India.

- A green corridor linking **Panna Tiger Reserve (PTR) with Durgavati** will be developed for the natural movement of the tiger to the new reserve.

Climate Skills Seeds for Transition India

- The British Council, in partnership with HSBC India launched the '**Climate Skills: Seeds for Transition India'** project that aims to equip youngsters with knowledge and skills on climate change and its challenges. The project seeks to engage 2,000 youngsters and 300 master trainers, and is expected to run from July this year to February 2026. Internationally, the project works with 18 to 30-year-olds in five countries — India, Brazil, Indonesia, Mexico, and Vietnam.

Climate Change:

- The periodic modification of Earth's climate brought about due to the changes in the atmosphere as well as the interactions between the atmosphere and various other geological, chemical, biological and geographical factors within the Earth's system is called Climate change.

Factors Contributing to Climate Change:

Greenhouse Gas Emissions:

- Burning fossil fuels (coal, oil, and natural gas) releases carbon dioxide (CO2) into the atmosphere.

- Industrial activities, transportation, and deforestation contribute to GHG emissions.

Deforestation:

- Clearing forests reduces the Earth''s capacity to absorb CO2 through photosynthesis, contributing to increased atmospheric concentrations.

Industrialization and Urbanization:

- Rapid industrial growth and urbanization lead to increased energy consumption and emissions.

- Urban heat island effect exacerbates local warming in cities.

Impact of climate change:
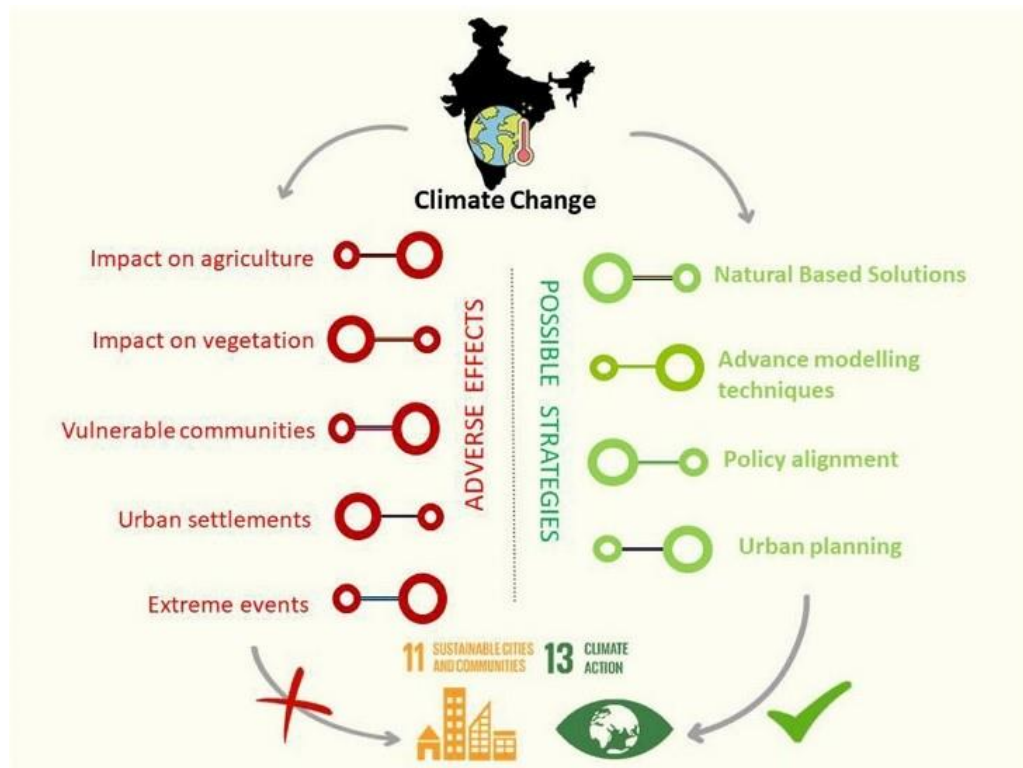
New species of dogfish shark discovered in Kerala harbour

- Scientists from the Zoological Survey of India (ZSI) recently discovered a new species of deep-water dogfish shark Squalus hima from a fishing harbour in Kerala along the Arabian Sea.

  Squalus hima:

- It is a new species of **dogfish shark** discovered from **southwest coast of India.**

- **Squalus** is a **genus of dogfish sharks** in the family Squalidae. commonly known as **spurdogs** and are characterized by **smooth dorsal fin spines.**

- They also have an **angular short snout**, a small mouthalmost as wide as the snout, first dorsal fin origin behind the pectoral fins, and body without anyspots.

- They are exploited for their liver oil,which **contains high levels of squalene** (or squalane when it is processed for products).

- It is in high demand for the pharmaceutical industry,particularly for making high-end cosmetic and anti-cancerous products.

- **On the Indian coast, two species** of Squalus are found from the southwest coast of India, and the new species, **Squalus hima n.sp**., very similar to **Squalus lalannei**, but differs in many characteristics.

- The newly discovered Squalus hima differs from other species by the number of precaudal vertebrae, total vertebrae, teeth count, trunk & head heights, fin structure, and fin colour.

Zoological Survey of India (ZSI)

- **Establishment and Purpose:** Founded on July 1, 1916, the **Zoological Survey of India** is dedicated to the systematic survey, exploration, and

research of India's fauna. Initially established to promote zoological studies, ZSI is headquartered in Kolkata.

Air pollution harms pollinators more than pests, study finds

Bees and other beneficial bugs are disproportionately harmed by air pollution compared to crop-destroying pests, according to a new study.

Key Findings of the Study:

- The study revealed that pollinators, including bees, moths, and butterflies, experienced a 39% decline in foraging efficiency when exposed to high levels of air pollution.

- In contrast, plant-eating pests like aphids showed no significant impact.

Detrimental Air Pollutants

- Among air pollutants, ozone emerged as particularly harmful to beneficial insects, reducing their ability to thrive and carry out their roles in the ecosystem by 35%.

- Even low ozone levels below current air quality standards can cause significant damage.

- Nitrogen oxides also substantially impaired beneficial insects.

Impact on Insect behaviour

- The research focused on how air pollution impacts various insect behaviors and biological aspects, including feeding, growth, survival, reproduction, and food location.

- The ability to find food was the most severely impaired, declining by about one-third on average.

World's rarest whale: spade-toothed whales

- World's rarest whale may have washed up on beach in New Zealand.
- **Spade-toothed whales** are the world's rarest, with no live sightings ever recorded.

Where do spade-toothed beaked whales live?

- The three specimens of spade-toothed beaked whales were found in New Zealand and Chile and the species is thought to be found only in the southern hemisphere and possibly just in the South Pacific. However, the full extent of their distribution remains unknown.
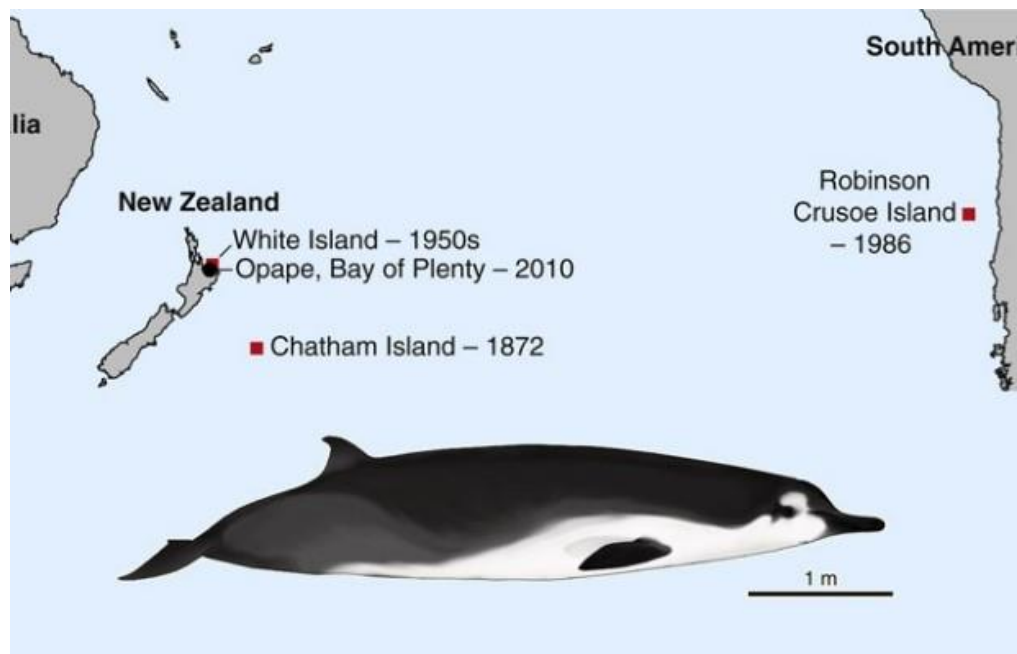
The main threats to spade-toothed whales

- **Noise pollution**– Spade-toothed beaked whales are vulnerable to naval sonar and seismic activity.
- **Bycatch**– Entanglement in fishing gear is likely to be one of the predominant threats to this deep-water species.
- **Plastic**– stranded individuals of similar species have been found with plastic in their stomachs.

Indian flap shell turtle

A vulnerable Indian flap shell turtle with a cracked shell was discovered in **Budaun**, possibly from a vehicle collision, and brought to the Indian Veterinary Research Institute for care.

Indian flap shell Turtle:

- It is a freshwater species of turtle **found in South Asia.** The "**flap-shelled**" name stems from the presence of **femoral flaps** located on the plastron. These flaps of skin cover the limbs when they retract into the shell. It is morphologically an evolutionary link between the softshell and hard-shell aquatic turtles.
- **Habitat:** They live in the shallow, quiet, often **stagnant waters of rivers**, streams, marshes, ponds, lakes and irrigation canals, and tanks. These turtles **prefer waters with sand or mud bottoms** because of their tendency to burrow.
- **Distribution:** They are mainly found in Pakistan, India, Sri Lanka, Nepal, Bangladesh (Indus and Ganges drainages), and Myanmar (**Irrawaddy and Salween Rivers**).

- **Lifestyle:** They are **omnivores.** They are generally **solitary and active during the day**. They are very well **adapted,** both morphologically and behaviourally, **to drought conditions.**

Conservation status

- **IUCN Red list:** Vulnerable
- **CITES:** Appendix I
- **Wildlife (Protection) Act, 1972**: Schedule I

Miyawaki Forest

- The methodology was developed in the 1970s, with the basic objective to densify green cover within a small parcel of land. The method involves creating **dense, multi-layered forests** that grow rapidly and mimic the natural biodiversity of native forests.

- This method involves planting two to four different types **of indigenous trees within every square metre**. The plants used in the Miyawaki method are mostly **self-sustaining** and don't require regular maintenance like manuring and watering.

- In this method, the trees become self-sustaining and they grow to their full length within three years.

- **Benefits**

- It helps in fighting the negative consequences of climate change.

- Help to reduce pollution levels in nearby areas by **capturing dust and other particles**.

- It increases the green cover of city enable residents to breathe fresh and pure air.

- It is a cost-effective method to grow tree and restore green cover in cities where finding space is a problem. **For instance, in Mumbai, Delhi**

- Promotion of indigenous variety of trees for instance **Bel, Anjan, Arju, Neem, Peepal and Amala, etc.**

- These forests can also sustain wildlife hence these urban forests encourage new bio diversity.

The Miyawaki method for restoring tropical forests

Germinate the seeds in a nursery, When two to three leaves have sprouted, move the seedlings to pots, Cultivate the seedlings in ports until their root groups generally fill the containers,

Cultivate under nets designed to cut out 60 percent of the sunlight for one to two months

Obtain seeds from natural tropical forests

Cultivate under nets designed to cut out 40 percent of the sunlight for one to two months.

"No management is best management"

Plant and conduct maintenance for one to two years, From the third year entrust the trees to natural management At this point the rule is "No management is the best management"

Adapt to the natural environment in an existing forest (period of between one week and one month).

Crop Residue Management

Crop residue are the agricultural waste that are left in the fields after the harvesting and threshing process. **Stubbles, stalks, stover, husk, bran, bagasse and molasses** are generally classified under the category of crop residue. These crop residues were once thought to be waste. But these are now regarded as an important natural resource.

In-situ Crop residue management:

- **Mulching** is the practice of leaving crop residue on the soil surface to protect the soil from erosion and retain moisture. Mulching also helps to suppress weeds and provides nutrients to the soil.
- **No-till farming** involves planting crops without disturbing the soil. Crop residue is left on the soil surface, and seeds are planted through it. This method helps to conserve soil moisture and reduce soil erosion.
- **Cover crops** are planted in between cash crops to provide ground cover and add nutrients to the soil. Cover crops can also be left on the soil surface as a form of mulch.
- **Crop rotation** involves alternating the type of crops grown on a field each season. This method can help to reduce soil erosion and nutrient depletion while also improving soil health

Crop residue ex-situ management:

- **Biomass power generation**: Crop residues can be used as a source of fuel for biomasspower generation. This method involves burning crop residues to produce electricity or heat.

- **Animal feed**: Crop residues can be used as a source of animal feed, particularly for livestock such as cattle, sheep, and goats. Crop residues can be baled and stored for use as animal feed during the dry season when forage is scarce.

- **Composting**: Crop residues can be composted to produce a nutrient-rich soil amendment. This method involves collecting the crop residues and mixing them with other organic materials such as manure, leaves, and grass clippings. The compost can then be used to improve soil fertility and structure.

- **Biochar production:** Biochar is a type of charcoal that is produced by heating crop residues in the absence of oxygen. Biochar can be used as a soil amendment to improve soil fertility, water retention, and crop productivity.

- **Industrial uses**: Crop residues can be used in various industrial processes, such as the production of paper, textiles, and building materials.

Over 800 Elephants died in Kerala in 8 years

- The Asian elephant's scientific name is **Elephas maximus**. It is the *largest living terrestrial animal in Asia*. Due to a population drop of at least 50% over the previous three generations of elephants, or roughly 60–75 years, the Asian elephant has been categorized as **Endangered** on the IUCN Red List since 1986. Its main threats are habitat loss, habitat degradation, habitat fragmentation, and poaching.

- There are three subspecies of Asian elephants: **Indian, Sumatran, and Sri Lankan**. India has more than **60% population of Asian elephants**.

- India has the largest number of wild Asian elephants, estimated at 29,964 according to the 2017 census by Project Elephant. It is about 60% of the species' global population.

- **Karnataka has the highest number of elephants, followed by Assam and Kerala**.

Conservation Status:

- IUCN Red List of threatened species:

1. **African Forest Elephant (*Loxodonta Cyclotis*)- Critically Endangered**

2. **African Savanna Elephant (*Loxodonta Africana*)- Endangered**

3. **Asian Elephant *(Elephas maximus)*- Endangered**

Initiatives in India for Elephant Conservation
Addressing Elephant-Human Conflict:

- Establishment of over 40 elephant corridors and 88 wildlife crossings to reduce conflicts.

- Creation of buffer zones around protected areas covering more than 17,000 sq. km.

Project Elephant:

- Launched in 1992, covering 23 states across India.

- Improved the status of wild elephants, with a population increase from about 25,000 in 1992 to around 30,000 in 2021.

Elephant Reserves:

- Establishment of **33** Elephant reserves covering approximately 80,777 Sq.km.

- These reserves play a crucial role in safeguarding wild elephant populations and their habitats.

Solid Waste Management Rules

- **Solid Waste** comprises solid or semi-solid household waste, sanitary waste, commercial waste, institutional waste, catering and market waste, as well as other non-residential wastes.

- It also includes street sweepings, silt collected from surface drains, horticulture waste, agriculture and dairy waste, treated biomedical waste (excluding industrial, bio-medical, and e-waste), battery, and radioactive waste.

What are the Challenges with Solid Waste Management in India?

- **Rising Waste Generation-**Rapid economic growth has raised the consumption levels in the economy, which has in turn increased the waste generation. Further, the expansion of digital economy is leading to a multifold increase in e-waste generation. **For ex-** A Planning Commission Report had estimated that India will generate 165 million tonnes by 2030.

- **Lack of proper Waste Management-** India lacks proper waste management and disposal techniques.
  (a) Poor Processing-Only 50% of the waste produced is actually processed in India. ~30% of waste is not accounted and ~20% ends up in landfills, reflecting poor waste disposal method.

(b) Incorrect and Inadequate Segregation Techniques- There is poor segregation of waste at source. Hazardous waste and e-waste is not sealed and labelled leading to improper disposal. **For ex-** Valuable materials like aluminium and plastics end up in landfills instead of being recycled.

(c) Reuse/recycling of waste- Reuse and recycling of waste is predominantly an informal economy, lacking access to advanced technology.

- **Littering and Illegal Dumping-**Due to poor disposal methods, almost half of waste is placed in uncontrolled dumps and landfills. These landfills are the source of generation of methane gases, leachates, and landfill fires, adversely affecting the surrounding environment.

- **What are the Solid Waste Management Rules 2016?**

- These rules replaced the **Municipal Solid Wastes (Management and Handling) Rules, 2000**and focused on the segregation of waste at source, the responsibility of the manufacturer to dispose of sanitary and packaging wastes, and user fees for collection, disposal and processing from the bulk generator.

Key Features:

- **Responsibilities of Generators** have been **introduced to segregate** waste in to three streams:

- Wet (Biodegradable)

- Dry (Plastic, Paper, metal, wood, etc.)

- Domestic hazardous wastes (diapers, napkins, empty containers of cleaning agents, mosquito repellents, etc.) and handover segregated wastes to authorized rag-pickers or waste collectors or local bodies.

Waste Generators will have to pay:

1. 'User Fee' to waste collectors.

2. 'Spot Fine' for Littering and Non-segregation.

- The **bio-degradable waste** should be processed, treated and disposed of through composting or **bio-methanation** within the premises as far as possible.

- **Manufacturers** and **brand owners** of disposable products like tin, glass, and plastic packaging must **financially assist local authorities** in establishing a **waste management system.**

LIMITATIONS
Centralized Treatment Emphasis:

- The rules predominantly advocate centralized treatment methods like waste-to-energy, neglecting the potential advantages of decentralized waste management, which might not align with the current needs of the nation.

Undervaluation of Informal Sector:

- The new guidelines fail to adequately recognize the importance of the informal sector in waste management, potentially undermining the significant role played by informal workers.

Unclear Monitoring System:

- There is a lack of clarity regarding the operational mechanisms of the monitoring system outlined in the rules. The specifics of how the system will function and the extent of fees imposed on plastic manufacturers remain ambiguous.

Behavioural Adjustment Challenges:

- The rules do not address the behavioural adjustments required from the public in the production of domestic garbage. Effective waste management necessitates behavioural changes, and authorities should focus on enforcing established standards.

The Great Nicobar Island Development Project

What is the Great Nicobar Island Development Project?

- **The Great Nicobar Project-**The project involves a comprehensive Rs 72,000-crore infrastructure upgrade on Great Nicobar Island. It is being implemented by **the Andaman and Nicobar Islands Integrated Development Corporation (ANIIDCO).**
- The project covers **16,610 hectares** and aims to leverage the island's strategic location near the Malacca Strait. The Great Nicobar Island Development project includes developing:

An International Container Transshipment Terminal (ICTT)

A greenfield international airport

Two greenfield cities

 A coastal mass rapid transport system

A free trade zones

Purpose:

Economic Reasons:

- As per the NITI Aayog report, the proposed port will allow Great Nicobar to participate in the regional and Global maritime economy by becoming a major player in cargo transshipment.

- It is equidistant from Colombo to the southwest and Port Klang (Malaysia) and Singapore to the southeast, and positioned close to the East-West international shipping corridor, through which a very large part of the world's shipping trade passes.

Strategic Reasons:

- The proposal to develop Great Nicobar was first floated in the 1970s, and its importance for national security and consolidation of the Indian ocean region has been repeatedly underlined.

- Increasing Chinese assertion in the Indian Ocean has added great urgency to this imperative in recent years.

The associated concerns with the project:

- **Threat to biodiversity-**Nearly a million trees could be felled as part of the project. This could potentially devastate the island's ecosystem, including coral reefs, the Nicobar Megapode bird, and leatherback turtles. The compensatory afforestation is being planned in Haryana.

- **Threat to rights of Indigenous Tribes-**The proposed Nicobar project endangers the rights of the Shompen and Nicobarese tribes, living on the island. It also violates the letter and spirit of the Forest Rights Act (2006), which holds the Shompen as the sole legally empowered authority to protect, preserve, regulate and manage the tribal reserve.

- **Seismic Vulnerability-**The proposed port which is an integral part of this project, is located in a seismically volatile zone, which experienced permanent subsidence of around 15 feet during the 2004 tsunami. This raises concerns about the safety and viability of constructing such a large-scale infrastructure project in a high-risk, disaster-prone area.

- **Lack of Adequate Consultation-**The project has been pushed through without adequate deliberations of all the stakeholders like the The Tribal Council. The National Green Tribunal's high-powered committee's report reviewing the environmental clearances has also not been made public.

- **Undermining international obligations-**The Galathea Bay Wildlife Sanctuary located in the Great Nicobar Island forms part of a UNESCO World Heritage Site. Hence the preservation of this pristine biodiversity is an International Obligation of India.

- **Lack of adequate Social Impact Assessment-**The Campbell Bay panchayat has raised concerns regarding the lack of adequate social impact assessment before land acquisition. **For ex-** Increased contact with outsiders, will increase the risks of Shompen tribe to diseases for which their immunity is not developed.

The Way Forward

- **Due regards to tribal rights-**The development work must be carried out with due regard to tribal rights. This should involve proper adherence to policies like the Shompen Policy of 2015. The Shompen Policy of 2015 calls for giving priority to tribal rights over large scale development proposals.

- **Separation of security and development capabilities-**The security capabilities of Andaman and Nicobar Island need to be addressed separately.

This must have no linkage with the developments contemplated for Great Nicobar Island.

- **Proper Social and Environmental Impact Assessment-**Any construction under the Great Nicobar Development plan should involve a proper and detailed Environment impact assessment (as mandated by the Environment Protection Act 1986). This will make development more socially and environmentally feasible.

- **Eco-friendly Construction-**The construction of infrastructure should be done using eco-friendly practices like strict adherence to GRIHA code for building construction.

- **Transparency in Data and Report-**NITI Aayog and the agencies participating in planning should maintain transparency in data. The government should release the data on the rationale, the process of creation, consulted groups etc. in public domain. This will give a holistic view to critics and supporters.

- **Enhanced International Cooperation-**India should enhance Cooperation with countries like Japan, South Korea etc. This will help in developing successful island development models.

Project Tiger

- It is a tiger conservation programme (a Centrally Sponsored Scheme of the MoEF&CC) launched in 1973 by the Government of India and administered by the National Tiger Conservation Authority (NTCA).

    It aims at

- Ensuring a viable population of the **Bengal tiger ('endangered')** in its natural habitats,

- Protecting it from extinction,

- Preserving areas of biological importance as a natural heritage that represent the diversity of ecosystems across the tiger''s range in the country.

Growth Rate in Tiger Population:

- The first tiger census, in 1972, used the unreliable **pug-mark method** to count 1,827 tigers.

- As of 2022, the tiger population is estimated at **3,167-3,925,** showcasing a growth rate of 6.1% per year.

- India is now home to three-quarters of the world's tigers.

Developments After the Launch of the Project Tiger

- In 2005, the then PM appointed a 5-member **'Tiger Task Force'** after a public outcry that India's tigers existed only on paper and not in the forests of Sariska in Rajasthan.

- In Sariska, the government had spent Rs 2 crore per tiger in 2002-2003 for their upkeep and safety, versus Rs 24 lakh per tiger elsewhere.

- The Task Force found that the increasing conflict between the forest/wildlife bureaucracy and those who coexist with the tigers was a recipe for disaster.

- So, the Parliament amended **WLPA in 2006 to create the National Tiger Conservation Authority (NTCA)** and a tiger conservation plan.

- From an administrative category arbitrarily constituted and administered by the forest bureaucracy, Tiger Reserves became a statutory category in 2006.

- Later, the government also enacted the **Forest Rights Act (FRA) 2006,** which recognised all customary and traditional forest rights - individual as well as community - on all forest land, including in Tiger Reserves.

- Under the Act, the habitation-level **Gram Sabha** was to democratically determine and demarcate the forest rights that FRA recognised and vested in them.

- As a result, FRA secured the livelihoods of at least 20 crore Indians – about half of them tribal – in 1.79 lakh villages.

- Importantly, FRA introduced a **'Critical Wildlife Habitat' (CWH),** akin to the CTH, with one difference: once a CWH had been notified, it couldn't be diverted for non-forestry purposes.

Coastal Zone Management Plans

- **Coastal Zone Management (CZM)** is a process of managing the coast, in all aspects of the including geographical and political boundaries, to achieve sustainability. India has an **Exclusive Economic Zone (EEZ)** of 2.02 million sq. km and a long coastline of 8,118 km with rich and diverse marine living resources. Coastal zone management is critical for utilising these resources efficiently leading to inclusive growth.

Coastal Zone Management Plan (CZMP)

- Coastal region management plans (CZMP) are designed to promote sustainable development within coastal sector environments.

- Till now the CZMP has been accepted for Odisha, Karnataka and Maharashtra and ICRZP has been authorized for Great Nicobar Island and Little Andaman Island as in line with **CRZ Notification, 2019.**

Coastal Regulation Zone (CRZ)

- The **Ministry of Environment and Forests (MoEF)** under the Environment Protection Act, 1986, issued the Coastal regulation zone notification for regulation of activities in the coastal area.
- **Definition:** As per the notification, the coastal land up to a distance of 500m from the High Tide Line (HTL) and a stage of 100m along banks of creeks, estuaries, backwaters and rivers subject to tidal fluctuations, is called the Coastal Regulation Zone (CRZ).

CRZ along the country has been placed in four categories, which are as follows:

1. **CRZ I – Ecologically Sensitive Areas.**

- Location: They lie between the low and high tide lines.

- In this area, exploration of natural gas and salt extraction are permitted

2. **CRZ II – Shore Line Areas**
- **Location:** The areas that have been developed up to or close to the shoreline.

- Unauthorized structures are not allowed to be constructed in this zone.

3. **CRZ III – Undisturbed Area**
- **Location**: Rural and Urban localities that fall outside I and II.

- Only certain activities related to agriculture even some public facilities are allowed in this zone.

4. **CRZ IV – Territorial Area**

- **Location:** An area covered between **the Low Tide Line and 12 Nautical Miles seaward.**

- Fishing and allied activities are permitted in this zone.

- No solid waste should be discharged in this zone.

GEOGRAPHY

- **Alaska's glaciers near irreversible tipping point, study finds**

- A new study suggests that the **Juneau Icefield in Alaska** could reach an irreversible tipping point sooner than predicted, with its glaciers rapidly receding since 2005.

- **The Icefield:** The Plateau icefield spans the United States' Alaska and **Canada's British Columbia** and comprises 1,050 glaciers in 2019, covering an area of 3,816.3 square kilometers.

The Study

- **Published In:** The study was published in the journal, **Nature Communications**.

- **Aim:** To determine **the rates of icefield-wide shrinkage** and thinning to quantify glacier change from the **Little Ice Age** period (a period of widespread cooling that lasted from 1303 to 1850) to recent times till 2020.

- **Scope:** To extend the scope of study and examine even longer-term records of icefield change, especially through previous periods of rapid climate change,

such as during the last glacial-interglacial transition 19,000 to 11,000 years ago.

Key Findings of the study:

Alaska's glaciers

- *Alaska's glaciers shrinkage is five times faster than in the mid-20th century, threatening global sea levels*

- **Icefield extent:** The reconstructed **Little Ice Age** revealed that the icefield covered 5,414.95 square kilometres of land, about 30 per cent larger than in 2019.

- **Disappearing glaciers:** Between 1770 and 2019, 108 glaciers disappeared, and 100 per cent of the glaciers mapped in 2019 had receded compared to their Little Ice Age positions.

- **Shrinkage rate:** The study found that glacier shrinkage from 2015 to 2019 was five times faster than between 1948 and 1979.

- *Glacier volume loss:*

- 1770 to 2013: Glacier volume loss was 0.4 cubic kilometres per year.

- 1948 –1979: Glacier volume loss increased to 1.0 cubic kilometres per year

- 1979 – 2000: Glacier volume loss rose to 3.7 cubic kilometres per year

- 2000 to 2010: Glacier volume loss rate witnessed a slight decrease to 3.1 cubic kilometres per year

- 2010 to 2020: Glacier volume loss again increased two times to 5.9 cubic kilometres per year

- **Temperatures rise:** The temperature in the Alaskan region remained relatively stable from 1990 to 2005, as did icefield thinning and area loss. However, from

2010 to 2020, the region experienced another temperature rise which rose by 1.39°C at Juneau Airport from 1941 to 2020.

- **Reason:** The temperature rise is due to a shift to predominantly positive values in **the Pacific Decadal Oscillation (PDO)** from 1976 bringing increased precipitation and warmer temperatures to **Alaska and Juneau.**

- **Pacific Decadal Oscillation (PDO):** It is a long-term ocean fluctuation in the Pacific Ocean, which alternates between warm and cool phases approximately every 20 to 30 years.

- **Contribution in global Sea level rise:** With around 25 per cent of global glacier ice loss coming from Alaskan glaciers, The large icefields here contain enough glacial ice to raise global sea levels by 46.4 millimetres if melted.

- **Ice loss:** The Alaskan glaciers have lost about 66.7 billion tonnes of ice each year and at this rate, all Alaskan ice could disappear in about 250 years.

Reasons

- **Plateau Icefields:** Alaskan icefields are particularly vulnerable to increased melting due to its predominantly flat, plateau landscape of its icefields. Ice loss happens across the whole surface affecting a much greater area as the climate warms.

- **Rising Equilibrium Line Altitude:** One significant factor in glacier volume loss is the rising **Equilibrium Line Altitude**. The melt is now occurring on the plateau itself, the snowline is on the plateau itself in particularly warm summers (The flat plateau area was previously above the ELA, with snow remaining year-round)

- Because the plateau is very flat, a small rise in the ELA exposes a much greater area to melt, accelerating icefield mass loss.

- **Equilibrium Line Altitude** is the zone on a glacier where snow and ice accumulation balance out with loss over a year. As summers lengthen and winters shorten, and temperatures rise, the height at which snow remains all year round is increasing.
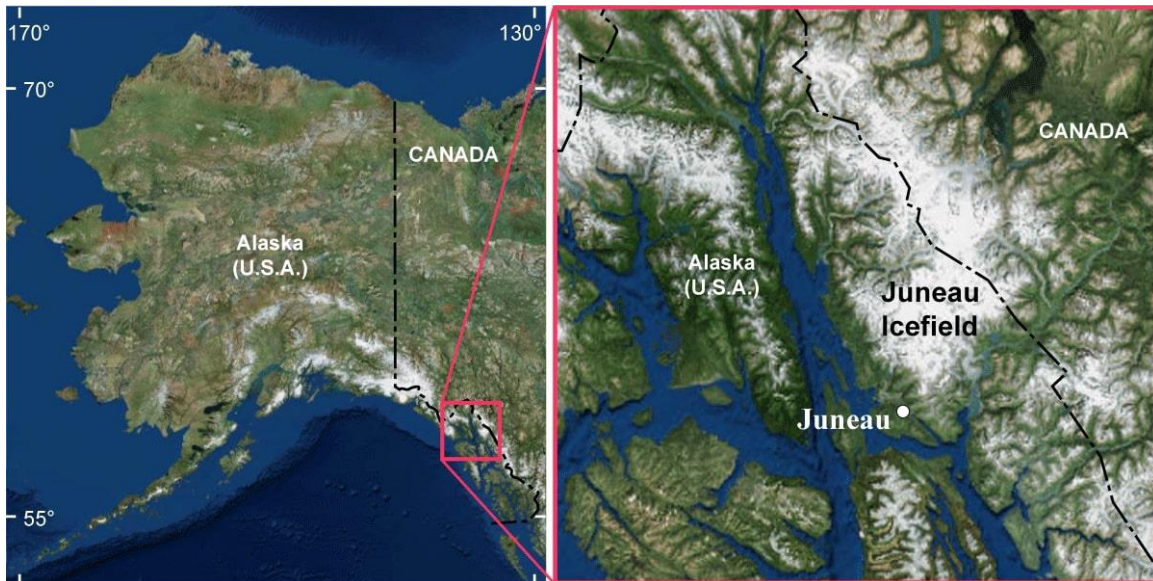
Alaska's Juneau Icefield

- **Location:** Juneau Icefield spanning 1500-square-mile is the fifth largest icefield in North America and is located just north of Juneau, Alaska, continuing north through the border with British Columbia.

- Much of the icefield is contained within the **Tongass National Forest**

- **Glaciers:** The icefield is the birthing ground of 38 major glaciers, including **Juneau's Mendenhall Glacier** and **Taku Glacier.**

- **Training for Moon:** NASA has chosen the icefield as one of the places on Earth that "captured the emotional sensations that one might encounter while walking on the moon."

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- **Notable peaks:** Major peaks on the Juneau Icefield are **Devils Paw, Nelles Peak, Emperor Peak**
- **The Juneau Icefield Research Program:** Since 1948, the Juneau Icefield Research Program has monitored glaciers of the Juneau Icefield.
- On the west side of the icefield, from 1946-2009, the terminus of the **Mendenhall Glacier** has retreated over 700 metres.

Wildfires have been a natural part of the Arctic's boreal forest or snow forest and tundra (treeless regions) ecosystems.

As per **Europe's Copernicus Climate Change Service**, it is the third time in the past five years that high intensity fires have erupted in the region.

Concerning Statistics On Arctic Wildfires

- The Arctic has been warming roughly **four times as fast as the world**. While the global average temperature has increased by at least **1.1 degree Celsius** above the pre-industrial levels, the Arctic has become on average around **3 degree warmer than it was in 1980**.
- **High Burning of Land:** A majority of fires are in **Sakha, Russia**, where more than 160 wildfires burned nearly 460,000 hectares of land.
- **High Carbon Emissions:** The June monthly total carbon emissions from the wildfires are the third highest of the past two decades, at **6.8 megatonnes of carbon**, behind June 2020 and 2019, which recorded 16.3 and 13.8 megatonnes of carbon respectively.

Factors for Worsening of Arctic Wildfires

- As per the **World Wild Fund**, all three factors — rising temperatures, more frequent lightning and heat waves — will most likely worsen in the coming years, thereby causing more wildfires in the Arctic.

- **Frequent Lightning:** The fast paced warming has led to more frequent lightning in the Arctic, which has further increased the likelihood of wildfires.

- **Example:** Lightning-sparked fires have more than doubled in Alaska and the Northwest Territories since 1975.

- **Rising Temperature:** Soaring temperatures have also slowed down the **polar jet stream** — responsible for **circulating air between the mid- and northern latitudes** — due to less of a temperature difference between the Arctic and lower latitudes.

- Hence, the polar jet stream often gets **"stuck" in one place**, bringing *unseasonably warm weather* to the region.

- **Heat Waves:** It also blocks out low-pressure systems, which bring clouds and rainfall, possibly leading to intense heat waves, which can cause more wildfires.

TUNDRA biome around the world

Concerns with Rising Arctic Wildfires

- By 2050, it is estimated that wildfires in the Arctic and around the world could **increase by one-third**.

- **Emission of Greenhouse Gases (GHGs):** When wildfires ignite, they burn vegetation and organic matter, releasing the heat trapping GHGs such as carbon dioxide (CO2) into the atmosphere.

- Hence, the rising frequency of wildfires around the globe is a matter of concern as they contribute to climate change.

- **Storehouse of Greenhouse Gases (GHGs):** In the case of Arctic wildfires, GHG emissions are not the biggest worry but rather the carbon stored underneath the **region's permafrost**.

- Scientists estimate that *Arctic permafrost holds around 1,700 billion metric tons of carbon*, including **methane and CO2**. That's roughly 51 times the amount of carbon the world released as fossil fuel emissions in 2019.

- **Vulnerable to Thawing:** Wildfires make permafrost more vulnerable to thawing as they **destroy upper insulating layers of vegetation and soil**. This can cause **ancient organic materials such as dead animals and plants to decompose** and release carbon into the atmosphere.

- In case of a large-scale thawing, it would be impossible to stop the release of carbon.

- This would mean that the world will not be able to limit global warming within the 1.5 degree Celsius threshold. Breaching the limit will result in catastrophic and irreversible consequences for the planet.

- **No Actions Taken:** To make matters worse, as of now, no one is keeping a tab on post-fire permafrost emissions, and they are not even fed into climate models. Therefore, there is no way to estimate their contribution to climate change.

- Arctic change amplifies risks globally and these fires are a warning cry for urgent action.

On July 5, Earth reaches its farthest from the sun for the entire year, a moment astronomers call Aphelion.

Aphelion

- Aphelion is the point in Earth's orbit where it is **farthest from the Sun**. The Earth **receives less radiation** from the sun, as heat, than at any other time of the year.
- **Occurrence:** Aphelion occurs every year in July.
- The sun is at its **smallest** in the sky.

Aphelion and Earth's Elliptical Orbit

- **Johannes Kepler:** It was 17th-century German mathematician Johannes Kepler who revealed that all planets orbit in an ellipse in his first law of planetary motion.
- **Elliptical Orbit of the Earth:** Earth's orbit around the Sun is not a perfect circle; it is **elliptical** (oval-shaped).
- **Aphelion and Perihelion:** This elliptical shape means that there are points in the orbit where Earth is closer to the Sun **(perihelion)** and points where it is farther from the Sun **(aphelion).**

- At aphelion, Earth is about **152.1 million km (94.5 million miles)** from the Sun.

- In **early January**, Earth reaches perihelion, the point where it is closest to the Sun, at about 147.1 million km (91.4 million miles).
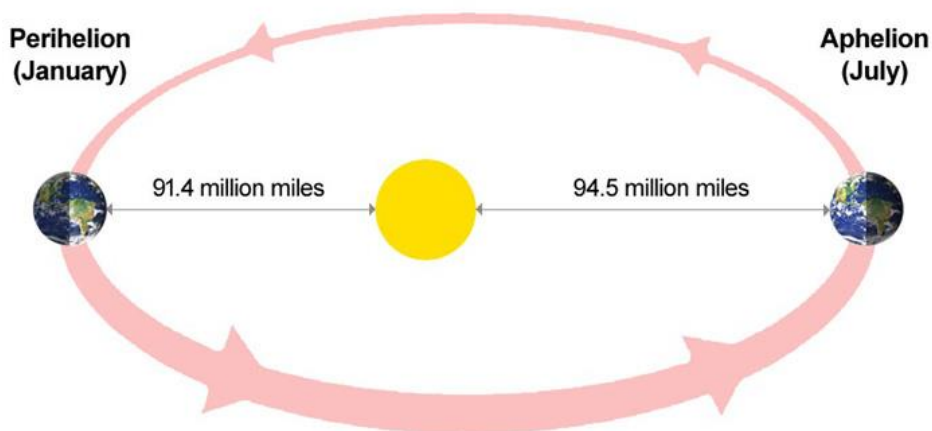
Gravitational Influences:

- The elliptical nature of planetary orbits is due to **gravitational forces**.

- Planets exert gravitational influences on each other, causing their orbits to be elongated rather than circular.

- Jupiter, the most massive planet in the solar system, has the greatest influence on the orbits of other planets.

Measuring Eccentricity:

- The degree to which an orbit deviates from a perfect circle is called its **eccentricity**.

- Higher eccentricity indicates a more elliptical orbit.

- For example, Mars has an eccentricity of 0.094, Pluto has 0.244, and Earth has a low eccentricity of 0.017.

Aphelion and Earth's Temperatures:

- A common misconception is that Earth's varying distance from the Sun causes the seasons.

- Earth receives **7% less sunlight at aphelion** compared to perihelion, leading to slightly milder summers and winters in the Northern Hemisphere.

- However, the effect of Earth's distance from the Sun is offset by the planet's axial tilt, which causes the seasons.

Hypothetical Scenarios:

- **No Aphelion:** If Earth's orbit were a **perfect circle**, the *lengths of the seasons would be exactly the same*.

- Currently, **spring and summer are a few days longer** than **fall and winter** in the **Northern Hemisphere**.

- **Increased Eccentricity:** If Earth's orbit became more eccentric, it would lead to extreme seasons, particularly in the Southern Hemisphere.

- Summers would be unbearably hot, and winters intolerably cold, potentially leading to crop failures and making advanced civilization difficult.

- **Conclusion:** Earth's current orbital characteristics and distance from the Sun create a stable environment conducive to life.

A painting created at least 51,200 years ago was discovered in the limestone cave of Leang Karampuang in the Maros-Pangkep region of the Indonesian island.

Leang Karampuang Cave:

- It is a limestone cave located on the ***Indonesian island of Sulawesi***.

Key findings:

- A scene of humans interacting with a pig painted on a cave wall is found in the cave.

- The scene, dominated by a representation of a pig that is standing upright along with three smaller human-like figures, is painted in a single shade of dark red pigment.

- One figure seems to be holding an object near the pig's throat. Another is directly above the pig's head in an upside-down position with legs splayed out.

- The third figure is larger and grander in appearance than the others; it is holding an unidentified object and is possibly wearing an elaborate headdress.

- This painting predates the **cave paintings of Europe**, which is at **El Castillo in Spain**, dating to about 40,800 years ago.

- The researchers interpreted the painting as a narrative scene, which they said would make it the oldest-known evidence of storytelling in art.

- The earliest Sulawesi rock art is not "simple, it is quite advanced and shows the mental capacity of people at the time.

Recently Goa & Karnataka are at loggerheads again over Kalasa-Banduri project as central body inspects Mahadayi river basin.

Kalasa-Banduri Project

- The project entails constructing dams and a canal system to divert water from **Goa's Mahadayi River** to the **Malaprabha River** basin in Karnataka, which is a tributary of the **Krishna River**.

- **Objective:** To supply drinking water to the districts of Belagavi, Dharwad, Bagalkot, and Gadag in Karnataka.

- **Status:** Although the project was initially proposed in the early 1980s, it has not progressed beyond the planning stage due to a dispute among Karnataka, Goa, and Maharashtra.

Mahadayi River Water Dispute

- **Origins:** The Mahadayi River dispute began in the 1980s and intensified over time.

- Karnataka's plans to build dams, canals, and barrages to divert Mahadayi water to the Malaprabha basin sparked the conflict, as the state claimed this would meet the water needs of Bagalkot, Gadag, Dharwad, and Belagavi districts.

- **Establishment of Tribunal:** To address the dispute, Goa sought the constitution of a water disputes tribunal in 2002 and moved the apex court in 2006. After persistent efforts, the *Mahadayi Water Disputes Tribunal was established on November 16, 2010.*

- **Goa's Argument:** Goa says diverting the Mahadayi River could harm its ecosystem, leading to saltwater damage to mangroves and upsetting the local ecological balance.

- **Dispute:** The dispute over Mahadayi water revolves around allocation. Karnataka argues for diverting surplus water to the Malaprabha basin for drinking, irrigation, agriculture, and power. Goa opposes, citing water scarcity and potential harm to agriculture if supply is reduced.

- **Stand of Supreme court:** The Supreme Court halted Karnataka's construction of dams and canals on the Mahadayi River due to Goa's concerns that Karnataka might store excess water in its reservoirs for irrigation in other regions of the state.

Mahadayi River

- **Origins:** Originating in the Western Ghats, the Mahadayi River starts from the **Bhimgad Wildlife Sanctuary** in Khanapur taluk of Belgaum district, Karnataka.

- **Type of River:** Known as **Mandovi** in Goa, the Mahadayi River is a **rain-fed river** shared by Karnataka and Goa to meet their water requirements.

- **Tributaries**: Kalasa Nala, Banduri Nala, Surla Nala, Haltar Nala, Poti Nala, Mahadayi Nala, Pansheer Nala, Bail Nala, and Andher Nala.

- **Towns:** Belgaum and Panaji, inhabited by communities such as **Kumri Marati**, **Goudas**, and **Konkanis**.

- Waterfalls: **Dudhsagar Falls** and **VajraPoha Falls**.

- Type of Farming: **Khazan** farming is popular in the Mahadayi basin, where elevated farmland is protected by bundhs.

- This method supports waterlogged farming, particularly for paddy cultivation, and is managed by the community as an integrated agro-aqua ecosystem. The embankments or bundhs are crucial for controlling water salinity.

- **Protected Areas:** Salim Ali Bird Sanctuary, Mhadei Wildlife Sanctuary & International Bird Area, **Bhagwan Mahaveer Sanctuary** and **Mollem National Park**
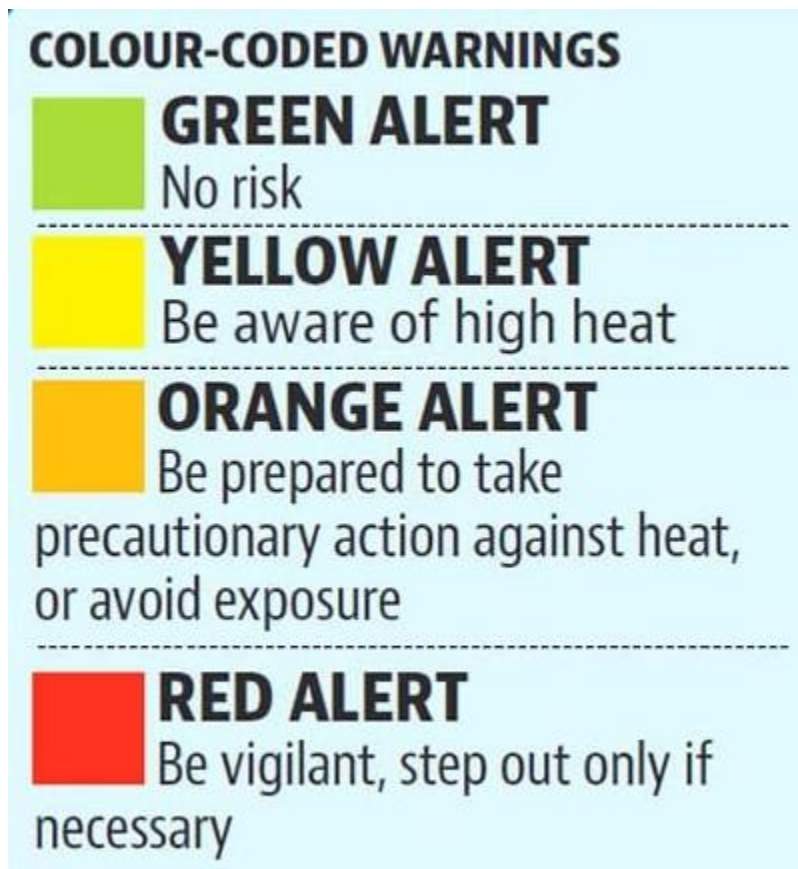
Colour- Coded Weather Warning

Orange alert in 5 rain-hit districts of Kerala.

Colour- Coded Weather Warning:

- **IMD** uses a color-coded weather warning system to alert the public about the severity and impact of various weather phenomena. The colour alerts issued by the IMD are as follows:

  Green Alert (No warning):

- No weather warnings are expected in the near future.

- No action needs to be taken by the general public or disaster management authorities.

COLOUR-CODED WARNINGS

GREEN ALERT
No risk

YELLOW ALERT
Be aware of high heat

ORANGE ALERT
Be prepared to take precautionary action against heat, or avoid exposure

RED ALERT
Be vigilant, step out only if necessary

Yellow Alert (Be updated):

- Severe weather is possible over the next few days.

- The public should stay informed about the latest weather updates and warnings.

- Disaster management authorities should plan and prepare for any potential impact.

  Orange Alert (Be prepared):

- The weather condition has the capacity to significantly impact people in the affected areas.

- This alert indicates a higher level of danger compared to the Yellow Alert.

- The public should prepare for rough weather and stay away from vulnerable areas.

- Disaster management authorities should be ready to handle any emergencies.

  Red Alert (take action):

- Extremely severe weather conditions are expected.

- This alert indicates the highest level of threat and requires immediate action.

- The public should take all necessary precautions and follow the instructions of local authorities.

India Meteorological Department:

- IMD was established in **1875.**

- It is an agency of the Ministry of Earth Sciences of the Government of India.

- It is the principal agency responsible for meteorological observations, weather forecasting and seismology.

Koyna Dam

- The Koyna Dam is the **largest dam in Maharashtra.** The Dam is located in Koyana Nagar, Satara District.
- It is **a rubble-concrete dam** constructed on the Koyna River.
- The catchment area of the Koyna Dam blocks up the **Koyna River and creates the Shivsagar Lake, which is roughly 50 km long.**
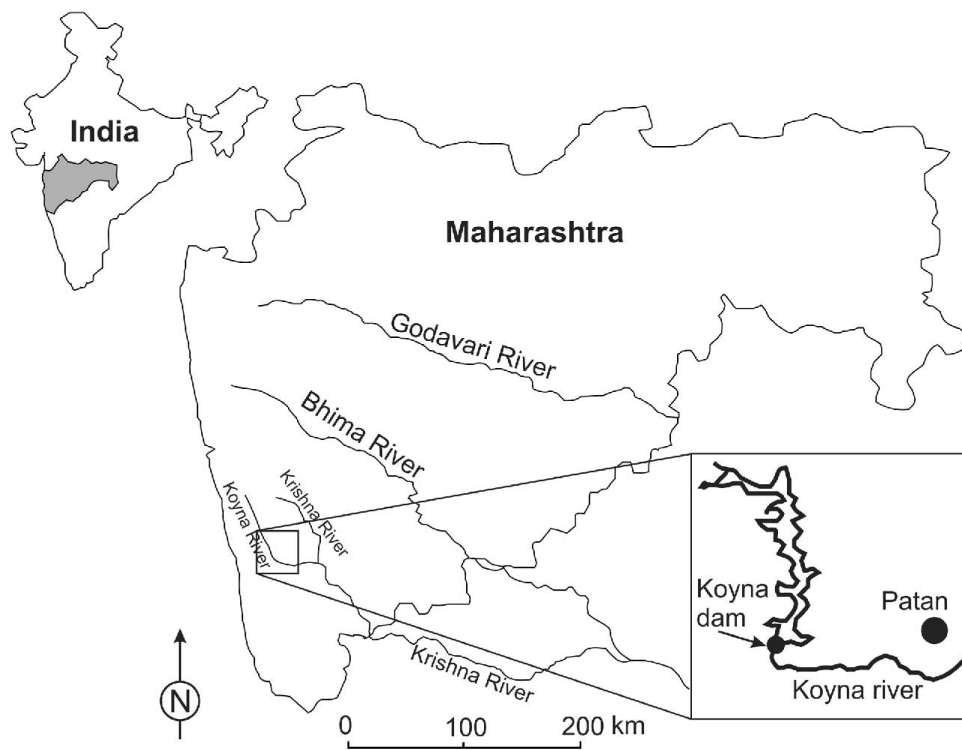- The dam plays a vital role in flood control during monsoon season.

Figure 1. Study site

Koyna River:

- The **Koyna River is a tributary of the Krishna river** which originates in Mahabaleshwar, Satara district, Western Maharashtra.
- Unlike most of the other rivers in Maharashtra which flow East-West direction, the **Koyna River flows in North-South direction.**
- Koyna River is supported by four tributaries. They are **Kera, Wang, Morna and Mahind.**
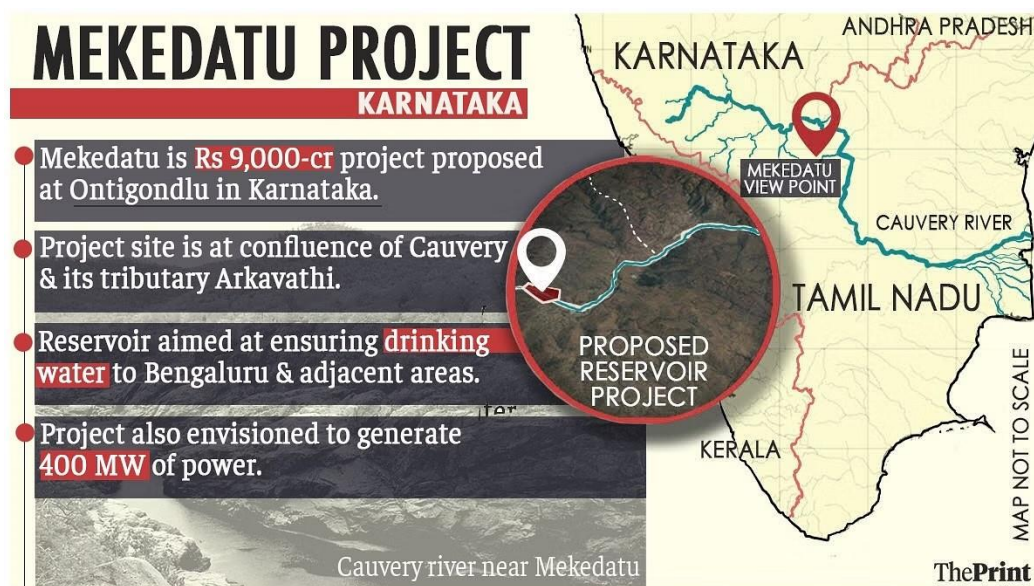
Krishna river

- The Krishna River originates in the Western Ghats, near the town of Mahabaleshwar in Maharashtra, at an elevation of about 1,337 meters.
- The river is about 1,400 kilometres (870 mi) long, making it the **third-longest river** in India after the Ganges and the Godavari.
- The Krishna River basin covers an area of about **258,948 square kilometres**, which is nearly 8% of the total geographical area of India.
- The river flows through the states of **Maharashtra, Karnataka, Telangana, and Andhra Pradesh**, before emptying into the Bay of Bengal.
- The main tributaries of the Krishna River are the **Ghataprabha, the Malaprabha, the Bhima, the Tungabhadra, and the Musi rivers.**

KRISHNA RIVER SYSTEM
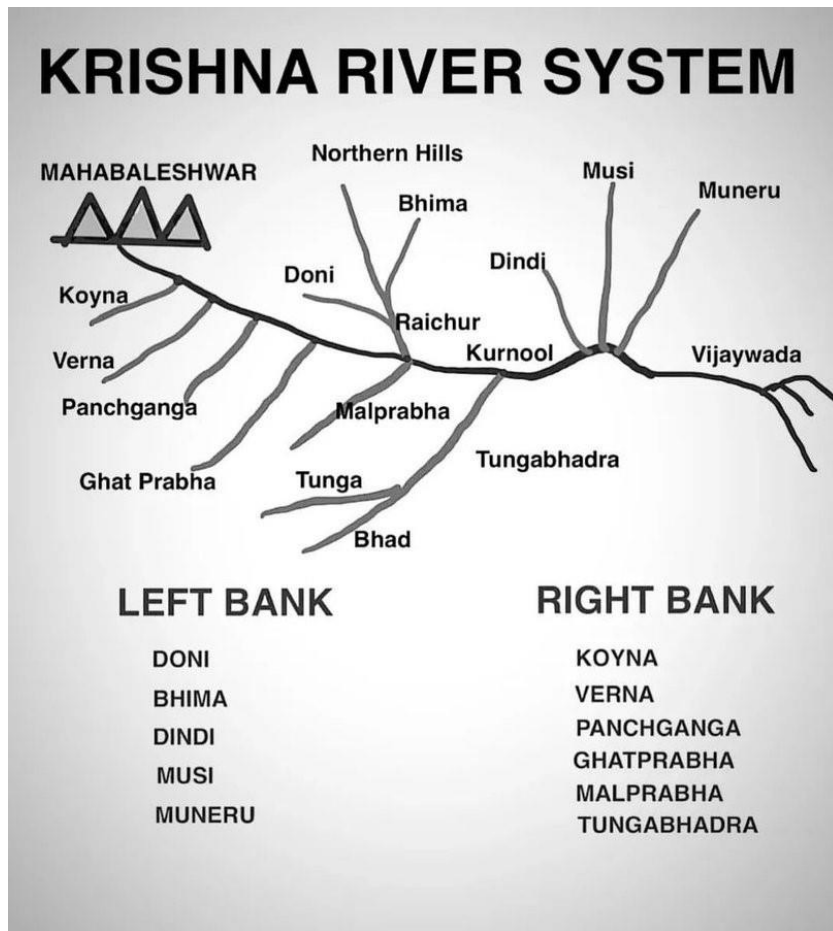
Mekedatu project

The Mekedatu project is a multipurpose project involving the construction of a balancing reservoir near Kanakapura in **Ramanagara district, Karnataka.** Mekedatu, meaning **goat's leap**, is a deep gorge situated at the confluence of the rivers Cauvery and its **tributary Arkavathi**.

- Its primary objectives are to provide drinking water to Bengaluru and neighbouring areas, totalling 4.75 TMC, and generate 400 MW of power.

MEKEDATU PROJECT
KARNATAKA

- Mekedatu is Rs 9,000-cr project proposed at Ontigondlu in Karnataka.
- Project site is at confluence of Cauvery & its tributary Arkavathi.
- Reservoir aimed at ensuring drinking water to Bengaluru & adjacent areas.
- Project also envisioned to generate 400 MW of power.

Cauvery river near Mekedatu

Issues surrounding Mekedatu project:

- The project aims to store and supply water for drinking purposes for the Bengaluru city. Around 400 megawatts (MW) of power is also proposed to be generated through the project.

- However, Tamil Nadu objected saying that the project would affect the flow of Cauvery water to Tamil Nadu. Tamil Nadu also argues that the project is against the final order of the **Cauvery Water Disputes Tribunal (CWDT)** in which the SC held that no state can claim exclusive ownership or assert rights to deprive other states of the waters of inter-state rivers.

Way forward

- The Mekedatu Dam dispute is a complex and sensitive issue that involves legal, technical and political aspects. The dispute reflects the competing demands and interests of two states over a shared natural resource that is vital for their development and livelihoods.

- The dispute also poses a challenge to cooperative federalism and inter-state relations in India. The resolution of this dispute requires dialogue, negotiation and compromise among all stakeholders, based on scientific data, legal principles and equitable distribution of water.

River Cauvery (Kaveri)

o It is known as 'Ponni' in Tamil, and it is the fourth largest river in southern India.

o It is a **sacred river of southern India**. It **rises on Brahmagiri Hill** of the Western Ghats in southwestern Karnataka state, flows in a south easterly direction through the states of **Karnataka and Tamil Nadu,** and descends the Eastern Ghats in a series of great falls and **drains into Bay of Bengal** through

o **Left Bank Tributary**: Arkavathi, Hemavathi, Shimsa, and Harangi.

o **Right Bank Tributary:** Lakshmantirtha, Suvarnavati, Noyil, Bhavani, Kabini, and Amaravathi.

Landslides flatten Wayanad villages.

What is a Landslide?

- A Landslide is a geological phenomenon involving the downward **movement of a mass of rock, soil, and debris on a slope.** This movement can vary in scale from small, localized shifts to massive and destructive events.

- Landslides can occur on both natural and man-made slopes, and they are often triggered by a combination of factors such as heavy rainfall, Earthquake, volcanic activity, human activities (such as construction or mining), and changes in groundwater levels.

Types of Landslides

1. **Falls** – They refer to the type of landslide that involves the collapse of material from a cliff or steep slope, which then falls down the slope and collects near the base.

2. **Topples** – Under this type of **landslide**, the falling mass undergoes forward rotation and movement around an axis or point at or near the base.

3. **Slides** – Under this type of landslide, there is a distinct zone of weakness that separates the moving material from a more stable underlying material.

Landslide Prone Areas in India

- ISRO has recently released the **Landslide Atlas of India**. As per this atlas, some of the prominent statistics regarding **landslides in India** are as follows:
- India is among the **top five landslide-prone countries** in the world.

- Excluding snow-covered areas, around 12.6 percent of India's geographical land area is prone to landslides.

- A rough break-up of reported **landslides in India** is as follows:

- About 66.5 percent from the North-Western Himalayas

- About 18.8 percent from the North-Eastern Himalayas

- About 14.7 percent from the Western Ghats.

- As per the Landslide Atlas of India, **major landslide prone areas in India** are as follows:

- The **North-eastern Region**(comprises about **50 percent** of the total landslide prone areas in India)

- Areas of **Uttarakhand, Himachal Pradesh, and Jammu & Kashmir** lying along the Himalayas.

- Areas of **Maharashtra, Goa, Karnataka, Kerala, and Tamil Nadu** lying along the Western Ghats.

- The **Araku region in Andhra Pradesh** along the Eastern Ghats.

- **Initiatives taken by the Government to mitigate the risk of landslides**

- **National landslide risk management strategy:** This is a comprehensive document that addresses all the components of landslide disaster risk reduction and management, such as hazard mapping, monitoring, early warning system, awareness programs, capacity building, training, regulations, policies, stabilization and mitigation of landslides, etc

- **Landslide Risk Mitigation Scheme (LRMS):** This is a scheme under preparation that envisages financial support for site specific landslide mitigation projects recommended by landslide prone states, covering disaster prevention strategy, disaster mitigation and R&D in monitoring of critical

landslides, thereby leading to the development of early warning system and capacity building initiatives.

- **Flood Risk Mitigation Scheme (FRMS):** This is another scheme under preparation that covers activities like pilot projects for development of model multi-purpose flood shelters and development of river basin specific flood early warning system and digital elevation maps for preparation of inundation models for giving early warning to the villagers for evacuation in case of flood.

- **National Guidelines on Landslides and Snow Avalanches:** These are guidelines prepared by the NDMA to guide the activities envisaged for mitigating the risk emanating from landslides at all levels. The guidelines cover aspects such as hazard assessment, vulnerability analysis, risk management, structural and non-structural measures, institutional mechanisms, financial arrangements, community participation, etc.

- **Landslide Atlas of India:** The Landslide Atlas of India is a document that provides the details of landslides present in landslide provinces of India, including damage assessment of specific landslide locations. It is prepared by the National Remote Sensing Centre (NRSC), one of the centres of ISRO.

SCIENCE & TECHNOLOGY

A new banking malware called 'Snowblind' is targeting Android users to steal banking credentials.

Snowblind malware:

- It is a new Android malware that uses a **built-in Android security feature** to bypass **anti-tamper mechanisms** and steal banking credentials.

- This malware exploits a built-in security feature to bypass anti-tamper protection in apps handling sensitive information.

- It works by repacking an app so it is unable to detect the use of accessibility features that can be used to extract sensitive information like login credentials and get remote access to the app.

- It exploits a feature called 'seccomp', which stands for **'secure computing'.**

- It is part of the underlying **Linux kernel** and the Android operating system and is used to check applications for signs of tampering.

- The security firm discovered that Snowblind injects a piece of code that loads before seccomp initialises the anti-tampering measures. This enables the malware to bypass security mechanisms and utilize accessibility services to remotely view the victim's screen.

- Snowblind can also **disable biometric** and **two-factor authentication**, two security features commonly used by banking apps to thwart unauthorised access. Like typical Android malware, Snowblind infects users who install apps from untrusted sources.

- While the security firm was unable to identify how many devices are affected by the new malware, it says that Snowblind is mostly active in Southeast Asia.

Oran Knowlson, A UK-based teenager, has become the first person in the world to be fitted with a brain implant.

- Recently, a UK-based teenager, **Oran Knowlson**, has become the **first person** in the world to be fitted with a **brain implant** to help bring his **epileptic seizures** under control.

Epilepsy

- Epilepsy, a condition that leads to recurring seizures, sees a person experience jerking of arms and legs, temporary confusion, staring spells, or stiff muscles.

- Causes: It is caused by **abnormal electrical activity** in the brain.

- **Status in India:** In India, between **3 and 11.9 per 1,000 people** suffer from epilepsy, according to a comment in a 2022 Lancet study. Although several anti-seizure medicines are available in the market, 30% of the patients remain resistant to treatment.

- **Process:** The cells in your brain send messages to and receive messages from all areas of your body. These messages are transmitted via a continuous electrical impulse that travels from cell to cell.

- Epilepsy disrupts this rhythmic electrical impulse pattern. Instead, there are bursts of electrical energy — like an unpredictable lightning storm — between cells in one or more areas of your brain.

- This electrical disruption causes changes in your awareness (including loss of consciousness), sensations, emotions and muscle movements.

- **Treatment:** Doctors first use anti-seizure medicines and a **ketogenic diet**, which is high in fats and low in carbohydrates.

Brain Implant Device

- **Working:** The neurostimulator delivers constant electrical impulses to the brain to disrupt or block abnormal seizure-causing signals. A 3.5 cm square, 0.6 cm in thickness, the device was surgically implanted in **Knowlson's skull** and anchored using screws.

- **Procedure:** The doctor then inserted two electrodes deep into his brain until they reached the thalamus — a relay station for all the motor and sensory information. The ends of the electrodes were connected to the neurostimulator.

- **Recharge:** It can be recharged by a wireless headphone.

Deep brain stimulation (DBS)

- **Deep brain stimulation (DBS)** is a neurosurgical procedure that uses **implanted electrodes and electrical stimulation** to treat movement disorders associated with Parkinson''s disease (PD), essential tremor, dystonia and other neurological conditions.

- The device uses DBS, which is also utilised for movement disorders associated with Parkinson's, and other neurological conditions.

- **New DBS Method:** Although DBS has been tried before for childhood epilepsy, until now neurostimulators were placed in the chest (instead of the brain), with wires running up to the brain where the leads were placed on the affected region.

- **Effectiveness:** Surgery is still preferable to implanting a DBS device. Currently, the DBS devices available in the market reduce seizures by around

40%. In comparison, seizures drop by nearly 90% if the patient undergoes surgery.

Physicists at the Large Hadron Collider (LHC) in Europe reported the most precise mass measurement of the Top Quark at 172.52 GeV/c2 having implications for the whole universe.

Quarks

- **Elementary particles:** Quarks are the ultimate building blocks of visible matter in the universe.
- They make up the protons and neutrons of an atom and lies on the ground floor of the **Standard Model** of particle physics.
- **Experimental Evidence:** At the Stanford Linear Accelerator Center (SLAC) in California in 1968, experimenters fired electrons, and muons, at protons, and found evidence that the electrons and muons were scattering off three smaller particles contained within the protons with each having their own electric charge.
- **Bonds:** Under normal condition Quarks are always bound together by the strong nuclear force and never exist alone forming composite particles called **hadrons.**
- **Baryons:** These are the particles made of **three quarks** which include protons (two up and one down quark) and neutrons (one up and two down quarks).
- Particles made of **two quarks are called mesons**.
- **Flavours:** In the present standard model, there **are six "flavors" of quarks** with each having its own set of quantum numbers, and with different masses.

19 years of Ethical IAS Coaching

- **Up quark; Down quark; Strange quarks; Charm quark; Bottom quarks;Top quark** (It is the heaviest with a mass over 61,000 times more than the up quark)

Top Quark

- Top Quark is the most massive particle scientists have found to date.

- It is **10-times heavier** than a water molecule, about three-times as much as a copper atom, and 95% as much as a full caffeine molecule.

- **Decay:** The top quark is a very unstable particle and breaks up into lighter, more stable particles in less than 10−25 seconds.

- By the mass-energy equivalence, a more massive particle is also a more energetic particle and the more energetic particles often break down into ones with less energy.

- **Discovery:** Top Quark was discovered in 1995 at a particle accelerator in the US called the Tevatron, measuring its mass to be 151-197 GeV/c2 at first.

- Physicists at the **Large Hadron Collider (LHC)** in Europe reported the most precise figure yet at 172.52 GeV/c2.

Significance of measuring the precise mass of Top Quark

- **To understand Higgs Boson:** Higgs Boson interacts most strongly with the **top quark** as it is the most massive subatomic particle. By measuring the top quark's mass as precisely as possible, a lot can be known about the Higgs boson as well.

- Higgs Boson interacts with particles providing them with their mass. Without this aspect of nature no particles would have mass.

- **Universe quantum tunnelling event:** Measuring the top quark mass precisely has implications for whether our universe will tunnel out of existence as The Higgs boson with its mass of 126 GeV/c2 is the precise enough to keep the universe in its current state.

- The atoms of most chemical elements will be destroyed, taking stars, galaxies, and earthlife with them if the Higgs field was slightly stronger than it is now.

- **Peculiar nature:** To determine its oddball nature as on the one hand, it is the one closest to the Higgs boson's mass and on the other hand, all the other particles like it are much, much lighter.

- Researchers will be able to incorporate the top quark's mass measurement into calculations that inform our understanding of our universe's particles.

- **Finding more particles:** Precisely measuring the top quark's mass is also key to knowing whether some other particle with mass close to that of the top quark could be hiding in the data.

Scientists have identified a species of desert moss called "Syntrichia caninervis" that could be a game-changer for future space exploration and colonisation efforts.

Syntrichia caninervis:
- It is one of the most abundant **desert mosses** in the world.

- It possesses remarkable tolerance to multiple environmental stress factors (drought, cold, and radiation).

- **Extreme desiccation tolerance:** recover within seconds after >98% water loss.
- **Extraordinary freezing tolerance:** withstand −196°C ultra-low temperature.
- **Super resistance to gamma radiation:** with half-lethal dose estimated to be 5,000 Gy.
- **Distribution:** It has a wide spread global distribution.
- It is predominant in dryland regions, including the **Gurbantunggut and Tengger Deserts** in China and the **Mojave Desert** in the United States.
- **caninervis** crusts are also present in mountainous regions of the **Pamir**, **Tibet**, **Middle East**, **Antarctica**, and **circumpolar regions**.
- It has a **unique adaptation:** it uses a **tiny hair (awn)** on the end of each leaf to collect water, in addition to that collected by the leaves themselves.

What is a Moss?
- A moss is a **flowerless**, **spore-producing plant** - with the spores produced in small capsules.
- Mosses are distributed throughout the world except in salt water and are commonly found in **moist shady** locations.
- They are best known for those species that **carpet woodland** and **forest floors**.
- Ecologically, mosses break down exposed **substrata**, releasing nutrients for the use of more-complex plants that succeed them.
- They also aid in **soil erosion** control by providing surface cover and absorbing water, and they are important in the nutrient and water economy of some vegetation types.

- Economically important species are those in the genus **Sphagnum that form peat.**

Using artificial intelligence, researchers have found potential cancer drivers hidden in so-called "junk" regions of DNA.

Junk DNA:

- In genetics, the term junk DNA refers to regions of DNA that are **noncoding.**

- DNA contains instructions (coding) that are used to create proteins in the cell.

- However, the amount of DNA contained inside each cell is vast, and not all of the genetic sequences present within a DNA molecule actually code for a protein.

- Some of this noncoding DNA is used to **produce non-coding RNA** components such as **transfer RNA, regulatory RNA** and **ribosomal RNA.**

- However, other DNA regions are not transcribed into proteins, nor are they used to produce RNA molecules, and their function is unknown. These are known as junk regions of DNA.

- The proportion **of coding versus noncoding DNA** varies significantly between species.

- In the human genome, for example, **almost all (98%) of the DNA is noncoding**, while in bacteria, only 2% of the genetic material does not code for anything.

- However, over the years, researchers have found evidence to suggest that junk DNA may provide some form of functional activity.

- Some lines of evidence suggest that fragments of what were **originally non-functional DNA** have undergone the process of exaptation throughout evolution.
- **Exaptation** refers to the acquisition of a function through means other than natural selection.

Genetic engineering researchers have discovered a next generation genomic design method known as the Bridge Recombinase Mechanism.

- The findings are reported in the form of two papers that were published in the journal **Nature** characterising the discovery and the working of a **'bridge' RNA molecule** which can then be reprogrammed as needed, and the structural mechanism behind the discovered recombination ability of these genes.

Bridge Recombinase Mechanism

- This tool will allow researchers to rearrange, recombine, invert, duplicate, move, and perform other editing operations on very long DNA sequences.

- **Existence:** This gene editing method exists naturally and has now been discovered, enhances the human ability to edit genomes beyond the capabilities and scope of **CRISPR (clustered regularly interspaced short palindromic repeats).**
- CRISPR is a technology that can be used to modify the **DNA of living organisms**.
- It utilises **mobile genetic elements** or **"jumping genes",** which cut and paste themselves into **genomes** and are present in all forms of life, *performing **on-the-go** DNA manipulation* through all living beings.

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Jumping Genes

- In the 1940's, while studying corn, Barbara McClintock discovered that sometimes genes could move from one location to another in a chromosome or even to other chromosomes.
- The movement could result in the genes landing in the middle of another gene and disrupting them.
- These "jumping genes" are now called transposons.
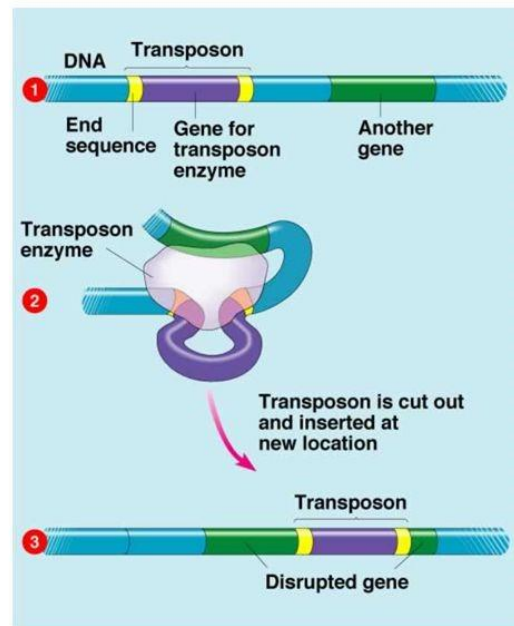
DNA Insertion

- It is a genetic process in which a segment of DNA is **added to a different DNA segment**, **excision** is a mechanism in which a **damaged DNA segment is removed**, and **inversion** is a method in which a **piece of DNA in a chromosome gets reversed.**

- **Role of Transposons or Jumping Genes:** The bits of extra DNA at the ends of jumping genes get joined together and convert the DNA double helix structure into a single-stranded RNA molecule that folds into two loops.

- **Binding:** This can then bind to two sets of DNA, the donor and the target, with each loop of the element binding independently to the donor segment and target segment.
- **Bridging:** The target DNA segment is the one that needs to be modified, and the donor segment is the one whose parts will be used to modify the target sequence. Thus, this jumping gene then functions as a bridge that recombines two bits of unconnected DNA.
- **Independent Working:** The donor loop and the target loop can be programmed independently, offering great flexibility in inserting or recombining sequences to DNA.
- **IS110:** It is the name of the jumping gene, which stands for **Insertion Sequence**, and such sequences are found in ample quantities in bacteria (E. coli).

- In E. coli bacteria, the bridge RNA had more than 60% insertion efficiency (i.e. ability to introduce a desired gene) and a 94% specificity (ability to target the intended location on the genome).
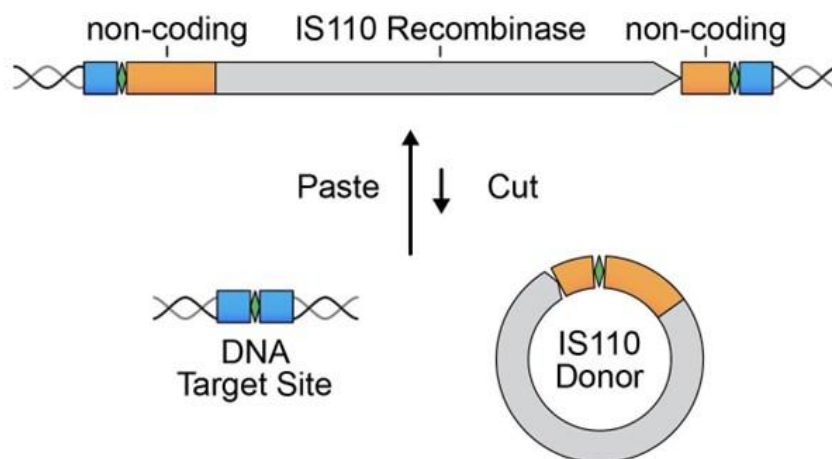
- They roam around the body, cutting and pasting themselves, repairing DNA and modifying it daily.

- The IS110 bridge recombination system expands the diversity of nucleic-acid-guided systems beyond **CRISPR and RNA interference**, offering a unified mechanism for the three fundamental DNA rearrangements — **insertion, excision and inversion** that are required for genome design.

- **Structure:** The mechanism reports results from **cryo-electron microscopy** (a technique in which samples are cooled to cryogenic temperatures to determine three-dimensional structures of internal fragments).

- The cryogenic temperature range has been defined as from −150 °C to absolute zero or −273 °C.

- By using cryo-electron microscopy to study the IS110 transposons, it is found that it works as a **dimer**, a complex compound formed by bonding two copies of a simpler compound.

- One copy binds to the target DNA and the other binds to the donor DNA, bridged by the bridge RNA.

- *Significance:*
- **A Big Boon for Synthetic Biology:** The technique can be used to manage, or even treat, a wide variety of genetic diseases: *a functional copy of a gene can be replaced* in a given genomic location.

- The role of the **flanking DNA** (sequences found on either side of the DNA fragment of interest) present around the recombinase genes of these mobile sequences has been understood for the first time.

- **Future Scope:** Researchers may also be able to treat chromosomal inversions or deletions, which are currently beyond the reach of any of the editing tools we have.

- It is expected to lead to more advanced gene editing therapeutics and treatments for diseases.

- Limitations: As RNA bridge modifies large sequences of DNA instead of just a tiny segment consisting of a handful of genes, this technique modifying large chunks of DNA sequences increases the risk of unintentional consequences.

- A limitation of the findings is that the studies were performed in vitro or in the lab on bacteria. To apply to any humans, they would need to be tried on animal models, and specifically mammal models, first.

Other Gene-editing Technologies:
- **CRISPR-Cas9:** A customizable tool that lets scientists cut and insert small pieces of DNA at precise areas along a DNA strand.
- **TALE nucleases:** Nucleases that cleave unique genomic sequences in living cells can be used for targeted gene editing.
- **Zinc-finger nucleases:** Targeted to cleave a chosen genomic sequence and provokes cellular repair processes that in turn mediate efficient modification of the targeted location.
- **RNA interference (RNAi):** Targets RNA molecules to block or activate gene expression.

How does RNA bridge differ from CRISPR, RNAi?
- **On Express/Activate:** Both CRISPR and RNA Interface (RNAi) work by **blocking gene expression** or **activating it**. RNAi does so by targeting RNA

molecules, which then do the work of editing genes, while CRISPR edits DNA directly.

- **Scope of Change:** CRISPR-mediated editing sometimes leaves small bits of nucleotides added/deleted during the repair process. **DNA recombination mediated by bridge RNA** on the other hand makes a clean cut, making the edit specific and tidy.

- Also, RNA bridge can facilitate the addition, deletion or inversion of DNA sequences of virtually any length.

Transposons or Jumping Genes

- These are minimal segments of DNA that have the **recombinase enzyme**, which binds this DNA to other DNA, along with extra DNA segments at the ends of the genes.

- **Discovery: Barbara McClintock** found that some genes were able to move around within the genome. These genes were called mobile elements or **transposons**.

- Between 1948 and 1983, researchers found transposons in an array of life-forms, including bacteriophages, bacteria, plants, worms, fruit flies, mosquitos, mice, and humans. They were nicknamed **'jumping genes'**.

- **Working:** Prof. McClintock also made another significant observation: depending on where the mobile elements were inserted, they had the ability to reversibly alter gene expression.

- She used corn kernels' colours as a surrogate to understand hereditary characteristics, and this way figured out transposons moved about in the genome of the maize plant.

- **Achievement:** She was awarded the **Nobel Prize in Physiology or Medicine in 1983** for this work.

Significance of Transposons:

- **Revolutionising the Understanding:** The discovery of transposons revolutionised understanding of genetics, in particular their role in enabling nature's diversity.

- **Tools of Evolution:** Transposons influence the effects of genes by turning 'on' or 'off' their expression using a variety of epigenetic mechanisms. They are thus rightly called the tools of evolution, for their ability to rearrange the genome and introduce changes.

- More than 45% of the human genome consists of transposable elements.

Concern:

- **Inactiveness:** Transposons also create mutations in genes and lead to diseases. However, most of the transposons have themselves inherited mutations and have become inactive, and thus can not move around within the genome.

- **Actions Taken:** Over the years, researchers have attempted to resurrect inactive transposons from the genomes of the animal kingdom, hoping that the results will be useful in biomedical applications like genetic correction to cure a disease or for gene therapy.

- Example: In 1997, researchers studied the genomes of fish and reconstructed a transposon called 'sleeping beauty' at the molecular level.

- Researchers have already discovered several naturally occurring vertebrate transposons and continue to look for more.

Recently, IIT Madras and the Jawaharlal Nehru Centre for Advanced Studies, Bengaluru broke minerals down into nanoparticles from microdroplets of water.

Experiment on Mineral Breakdown

- **Experiment Setup:** IIT Madras tested the hypothesis on **crystals of quartz (silica),** ruby, and fused alumina.

- **Method:** Applied a few thousand volts to mineral microparticles in water, creating a mist of microdroplets that resulted in the mineral breaking down into nanoparticles within Different Sizes of Water Drops.

- *Different Sizes of Water Drops*

- **Variety in Sizes:** Water drops can be as large as raindrops or as small as aerosol particles.

- **Microdroplets:** Invisible to the naked eye, these are a thousandth the size of a typical raindrop.

- *Mineral Nanoparticles*

- **Size:** Nanoparticles range in size from 1 to 100 nanometers.

- **Mineral Nanoparticles Properties:** Their properties depend on shape, size, surface characteristics, and internal structure.

- **Forms:** It can exist as aerosols (solids or liquids in air), suspensions (solids in liquids), or emulsions (liquids in liquids).

- *Formation of Nanoparticles*

- **Natural Formation:** Occurs through processes like erosion and weathering.

- **Human Activities:** Generated through cooking, manufacturing, transportation, and other industrial and domestic activities.

Manufacturing Approaches:
- **Top-Down:** Breaking larger particles into nanostructures.
- **Bottom-Up:** Assembling atoms or molecules into nanostructures.

Eccentricity of Water Microdroplets
- Eccentricity in the context of water microdroplets refers to the **deviation** of the shape of these droplets from being perfectly spherical. When water droplets **are not perfectly round**, they have a measure of eccentricity that quantifies this irregularity.

Surface vs. Bulk Water Reactions
- **Surface Water Molecules:** Molecules at the surface of water can participate in chemical reactions more easily than those in bulk water, but still need some energy to do so.
- **Microdroplets:** Water molecules in microdroplets are packed closely together and are more eager to participate in chemical reactions without needing additional energy.

Chemical Reactions in Microdroplets
- **Faster Reactions:** Microdroplets can engage in chemical reactions up to a million times faster than bulk water.
- **Charge Carriers:** Microdroplets are effective carriers of electric charge.

- Beach Example: At the beach, microdroplets from the spray can carry **salt ions** and settle on your skin.

Formation of Charged Microdroplets

- **Evaporation Effect:** When larger droplets evaporate and shrink, remaining water molecules form weak hydrogen bonds. This can result in the creation of negatively charged hydroxyl ions (OH-) and free protons (H+).

- Bulk Water: In bulk water, protons can't move much due to surrounding molecules.

- **Microdroplets:** In microdroplets, **protons easily reach the surface**, making it more *acidic and conducive* to chemical reactions.

Possible Causes of Mineral Breakdown

- **Proton Infiltration:** Free protons could have squeezed into crystal layers, breaking them from within.
- **Electric Fields:** Charged surfaces might have provided the necessary energy.
- **Surface Tension:** A balance between attractive surface tension and repulsive like charges could have caused shockwaves that broke the microdroplets.

*Implications and Future Research*

- Creating nanoparticles from microparticles is related to significant issues like the origin of life, agriculture, water, and food.

- **Proto-Cells:** Findings could be relevant to the study of proto-cells, which are believed to be precursors to modern cells.

- **Agriculture:** Nanoparticles formed from microparticles could enhance soil productivity and benefit agriculture, particularly in desertified areas.
- **Silica Absorption:** Silica, which makes up half of sand, is absorbed by plants as nanoparticles, helping them grow taller. **Rice crops typically have high silica levels**.
- **Atmospheric Processes:** Potential for microdroplet showers to react with minerals and form nanoparticles, impacting atmospheric chemistry.

AIIMS blood test offers hope and help in early Alzheimer's diagnosis.

Alzheimer disease:
- Alzheimer's disease is a **degenerative brain condition** that gradually deteriorates memory and cognitive abilities and is the most likely cause of **dementia** in older people.
- Alzheimer's is a **neurodegenerative and progressive disease** that slowly destroys memory and other functions related to memory. It happens when plagues containing **amyloid-beta peptides continue to accumulate** in the brain.

- Peptide aggregate ion means their formation of one over the other which deforms the cortex of the brain and leads to Alzheimer's.

- It is similar to plaque which blocks arteries, affects blood supply and causes cardiovascular diseases.
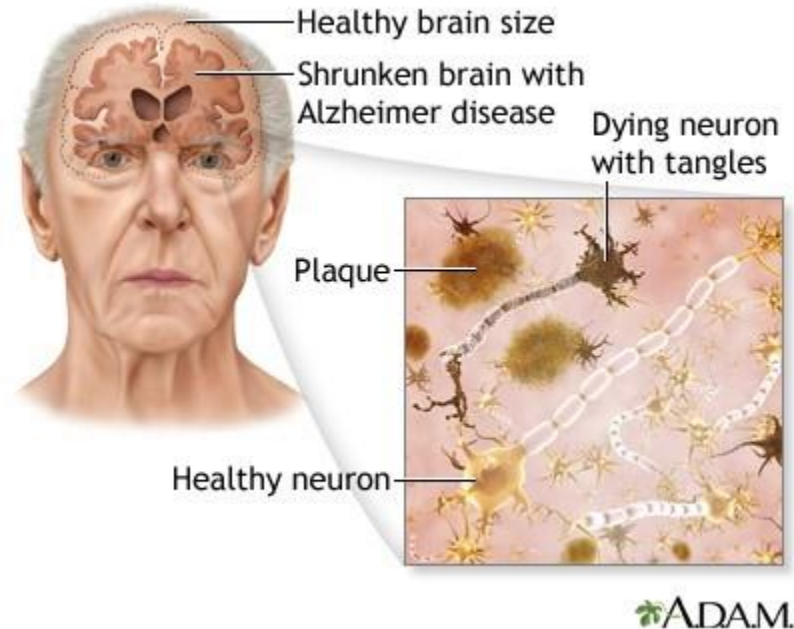
Dementia:

- Dementia is not a specific disease but is rather a general term for the impaired ability to remember, think, or make decisions that interferes with doing everyday activities.

- Alzheimer's disease is the most common type of dementia. However, there are several other types of dementia, each with its own underlying causes. Some of the common types of dementia include: **Vascular Dementia, Lewy Body Dementia, Frontotemporal Dementia, and Mixed Dementia**.

- Though dementia mostly affects older adults, it is not a part of normal aging.

Diagnosis:

- **Cognitive and neuropsychological tests** to assess memory, thinking, and problem-solving abilities.

- Imaging techniques **(MRI, PET scans)** to identify brain changes.
- Biomarker Tests **(cerebrospinal fluid analysis, amyloid PET)** to detect amyloid plaques.

Prevention:

- Just like physical exercise, exercising the brain every day is also important.

- **Learning new languages, developing hobbies like music, and solving puzzles like Sudoku** keep the brain active and cognitively fit. It is also important for the elderly to go out, make new friends and socialize.

- The disease can also be kept at bay by mitigating risk factors such as **diabetes, hypertension, and obesity** through a good diet, exercise, enough sleep, and doing away with smoking.

Zika virus: the need to improve surveillance and vector control

What is Zika Virus?

The Zika virus, a **mosquito borne flavivirus** , that is primarily spread by Aedes mosquitoes, particularly **Aedes aegypti.**

Also, it can also be **transmitted from mother to fetus during pregnancy, as well as through sexual contact, transfusion of blood** and blood products.

The Zika virus has an **RNA Genome**, and thus a very high potential to accumulate mutations.

Genomic studies have suggested that the Zika virus has two lineages**: African and Asian.**

Symptoms:

- Often asymptomatic; when present, **common symptoms include fever, joint pain, muscle pain,** and headache lasting 2-7 days.
- Association with Other Conditions:
- Linked with **Guillain-Barre syndrome, neuropathy, and myelitis** in adults and children.
- Also, the **interaction between Zika and dengue viruses significantly impacts disease severity.**

- Exposure to one can worsen the impact of the other, posing challenges in vaccine development and public health management.

India's Lack of Significant Zika Surveillance and Other Diseases:

- **Limited Diagnostic Capabilities:** India faces challenges with the absence of approved diagnostic tests for the Zika virus, relying on clinical symptoms and selective testing, which may lead to underreporting.
- **Surveillance Gaps**: There is a notable gap in systematic surveillance systems specifically tailored for Zika and other emerging infectious diseases, hampering early detection and containment efforts.
- **Infrastructure Deficiencies:** The country's diagnostic infrastructure outside major institutes is inadequate, affecting the timely identification and response to outbreaks of diseases like Zika, Nipah, and avian influenza.
- **Dependency on Apex Institutes:** Diagnostic facilities are largely concentrated in apex national institutes, limiting accessibility and delaying the implementation of crucial public health measures during outbreaks.

Initiatives of Government of India to control the spread of Zika Virus:

- **National Guidelines for Zika Virus Disease** under *Integrated Disease Surveillance Programme.*

- **Rashtriya Bal Swasthya Karyakram** (RBSK): It aims to improve the quality of life of children and provide comprehensive care to all children in the community.

- RBSK involves screening of children from birth to 18 years of age for four Ds:

1. Defects at birth

2. Deficiencies

3. Diseases

4. Development delays including disability

Chandipura virus

In Gujarat's Sabarkantha district, four children have died and two others are under treatment for suspected infection of **Chandipura virus,** which causes encephalitis.

Chandipura virus:

- Chandipura virus is a rare and potentially deadly pathogen that causes fever, with symptoms similar to flu, and acute encephalitis (inflammation of the brain).

- The pathogen is a member of the Vesiculovirus genus of the family Rhabdoviridae.

- Chandipura virus, named after the town in Maharashtra where the discovery was first made.
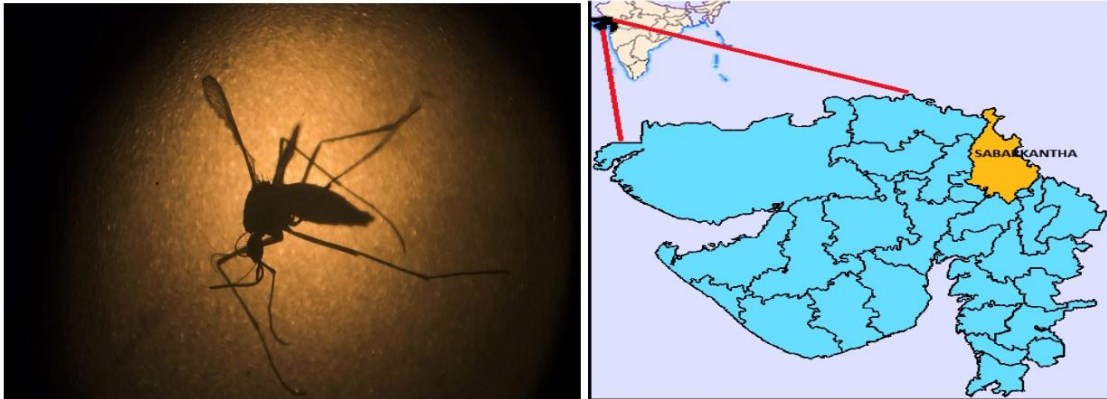
Causes of Chandipura Vesiculovirus

▪ The Chandipura virus is primarily transmitted through the bite of sandflies, specifically those belonging to the genus **Phlebotomus**. The infection spreads when these infected sandflies bite humans, injecting the virus into their bloodstream. Other possible modes of transmission, though less common, include contact with bodily fluids from an infected person or animal.

Symptoms:

▪ Sudden high fever accompanied by headaches and altered consciousness.

▪ Convulsions.

▪ Vomiting and nausea.

▪ Unconsciousness

Treatment of Chandipura Vesiculovirus:

▪ Currently, there is no specific antiviral treatment for Chandipura virus infection. The management of the disease focuses on symptomatic relief and supportive care. Treatment options include:

- Rehydration: Intravenous fluids to prevent dehydration caused by vomiting and fever.

- **Antipyretics**: Medications to reduce fever.

- **Anticonvulsants:** Drugs to control seizures.

- Intensive Care: In severe cases, patients may require intensive care support to manage complications.

  Prevention:

- The best approach for suppressing CHPV infection is prevention. According to the **National Center for Biotechnology Information (NCBI),** maintaining good nutrition, sanitation, hygiene and knowledge in rural areas is important for the containment of disease-transmitting vectors.

Asphyxiation

- Three die of asphyxiation at illegal coal mine in Gujarat.
- **Asphyxia or asphyxiation** is a condition of deficient supply of **oxygen** to the **body** which arises from abnormal **breathing.** Asphyxia causes **generalized hypoxia,** which affects all the tissues and organs, some more rapidly than others. There are many circumstances that can induce asphyxia, all of which are characterized by the inability of a person to acquire sufficient oxygen through breathing for an extended period of time. Asphyxia can cause coma or death.

  Asphyxia Symptoms

- Some symptoms of asphyxiation happen right away, and some develop when you don't get enough oxygen over time. They include:

- Loss of consciousness

- Inability to speak

- A red, purple, blue, or gray tint to your face or lips

- Peeing or pooping without meaning to

- Trouble swallowing

- Shortness of breath

- Quick or deep breathing (hyperventilation)

- Coughing

- Raspy or hoarse voice

- Memory loss

  Asphyxia Treatment

- Asphyxia is an emergency, and you need immediate treatment for it. The type of treatment you need will depend on what's causing your asphyxia and how serious it is. You may need:

- **Cardiopulmonary resuscitation (CPR).** It's done to get blood flowing to your vital organs until your heart starts beating again. CPR requires hard chest compressions on your sternum, also called breastbone.

- **Mouth-to-mouth resuscitation.**After drowning or a drug overdose, mouth-to-mouth resuscitation can help get someone breathing. Often, it's done together with CPR.
- **Heimlich maneuver.** It helps dislodge an object stuck in your airway. To do it, someone stands behind you, wraps their arms around your torso, and thrusts upward with their clasped fists. For infants, you lay them chest-down on your outstretched forearm and use the heel of your hand to strike several blows against their back.

Wolbachia

Wolbachia is a **gram-negative bacterium** known for its diverse interactions with **arthropods and nematodes**. It can act as a parasite or mutualistic microbe, impacting host reproduction and survival significantly.

How Does the Wolbachia Method Work:
- **Egg Injection**: Wolbachia bacteria is injected into the eggs of Aedes aegypti mosquitoes. Thereafter, they are released into the wild.
- **Larval Exposure**: Wolbachia bacteria is introduced into Larvae by exposing it to Wolbachia-infused water.
- **Male Releases**: This method involves releasing Wolbachia-infected male mosquitoes into the wild. These male mosquitos then mate with wild female mosquitos, passing on the bacteria to their offspring.

Advantages of Wolbachia

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- The **flies and mosquitos infected with Wolbachia bacteria are more resistant to RNA viruses** such as West Nile virus, Chikungunya virus, cricket paralysis virus, flock house virus and Norovirus.

- In leaf miners, the bacteria help their hosts to produce green islands. The leaf miners are insects that lives and easts the leaf tissues in their larval stage. The Wolbachia bacteria help the leaf miners to produce green islands on the leaves that are yellowing. This allows the larva to grow to their adult forms.

- It helps in iron metabolism in some of the insect species.

- The occurrence of Wolbachia in household mosquitos help them remain resistant to insecticides.

- The Wolbachia induce fecundity in some of their hosts. Fecundity is fertility selection. It is the fitness advantage that increase the number of offspring.

Late Blight Disease

- The **Central Potato Research Institute (CPRI)** has issued an advisory for potato farmers, warning of a high risk of late blight disease in the crop due to changing weather conditions.
- Late blight disease, is a **fungal infection caused by Phytophthora infestans**.
- The primary host is potato, but infestans also can infect other solanaceous plants, including **tomatoes, petunias and hairy nightshade.**
- It poses a significant threat to potato crops. This disease can lead to substantial yield **losses and diminish the quality of tubers.**
- Cool, **moist weather conditions are highly favourable** for the spread of late blight.
  Symptoms:

- When plants have become infected, **lesions** (round or irregularly shaped areas that range in colour from dark green to purplish black and resemble frost injury) **appear on the leaves, petioles, and stems**.
- A **whitish growth** of spore-producing structures may appear at the margin of the lesions **on the under-leaf surfaces.**
- **Potato tubers develop rot** up to 15 mm (0.6 inch) deep.
- **Secondary fungi and** Bacteria (particularly Erwinia species) often **invade potato tubers** and **produce rotting** that results in great losses during storage, transit, and marketing.

H1N1

What is H1N1?

- Influenza A (H1N1) virus is the subtype of influenza A virus that was the most common cause of human influenza in 2009.

- H1N1 flu is also known as swine flu caused by swine influenza virus that is endemic in pigs.

- It is a highly contagious disease and can easily spread from a patient through saliva and mucus.

- Symptoms are cough, fever, sore throat, stuffy or runny nose, headache, body ache etc.

Spreads

- Airborne respiratory droplets (coughs or sneezes).

- Skin-to-skin contact (handshakes or hugs)

- Saliva (kissing or shared drinks).

- Touching a contaminated surface (blanket or doorknob)

Diagnosis and treatment:

- The Centres for Disease Control and Prevention recommend real-time polymerase chain reaction as the method of choice for diagnosing H1N1.

- Antiviral drugs are the mainstay of clinical treatment of swine influenza and can make the illness milder and enable the patient to feel better faster.

On the trail of H1N1
A look at the causes and management of H1N1

What is H1N1?
Commonly known as swine flu, H1N1 is a respiratory disease caused by Type A influenza known as H1N1 (A). It is an airborne infection

Watch out for:
Nasal congestion, sore throat, high grade fever, cough, breathlessness, body ache, vomiting, and diarrhoea

Treatment:
Oseltamivir is the medicine that works against H1N1. It is available under various brand names like Tamiflu, Antiflu etc.

At risk
- Pregnant women
- Children below six years
- Senior citizens
- Patients with co-morbid conditions

Advisory
- Consult doctor immediately if symptoms such as fever, cough, cold, throat infection persist
- Take medicines only as prescribed by the doctor
- Drink plenty of liquids, consume food rich in vitamin C (lime, olive, orange)

H1N1 vaccine
- H1N1 influenza virus vaccine is a "killed virus" vaccine
- The virus vaccine works by exposing a subject to a small dose of the virus, which helps his/her body to develop immunity to the disease

Prevention –

- Being a communicable disease, swine flu can best be prevented with **awareness** generation by the governments.

- Uptake of influenza vaccination by people, health-care workers and especially by those belonging to the high-risk category, can go a long way in reducing the cases.

- High-risk categories include pregnant women, very young and old people, those who have had organ transplantation and those with certain underlying illnesses.

- Government should ensure that there are enough **vaccines** in various health centres.

- Also, it should take measures to keep the environment clean to address poor **hygiene and sanitation** being causes of swine flu.

Zika virus

Zika virus is primarily transmitted through the bite of infected Aedes mosquitoes, particularly **Aedes aegypti and Aedes albopictus**. It can also spread through sexual contact and from mother to child during pregnancy.

- **Symptoms**: Most people infected with Zika virus do not show symptoms. When symptoms do occur, they are usually **mild and include fever, rash, joint pain, and red eyes (conjunctivitis)**. However, infection during pregnancy can lead to severe birth defects such as **microcephaly and other neurological complications** in the foetus.

- **Global Spread**: The Zika virus garnered international attention during its widespread outbreak in **2015-2016 in the Americas, particularly in Brazil**. This led to a global health emergency declaration by the World Health Organization (WHO) in 2016.

- **Impact and Response**: Countries affected by Zika virus outbreaks implemented measures to control mosquito populations, advised pregnant women to take precautions, and conducted research to understand the virus better. International cooperation and research efforts intensified to develop vaccines and treatment options.
- **Challenges and Lessons**: The Zika virus highlighted challenges in global health governance, response to emerging infectious diseases, and the need for robust public health infrastructure. It also underscored the importance of international collaboration in managing health crises.

Nipah virus

Nipah virus is a zoonotic virus that can cause severe illness in humans, including encephalitis (inflammation of the brain).

- **Origin and Transmission**: The Nipah virus was first identified during an outbreak in Malaysia in 1998-1999. It is primarily transmitted to humans from animals (bats and pigs), and in some cases, through direct contact with infected individuals.
- **Symptoms and Impact**: Nipah virus infection can range from asymptomatic (no symptoms) to acute respiratory illness and fatal encephalitis. The virus has a high mortality rate, ranging from 40% to 75% in outbreaks.
- **Outbreaks**: Nipah virus outbreaks have occurred sporadically in South and Southeast Asia, including Bangladesh and India. These outbreaks often lead to significant public health challenges due to the high case fatality rate and potential for person-to-person transmission.

- **Preventive Measures and Control**: Prevention and control of Nipah virus outbreaks involve measures such as surveillance of bat populations (natural reservoirs), early detection of cases, isolation of infected individuals, infection control practices in healthcare settings, and public awareness campaigns.
- **Challenges:** The emergence of Nipah virus highlights challenges in global health security, including the rapid spread of zoonotic diseases, capacity building for outbreak response, and the importance of international collaboration in disease surveillance and control.

Neutrino

- A neutrino is a subatomic particle that resembles an electron in many ways but differs in that it **lacks an electrical charge** and has a very small mass that might potentially be zero.

- One of the most prevalent particles in the universe is the neutrino.

- They **barely interact with matter**; they are exceedingly hard to find.

- Both electrons and neutrinos are treated similarly by nuclear forces; neither participates in the strong nuclear force, but both do so equally in the weak nuclear force. Leptons are particles with this characteristic.

- The muon, which has a **mass 200 times more than that of the electron, and the tau, which has a mass 3,500 times greater** than that of the electron, are two further charged leptons in addition to the electron (and its antiparticle, the positron).

FUNDAMENTAL	ABUNDANT	ELUSIVE
Neutrinos are fundamental particles, which means that—like quarks and photons and electrons—they cannot be broken down into any smaller bits.	Of all particles with mass, neutrinos are the most abundant in nature. They're also some of the least interactive. Roughly a thousand trillion of them pass harmlessly through your body every second.	Neutrinos are difficult but not impossible to catch. Scientists have developed many different types of particle detectors to study them.

India-based neutrinos observatory

- It is planned to establish the India-based Neutrino Observatory in Tamil Nadu's Theni area.

- A particle physics research project is being built in a cave beneath a mountain that is 1,200 meters (3,900 feet) deep with the main goal of studying atmospheric neutrinos.

- The Iron-Calorimeter Detector is the primary experiment that INO has put forth.

Phishing attacks

CERT-In warns CrowdStrike users of phishing attacks.

Phishing:

- It refers to an attempt to steal sensitive information in the form of usernames, passwords, credit card numbers, bank account information or other important data to utilize or sell the stolen information.

How Phishing is done:

- In a phishing attack, the sender pretends to someone trustworthy to the recipient, such as a family member, the CEO of their company, or a well-known figure offering giveaways.

- The message prompts immediate action, often with a sense of urgency and directing the recipient to a fake website resembling a legitimate one.

- They are asked to input their login credentials which are then stolen by the attacker for identity theft, financial fraud, or selling personal information. The phishing email's destination URL closely resembles the legitimate one.

Steps taken by government for cyber threats:

- **Information Technology Act, 2000:** Section 43, 66, 70, and 74 of the IT Act, 2000 deal with hacking and cyber-crimes.

- **CERT-In (Indian Computer Emergency Response Team):** CERT-In issues alert and advisories regarding the latest cyber threats and vulnerabilities. It provides countermeasures to protect computers and networks, aiming to enhance cybersecurity nationwide.

- **National Cyber Coordination Centre (NCCC):** It is established to generate situational awareness of existing and potential cyber security threats. It facilitates timely information sharing for proactive, preventive, and protective actions by various entities to mitigate cyber risks.

- **Cyber Swachhta Kendra (Botnet Cleaning and Malware Analysis Centre):** Launched to detect malicious programs, the Cyber Swachhta Kendra provides free tools for removing such programs. It plays a crucial role in

enhancing cybersecurity by identifying and neutralizing threats in digital environments.

- **Bharat National Cyber Security Exercise 2023 (Bharat NCX):** Bharat NCX aims to improve strategic leaders' understanding of cyber threats. It helps assess readiness and develop skills for cyber crisis management and cooperation, bolstering the nation's cybersecurity preparedness.

- **Chakshu Facility:** The Chakshu Facility is a newly introduced feature on the Sanchar Saathi portal. It encourages citizens to proactively report suspected fraudulent communications received via call, SMS, or WhatsApp, facilitating the identification and mitigation of cyber threats.

Surprising 'dark oxygen' discovery could ensnarl deep-sea mining

Dark Oxygen:

- Oxygen that is being produced in complete darkness thousands of feet below the ocean surface is termed dark oxygen.

Why is the discovery important?

- Until now, it was thought that oxygen was created only through **photosynthesis**, a process that requires sunlight.

- Oceanic plankton, drifting plants, algae, and some bacteria are the primary elements attributed to the production of oxygen in the ocean. All these organisms are capable of photosynthesis.

- The production of oxygen at such depths is thought to be impossible because there isn''t enough sunlight for plants to do photosynthesis.

- However, in this case, oxygen is not being produced by plants.

- The oxygen comes out of **Polymetallic nodules** that are similar in resemblance to lumps of coal.

- These nodules, made up of metals like manganese, iron, cobalt, nickel, copper, and lithium, can generate oxygen through electrochemical activity even in the absence of light.

- They are **splitting H2O molecules into hydrogen and oxygen.**

Polymetallic Nodules:

- Polymetallic nodules, also known as **manganese nodules**, are small, rounded accretions found on the seabed of the deep ocean floor.

What is Deep Sea Mining?

- Deep sea mining involves **removing mineral deposits and metals from the ocean's seabed.**
  There are three types of such mining:

1. Taking deposit-rich polymetallic nodules off the ocean floor.

2. Mining massive seafloor sulfide deposits.

3. Stripping cobalt crusts from rock.

Major Issues associated with the deep-sea mining:

- **Environmental impacts:** Mining operations can disturb and damage fragile deep-sea ecosystems, including coral reefs, hydrothermal vents, and other important habitats.

- **Thermal pollution:** The mining vehicles also generate sediment plumes that could smother the benthic species at the bottom of the ocean.
- **Noise pollution:** The process generates noise pollution that can overlap with the frequencies at which cetaceans communicate, causing auditory masking and behavioral changes in marine mammals.
- **Regulatory gaps:** There is currently a lack of international regulations governing deep-sea mining, which could lead to environmental harm and other negative impacts.
- **Social and economic impacts:** The potential benefits of deep-sea mining may not be evenly distributed, and could lead to social and economic disparities between different communities.
- **Technological challenges:** Deep-sea mining requires advanced technologies and equipment that are currently under development, and may not be cost-effective or efficient enough to make the practice commercially viable.

Govt Initiatives to promote deep sea mining:
- **National Centre for Polar and Ocean Research (NCPOR):**It was established in 2020 by the Ministry of Earth Sciences in Goa, which is tasked with exploring the country's deep-sea mineral wealth.
- **Draft Deep Seabed Mining Regulations, 2021:**It has been formulated by the Indian government to provide a legal framework for the exploration and exploitation of mineral resources in the country's exclusive economic zone (EEZ).
- **International collaborations:** The government is also considering setting up a nodal agency to regulate deep sea mining activities in the country, in line with the International Seabed Authority (ISA) and the United Nations Convention on the Law of the Sea (UNCLOS).

Brain-Eating Amoeba: *Naegleria fowleri*

- Naegleria fowleri, commonly known as the brain-eating amoeba, is a free-living microscopic amoeba that can cause a rare and devastating brain infection called **primary amoebic meningoencephalitis (PAM)**.

- It is a microscopic organism that can only be seen with a microscope.

At-risk Individuals:

- While the human body is generally vulnerable to Naegleria fowleri, infections are extremely rare.

- Certain factors can increase vulnerability, such as a weakened immune system, a history of nasal or sinus issues, or activities involving exposure to warm freshwater.
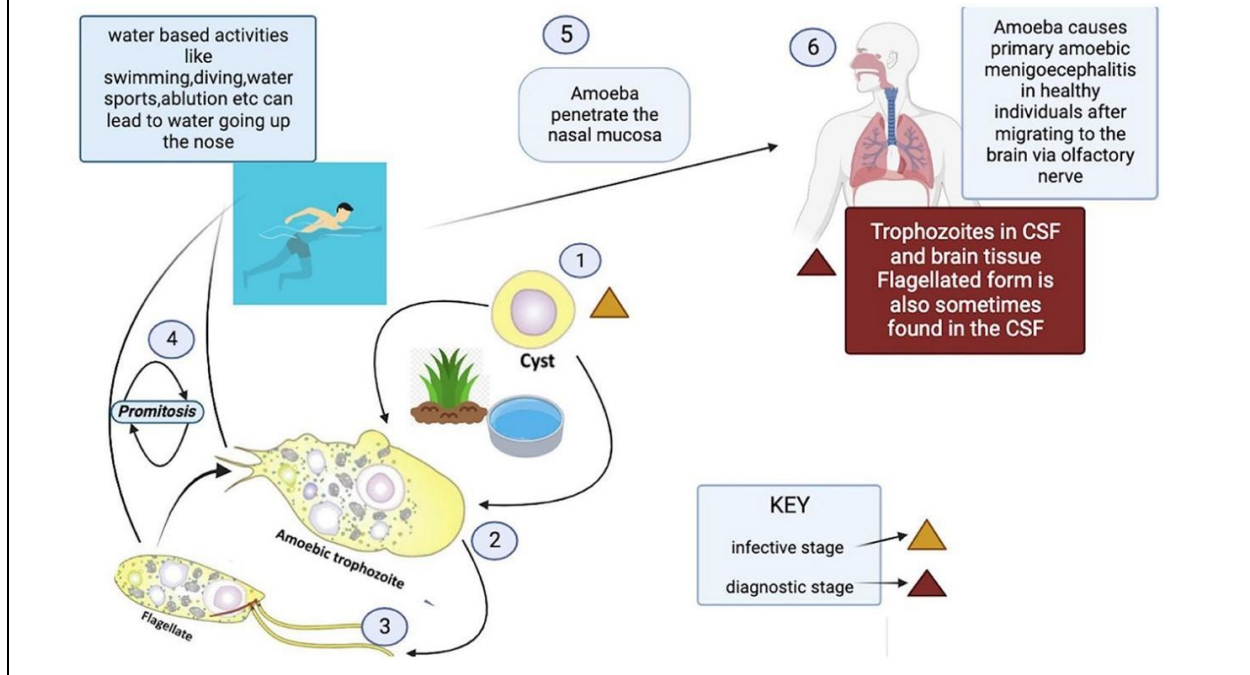
Symptoms:

- As per the US Centres for Disease Control and Prevention (CDC), the first signs of it start showing within one to 12 days after the infection.

- In the initial stages, they might be similar to **symptoms of meningitis**, which are headache, nausea and fever.

- In the later stages, one can suffer from a stiff neck, seizures, hallucinations, and even coma.
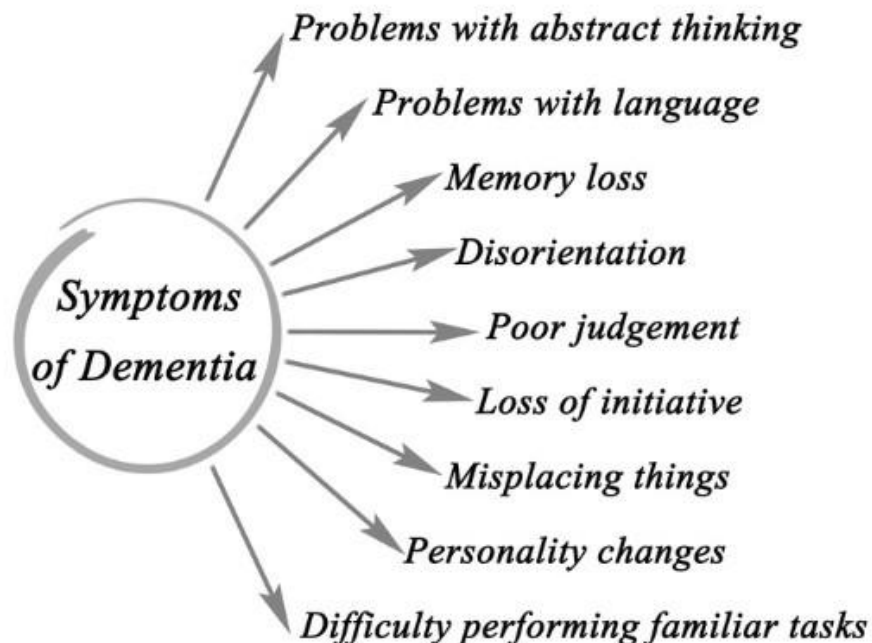
Treatment:

- Treatment includes a combination of drugs.

- The drug **Miltefosine** has shown efficacy in killing Naegleria fowleri in laboratory settings and has been used successfully in the treatment of some survivors.

- Even with treatment, the chances of surviving Naegleria fowleri infection remain low with a recorded death rate of 97 per cent.

Prevention

- **Avoidance of Warm Freshwater**: Especially in warm seasons when the amoeba is more likely to thrive.

- **Nasal Protection**: Using nose clips or avoiding putting the head underwater in freshwater bodies can reduce the risk.

- **Water Safety**: Ensuring swimming pools and other recreational water venues are properly maintained and **chlorinated.**

Dementia

- It is a syndrome – usually of a chronic or progressive nature – that leads to deterioration in **cognitive function** (i.e. the ability to process thought) beyond what might be expected from the usual consequences of biological ageing.

- It affects memory, thinking, orientation, comprehension, calculation, learning capacity, language, and judgement.

- However, the consciousness is not affected.

- 65% of total deaths due to dementia are women, and disability-adjusted life years (DALYs) due to dementia are roughly 60% higher in women than in men.

Treatment:

- There is **currently no treatment available** to cure dementia, though numerous new treatments are being investigated in various stages of clinical trials.

Global Scenario:

- Dementia is currently the seventh leading cause of death among all diseases and one of the major causes of disability and dependency among older people worldwide.

- More than 55 million people (8.1% of women and 5.4% of men over 65 years) are living with dementia.

- This number is estimated to rise to 78 million by 2030 and to 139 million by 2050.

- **WHO's Western Pacific Region** has the highest number of people with dementia (20.1 million), followed by the European Region (14.1 million).

SOCIETY

Govt launches virtual systems for quality assessment in healthcare centres.

- Recently, the **Ministry of Health and Family Welfare** on Friday launched **virtual systems** to aid in providing quality certifications for healthcare facilities.

- Virtual **National Quality Assurance Standards (NQAS)** assessment for **Ayushman Arogya Mandirs (AAM)**

- **Objective:** It will serve as a dashboard to help national, state, and district health institutions and facilities quickly monitor compliance with **Indian Public Health Standards (IPHS)** and take appropriate actions.

- Additionally, it will include an on-the-spot food license and registration initiative for food vendors.

- **Role of Health officers:** Community Health Officers lead the primary healthcare teams at AAM, who are trained to provide initial care, triage, and refer patients to the appropriate facilities for further treatment.

- This approach lessens the load on secondary and tertiary care facilities by offering primary care services nearer to the community, supported by effective referral connections.

- **Benefit:** Early identification and management of health issues are crucial in preventing disease progression, thereby reducing the need for advanced care.

- **National Quality Assurance Standards (NQAS):** It was formulated for District Hospitals, Community Health Centres, Rural and Urban Primary Healthcare Centres, and Ayushman Arogya Mandirs (Sub Centres), aiming for complete compliance by 2026.

NQAS for Integrated Public Health Laboratories (IPHL):

- **Objective:** Through the establishment of **Integrated Public Health Laboratories (IPHL),** the Ministry of Health and Welfare, Government of India,

has bolstered laboratory systems under the **PM-Ayushman Bharat Health Infrastructure Mission (PM-ABHIM).**

- **Quality Diagnostic Services:** These labs ensure accessible, efficient, and quality diagnostic services, crucial for effective healthcare delivery.
- **Aim:** The standards aim to enhance the quality and competence of management and testing systems in IPHLs, thereby improving the reliability of test results and fostering trust among clinicians, patients, and the public in lab outputs.

IPHS Dashboard for Real-time monitoring:

- The IPHS Dashboard is an innovative digital platform for **monitoring public health facilities in real-time**. It offers a detailed overview of the assessment and compliance status of various facilities, such as District Hospitals, Sub-District Hospitals, Community Health Centers, Primary Health Centers, and Ayushman Arogya Mandirs.

Food Safety and Compliance System (FoSCoS)-

- FoSCoS is a cutting-edge, nationwide IT platform tailored to meet all food safety regulatory requirements. This advanced system streamlines licensing and registration processes, providing an improved user experience.

- **Functions:** In addition to licensing and registrations, FoSCoS supports self-compliance with features like online return filings, hygiene ratings for food service establishments, and third-party audits for safety standards.

- Integrated with other IT platforms of the **Food Safety and Standards Authority of India (FSSAI),** FoSCoS offers a comprehensive solution for food business operators.

- Select categories such as wholesalers, distributors, retailers, transporters, storage facilities without atmospheric control + cold storage, importers, food vending agencies, direct sellers, and merchant-exporters can now obtain licences instantly, without needing intervention from a licensing authority.

The Union Minister for Coal and Mines recently launched the portal "Noble Initiative for Rewarding Mains Aspirants of National Civil Services Examination (NIRMAN)".

NIRMAN Scheme:

- **Noble Initiative for Rewarding Mains Aspirants of the National Civil Services Examination (NIRMAN)** is a unique Corporate social responsibility (CSR) scheme by Coal India Limited (CIL) designed to support meritorious candidates from its operational districts.

- The NIRMAN scheme is tailored to provide **financial assistance** of ₹1,00,000 to candidates who have successfully cleared the preliminary round of the **UPSC Civil Services and Forest Service Examinations** in 2024.

- The eligible beneficiaries include those with an annual family income of less than ₹8 lakhs, and who are permanent residents of the 39 districts where CIL operates.

- This support extends to individuals from Scheduled Castes (SC), Scheduled Tribes (ST), as well as femaleand third-gender candidates.

- The application process for NIRMAN is fully digital, facilitated through a dedicated portal.

Coal India Limited (CIL):

- It is a Govt of India owned **Maharatna company**.
- is **the single largest** coal producer in the world.
- It contributes to **85% of total domestic coal production** and 75% of total coal-based generation.
- CIL contributes to **55% of total power generation** and meets 40 % of the primary commercial energy requirements of the country.
- CIL functions through its subsidiaries in 84 mining areas spread over eight states in India.
- CIL has 313 mines (as of 1st April 2024), of which 131 are underground, 168 are opencast, and 14 are mixed mines.
- It operates **Asia's largest opencast coal mine at Gevra, Chhattisgarh**.

Integrated Tribal Development Programme

- **National Bank for Agriculture and Rural Development (NABARD)** will launch an integrated tribal development programme in the **Kulathupuzha grama panchayat** on July 8 marking its first initiative in **Kollam**.
- It is a flagship programme of **NABARD** for sustainable tribal livelihoods.
- It is based on **'wadi'** model of tribal development, which has evolved with the support of national and international development agencies.
- Projects under this programme are funded through **Tribal Development Fund.**

    The Objective of the Fund :

1. Create replicable models of integrated development of tribal families on participatory basis, through adoption of sustainable income generating activities based on potential of the area and the tribal needs;

2. Build and strengthen tribal institutions, which would enable the communities to be partners in policy formulation, execution of programs and improve social and economic status; and

3. Build and strengthen producers' organizations

Key facts about NABARD

- It is a financial institution that was set up by the Indian government to promote sustainable agriculture and rural development in the country.

- It is the main regulatory body in the country's rural banking system.

Formation:

- It was established in **1982** as a central regulating body for agriculture financing and the rural section.

- The government of India established NABARD under the outlines of the **National Bank for Agriculture and Rural Development Act 1981. Objective:** Promoting agriculture and rural development through participative financial and non-financial interventions, innovations, technology and institutional development for securing prosperity.

- Activities undertaken by NABARD for rural development include: Provision of refinance support, Improving rural infrastructure and Supervision of **Regional Rural Banks (RRBs)** and **Cooperative Banks etc.**

National Gopal Ratna Award

- Since 2021, the **Department of Animal Husbandry and Dairying** has been conferring the National Gopal Ratna Award every year under the **Rashtriya Gokul Mission.**

- It is one of the **highest national awards** in the field of livestock and dairy, instituted for farmers rearing indigenous livestock.

The Award is conferred into the following categories:

- **Best Dairy farmer rearing Indigenous Cattle/buffalo breeds**
- **Best Dairy Cooperative Society** (DCS) / **Milk Producer Company** (MPC) / **Dairy Farmer Producer Organization** (FPO).
- **Best Artificial Insemination Technician** (AIT).
- **Objective:** To encourage the Milk producing farmers, dairy cooperative societies/MPC/FPOs, and Artificial Insemination Technicians (AITs).
- The awards will be conferred on the occasion of **National Milk Day** on 26th November.

U-Win portal: A digital vaccine card for every child

- Government **u-win portal** to redraw immunisation map.
  U-Win portal:
- The government of India will launch a '**U-WIN'** portal for maintaining an electronic registry of routine immunisations. The portal under the **Union Ministry of Health and Family Welfare** has been designed on the lines of COVID-19 vaccine management system Co-WIN.

- The U-WIN programme has been designed to digitise the **Universal Immunisation Programme (UIP)** and it is presently being run in a pilot mode in two districts of each state and Union Territory.

U-WIN

Problem with the existing system

- At present vaccination records under UIP are being maintained manually which has led to duplication and exclusion of beneficiaries.

- Inadequate monitoring of targeted pregnant mothers and children has in certain instances led to multiple vaccination and doses.

- The system is also plagued by the absence of a mechanism of individual tracking of vaccinated mother and child.

- Another major issue is that immunisation at private health facilities is not recorded.

- There is also lack of awareness among beneficiaries about sessions, location and date, especially in urban areas and iniquity in immunisation coverage in states/UTs.

Features

- The platform generates a uniform QR-based,digitally verifiable e-vaccination certificate, similar to Covid vaccination certificate, which can be accessed anytime by the citizens through a single click.

- The U-WIN is going to be the single source of informationfor immunisation services which will record pregnancy details and outcome, new-born registration and immunisation at birth.

- It will update vaccination status, and delivery outcome, among others, in real time.

- Citizens can self-register for vaccinationsvia the U-WIN web portal or its Android mobile application, select preferred vaccination centres, and schedule appointments.

- Automated SMS alerts inform citizens about registration confirmations, administered doses, and upcoming dose reminders, ensuring timely and age-appropriate vaccinations.

- It also facilitates the creation of **Ayushman Bharat health account (ABHA)**IDs for comprehensive health record maintenance.

Universal Immunisation Scheme

- India's Universal Immunization Programme (UIP) is a part of the **Reproductive and Child Health (RCH) Program under National Health Mission (NHM).**

- It is one of the largest public health programs in the world under which vaccination is being provided free of cost to all pregnant women & children.

- Vaccination can be availed against 12 vaccine preventable diseases: nationally against **11 diseases**- Diphtheria, Pertussis, Tetanus, Polio, Measles, **Rubella**, severe form of childhood Tuberculosis, **Rotavirus Diarrhoea**, **Hepatitis B**, Meningitis & Pneumonia caused by **Hemophilus Influenza Type B** and Pneumococcal Pneumonia and **sub-nationally against 1 Disease - Japanese Encephalitis** (JE vaccine is provided only in endemic districts).

Right to Education

What is Right to Education?

- Right to Education Act (RTE) provided free and compulsory education to children in 2009 and enforced it as a fundamental right under **Article 21-A.**

Why Right to Education?

- The Right to Education serves as a building block to ensure that every child has his or her right to get a quality elementary education.

Constitutional Background

- Originally Part IV of Indian Constitution, **Article 45 and Article 39 (f) of DPSP,** had a provision for state funded as well as equitable and accessible education.

- The first official document on the Right to Education was **Ramamurti Committee Report in 1990.**

- In 1993, the Supreme Court's landmark judgment in the **Unnikrishnan JP vs State of Andhra Pradesh & Others** held that **Education is a Fundamental right flowing from Article 21.**

- **Tapas Majumdar Committee (1999)** was set up, which encompassed insertion of **Article 21A.**

- **The 86th amendment to the constitution of India in 2002,** provided **Right to Education as a fundamental right in part-III** of the Constitution.

- The same amendment inserted **Article 21A** which made Right to Education a fundamental right for children between **6-14 years.**

- The 86th amendment provided for a **follow-up legislation** for Right to Education Bill 2008 and finally **Right to Education Act 2009.**
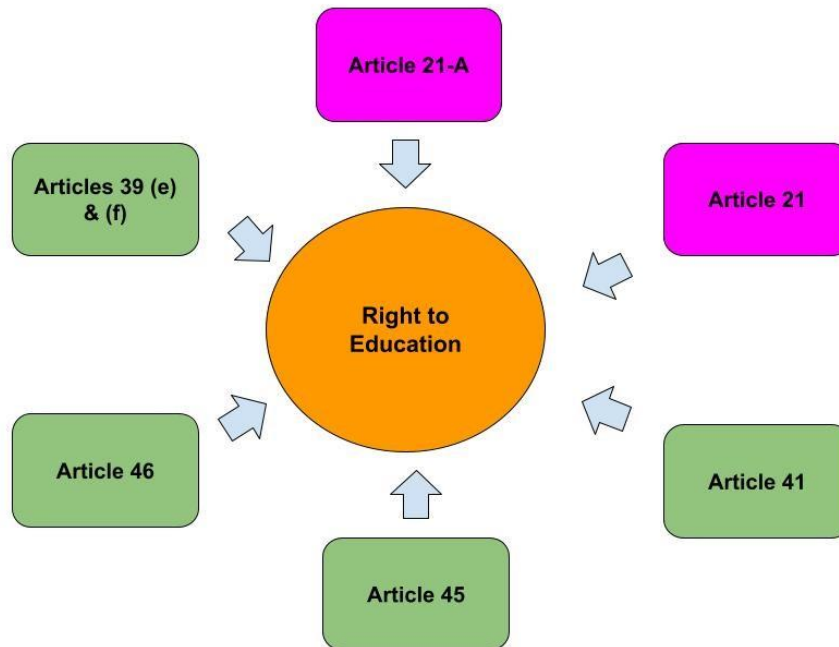
Features of the Right to Education (RTE) Act, 2009

- The right of children to free and compulsory education act 2009 guarantees free and compulsory education for all children aged 6 to 14. This is irrespective of their caste, creed, or social status.

- The RTE Act mandates the establishment of neighbourhood schools. Every child should have access to a school within a reasonable distance.

- The RTE Act prohibits schools from charging any capitation fee or screening students for admission.

- The RTE Act mandates that **25% of seats in all private schools** be reserved for children from disadvantaged groups. This includes scheduled castes, scheduled tribes, and other backward classes.

- The RTE Act prescribes a common curriculum for all schools so that all children can access quality education.

- The RTE Act mandates that all teachers be trained and qualified.

- The RTE Act sets minimum standards for school infrastructure, such as classrooms, toilets, and libraries.

Achievements of Right to Education Act,2009

- The RTE Act has successfully managed to increase enrolment in the upper primary level (Class 6-8).

- Stricter infrastructure norms resulted in improved school infrastructure, especially in rural areas.

- More than 3.3 million students secured admission under 25% quota norm under RTE.

- It made education inclusive and accessible nationwide.

- Removal of "no detention policy" has brought accountability in the elementary education system.

- The Government has also launched an integrated scheme, for school education named as **Samagra Shiksha Abhiyan,** which subsumes the three schemes of school education:

1. Sarva Shiksha Abhiyan (SSA)

2. Rashtriya Madhyamik Shiksha Abhiyan (RMSA)

3. Centrally Sponsored Scheme on Teacher Education (CSSTE).

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Limitation of Right to Education Act, 2009

▪ Age group for which Right to Education is available ranges from **6 – 14 years of age only**, which can be made more inclusive and encompassing by **expanding it to 0 – 18 years**.

▪ Children below 6 years are not covered under the Act.

▪ Five States namely Goa, Manipur, Mizoram, Sikkim and Telangana have not even issued notification regarding **25% seats** for underprivileged children of society under the RTE.

▪ **Lack of teachers** affect pupil-teacher ratio mandated by RTE which in turn affects the quality of teaching.

- Many of the schemes under the Act have been compared to the previous schemes on education such as the Sarva Shiksha Abhiyan, and have been plagued with **corruption charges and inefficiency**.

- At the time of admissions, **many documents such as birth certificate, BPL certificate, etc. are required. This move seems to have left out orphans** from being beneficiaries of the Act.

- There have been implementational **hurdles in the 25% reservation of seats for EWS and others** in private schools. Some of the challenges in this regard are **discriminatory behaviour towards parents** and difficulties experienced by students to fit in with a different socio-cultural milieu.

- Regarding the '**no detention' policy** till class 8, an amendment to the Act in 2019, introduced regular annual exams in classes 5 and 8.

- In case a student fails in the annual exam, he/she is given extra training and made to appear for a re-exam. **If this re-exam is not passed, the student can be detained in the class**.

- This amendment was made after many states complained that without regular exams, the learning levels of children could not be evaluated effectively.

- The states which were against this amendment were six states with higher learning outcomes due to their effective implementation of the CCE system as mandated in the Act. (The six states were Andhra Pradesh, Karnataka, Kerala, Goa, Telangana and Maharashtra.)

Steps to Be Taken

- Minority Religious Schools need to be brought under the RTE.

- More focus on teacher training programs.

- Quality of education needs to be emphasized over quantity of education.

- Steps should be taken to make the teaching profession attractive.

- Society as a whole need to be supportive of education for children without biases.

Project ASMITA

- It was launched by the **Union ministry of education** and the University grants commission.

- It is a collaborative effort of the UGC and the **Bharatiya Bhasha Samiti** to promote Indian languages in education.

- The UGC was established in **1953** (became a statutory organisation in 1956), for the coordination, determination and maintenance of standards of teaching, examination and research in university education.

- Bharatiya Bhasha Samiti is a High-Powered Committee for Promotion of Indian Languages constituted by the Ministry of Education in 2021.

- 13 nodal universities along with member universities from various regions have been identified to lead this project.

- The UGC has created a Standard Operating Procedure (SOP) for the book-writing process in each assigned language.

- The project aims to produce 1,000 books in 22 languages within five years, resulting in 22,000 books in Bharatiya Bhasha (Indian languages).

- Also, the commission aims to produce 1,800 textbooks covering Arts, Science and Commerce streams by June 2025.

Other Initiatives Launched with Project ASMITA:

- The Ministry of Education also launched the "**Bahubhasha Shabdakosh,**" a single-point reference for all the words in all Indian languages and their meanings.

- This initiative will be developed by the Central Institute of Indian Languages (CIIL) in collaboration with the Bharatiya Bhasha Samiti.

- The Shabdakosh will help in using Bharatiya words, phrases, and sentences for various new-age domains like IT, industry, research, and education.
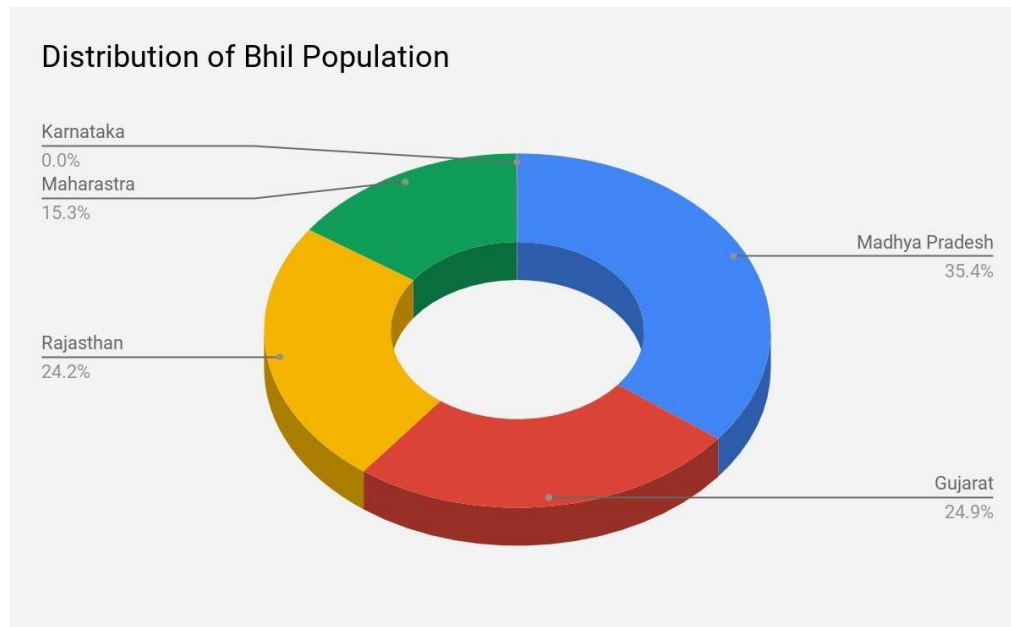
Objective:

- Promote deeper integration of Indian languages into the education system, enhancing inclusivity and enriching the learning experience.

Implementation Framework:

- Thirteen nodal universities have been designated to spearhead the project, with participation from member universities across different regions.

- UGC has established a comprehensive Standard Operating Procedure (SOP) for the book-writing process in each assigned language.

- Includes steps such as appointing nodal officers and authors, title and subject allocation, manuscript writing and editing, submission, review, plagiarism check, finalization, designing, proofreading, and e-publication.

Bhil Pradesh

- Bhil Pradesh is a proposed state in India primarily aimed at addressing the socio-economic and cultural needs of the Bhil tribal community. The Bhils are one of the largest tribal groups in India, predominantly residing in the western and central parts of the country.

Distribution of Bhil Population

Karnataka
0.0%

Maharastra
15.3%

Madhya Pradesh
35.4%

Rajasthan
24.2%

Gujarat
24.9%

Major Reasons for Rise in demand for Separate state:

- **Economic backwardness of sub-regions** within large states has also emerged as an important ground on which demands for **smaller states are being made**

- **Linguistic and cultural reasons,** which were the primary basis for creating new states in the country, **have now become secondary in most of these cases.**

- **Slow execution**: Several Union governments brought various "laws, benefits, schemes, and committee reports" on tribal, but went slow on their execution and implementation.

- **There were various measures such as the protection of tribal interests through the Fifth Schedule under Article 244(1)** of the Constitution, but most of these were mere assurances by the ruling party.

  Challenges

- **Administrative challenges:** The initial costs of setting up new state machinery are very high.

- **Conflicts:** Possibility of increased conflict over interstate river water, land borders, etc. Regionalism: Fragmentation and weakening national unity.

- **Economical Concerns:** Potential financial burden on central government, Smaller markets might be less attractive for large-scale investments, etc.

- **Pandora box:** Creation of new states can further lead to the demand for and creation of other new states.

NPS Vatsalya Scheme

- It is a scheme **under the National Pension Scheme** (NPS).

- It is designed to help **parents and guardians plan for their children"s future** financial needs.

- The scheme operates **similarly to the existing NPS.**

  Key Features

- Parents or guardians can open an account for their minor children and contribute towards their retirement savings, which will accumulate until the child reaches 18 years old.

- Once the child reaches adulthood, the accumulated amount will be transferred to the standard NPS account.

- On attaining the age of majority, the plan can be converted seamlessly into a normal NPS account.

- It operates similarly to the existing NPS, which helps individuals build a retirement corpus by making regular contributions throughout their careers.

- NPS contributions are invested in market-linked instruments like stocks and bonds. This offers the potential for higher returns than traditional fixed-income choices.

ART & CULTURE

Kharchi Puja

- Recently, **Kharchi Puja**, which is observed annually on the **Shukla Ashtami day** of the lunar month of **Ashadha,** was celebrated.
- Kharchi Puja is a fascinating festival celebrated in the Northeastern state of **Tripura in India. Also known as the 'Festival of 14 Gods**,' it takes place on the eighth day of the new moon in July or August each year.
- The festival revolves around the worship of **Chaturdasa Devata**, the ancestral deity of the Tripuri people, and showcases their rich history and traditions.

- The word 'Kharchi' is derived from Tripuri words meaning 'sin' and 'cleaning,' signifying the cleansing of sins. T

- he significance of Kharchi Puja is linked to the belief that the presiding deity of the land, Tripura Sundari or Mother Goddess, **menstruates during the Ambubachi period in June.**

- It is believed that the Earth becomes impure during this time, so puja is performed to ritually clean the Earth and wash away the sins of the people.

Jagannath temple

- Treasury of Jagannath temple in Puri opened after 46 years.
- It is located in **Puri, Odisha**.
- It is dedicated to Lord Jagannath, a form of the **Hindu deity Vishnu**.
- It is believed to have been built during the reign of **King Anantavarman Chodaganga Deva, of the Eastern Ganga dynasty, in the 12th century**.
- This temple is called '**Yamanika Tirtha**' where, according to the Hindu beliefs, the power of '**Yama', the god of death, has been nullified in Puri due to the presence of Lord Jagannath.**
- Architecture: The Jagannath Temple is a striking example of **Kalinga architecture**, a distinct style prevalent in the Odisha region.
- The temple's main structure, the sanctum sanctorum, or the garbhagriha, houses the idols of **Lord Jagannath, Balabhadra, and Subhadra**.
- **Ratha Yatra** is a Hindu festival associated with Lord Jagannath held at Puri in Odisha.
- The festival commemorates Jagannath's annual visit to **Gundicha Temple via Mausi Maa Temple (aunt's home) near Balagandi Chaka, Puri.**

- The most famous Rath Yatra festival begins on the second day of the bright half of the lunar month of Ashadha (June–July) and lasts for nine days.

- During this time, the deities are taken out of the Jagannath Puri Temple and placed on three massive chariots.

Project PARI

- The Ministry of Culture, Government of India, on the occasion of the **46th Session of the World Heritage Committee Meeting**, which is being held in New Delhi from 21st-31st July 2024, has initiated Project PARI (Public Art of India).

Project PARI:

- The **Project PARI (Public Art of India)** aims to stimulate dialogue, reflection, and inspiration, contributing to the dynamic cultural fabric of the nation.

- It provides a platform to uplift the **aesthetic and cultural outlook of Delhi** while adding grandeur to the rich historical legacy of our national capital.

- The representation of Art in public spaces is particularly significant as it showcases the nation"s rich and diverse cultural heritage.

- The proposed sculptures being created for Project PARI include wide-ranging ideas such as paying tributes to nature, ideas inspired by the Natyashastra, Gandhi ji, toys of India, hospitality, ancient knowledge, Naad or Primeval Soun, Harmony of life, Kalpataru – the divine tree, etc.

- Women artists have been an integral part of Project PARI and their participation in large numbers is a testimony of **Bharat's NARI SHAKTI**.

- This initiative is being executed by the **Lalit Kala Akademi**, an autonomous institution under the Ministry of Culture.

Aanayoottu: an annual elephant feeding ritual held at the Sree Vadakkunnathan Temple, Thrissur

What is Anayoottu?

- The Aanayoottu (gaja pooja/ feeding of elephants) is a festival held in the precincts of the Vadakkunnathan temple in City of Thrissur, in Kerala.

- The festival falls on the first day of the month of Karkkidakam (timed against the Malayalam calendar), which coincides with the month of July.

- It involves a number of unadorned elephants being positioned amid a multitude of people for being worshipped and fed.

- Crowds throng the temple to feed the elephants.

Historical Background:

- Kerala's elephant pooram was selected for display at the opening ceremony of the Asian Games held in Delhi in 1982.

- It was a herculean task to transport the elephants all the way to Delhi.

- A large team accompanied 34 majestic elephants to Delhi.

- This long journey made many elephants sick and weak so to help them regain health, Anayoottuwas started where special nutritious food was fed to the pachyderms.

Vadakkunnathan temple

- The Vadakkunnathan temple is the first temple which was created **by Lord Parasurama**. The temple located at the heart of the city of Thrissur is enclosed by colossal walls of stone under an area of around eight acres. The four directions, East, West, North and South in the temple have been indicated by four Gopurams inside the temple premises. In the centre of the temple there is multi shrined complex, besides the four Gopurams. The three key shrines of the temple have been dedicated to the **Vadakkunnathan or Lord Shiva**, Lord Rama and **Sankaranarayana**.

Wagh nakh

Shivaji's *wagh nakh* from U.K. to be displayed in Satara.

What is the "wagh nakh"?

▪ The Wagh Nakh is a special dagger that may be concealed in the hand or held between the fingers. It contains four or five curved blades that are attached to a crossbar or glove and are designed to sever muscle and skin. This dagger's name, Wagh Nakh, which means "tiger's claw" in English, is supposed to have been influenced by the weapons of huge animals.

Chhatrapati Shivaji's Defence with the "Wagh Nakh":

▪ Chhatrapati Shivaji faced Afzal Khan, a Bijapur general assigned to stop Shivaji's strong campaigns in the Konkan. Khan suggested a peaceful meeting, but Shivaji, anticipating danger, came prepared.

- He concealed a "wagh nakh" and wore chainmail (armour made from small metal rings) under his attire. When Khan attacked, Shivaji"s "wagh nakh" struck, resulting in Khan"s death, ultimately securing Shivaji"s victory.

The Journey of the Wagh Nakh to London

- The wagh nakh was brought to Britain by East India Company officer James Grant Duff (1789-1858), who served as the Company Resident in the Satara State from 1818 to 1822.

- Duff had a fitted case made for the weapon and inscribed it with details about its historical significance.

Chhatrapati Shivaji Maharaj:

- He was born on 19th February 1630 at **Shivneri Fort** in District Pune in the present-day state of Maharashtra.

- He was born to **Shahaji Bhonsle**, a Maratha general who held the jagirs of Pune and Supe under the **Bijapur Sultanate**, and Jijabai, a pious woman whose religious qualities had a profound influence on him.

- Shivaji was not named after Lord Shiva. His name was derived from the name of a regional deity – **'Goddess Shivai.'**

Kanwar Yatra

- It is an annual Hindu pilgrimage observed every year by Lord Shiva devotees.

- It usually starts in the month of July or August, commonly known as the month of Sawan, according to the Hindu calendar.

Mythological Origins of Kanwar Yatra-

- **Samudra Manthan:** Kanwar Yatra is believed to have originated from the mythological story of Samudra Manthan, where Lord Shiva consumed poison to save the world. To alleviate the effects of the poison, all the gods poured water from the Ganga River on Lord Shiva.

- **King Rama's Offering:** Another version suggests that the ritual of Kanwar Yatra began when King Ram offered water from the Ganga to a statue of Lord Shiva (shivalinga) in an earthen pot.

Process and activities during Kanwar Yatra-

- Lakhs of devotees from various parts of India wear saffron attire.

- They travel to Gomukh, Haridwar and Gangotri, on foot, to collect holy water of river ganga.

- This water is carried in two earthern pot which are Hung on a decorated bamboo stick, which is known as Kanwar.

- The bamboo stick along with earthen pot is balanced on the soldiers of devotees, Kanwarias.

- They believe that dust can impure the water hence they keep the earthen pot hung all the time and do not put them on ground.

- Various Kanwar camps to ease the travel of devotees are set up across the travel routes where they can hang their Kanwars, take rest, get free meals and medical assistance.

- Finally, this water is brought to their native place and offered to Lord Shiva.

Sangameswara temple

- **Pattadakal"s Sangameshwara Temple,** formerly known as **Vijayeswara Temple,** is a religious site. It was constructed around 733 AD by the **Chalukya king, Vijayaditya Satyashraya.** This temple is considered one of the oldest temples in India as well as the oldest temple in this region. The structure has an inner passage, a hall, and a sanctum and is built in the **Dravidian architectural style.**

- It is a large east-facing Dravida temple located on the south side of the Chandrasekhara temple. Inscriptions at the temple, as well as other evidence, place it between 720 and 733 CE.

- The temple was left unfinished after the death of its patron king, Vijayaditya, in 734 CE, though work continued intermittently in later centuries.

- Other important Sangameshwara temples were built during the Badami Chalukya reign, between 543 and 757 CE, such as the one at KuDavelli; in

modern times, this temple was relocated to Alampur after extensive restoration work.

- Inscriptions discovered in this and other temples mention sponsor names from various centuries, including those of Hindu queens, implying that they actively supported temple architecture and arts.

Onam Festival

- Onam is a **major harvest festival in Kerala** and is celebrated to **honour the home-coming of Asura king Mahabali** who brought about peace and prosperity in Kerala. It is one of the **three major festivals of Kerala,** celebrated during the month of **Chingam,** the first month in the **Malayalam calendar, Kollavarsham.**

- Onam involves crafting Pookkalam, intricate flower rangolis. Alongside, a variety of rituals enrich the festivities, including Vallam Kali (boat races), Pulikali (tiger dances), Kummattikali (mask dances), and Onathallu (martial arts), among other captivating traditions.

God vs Demon Story:

- Battles between demons and gods are familiar to people everywhere. Gods emerging victorious over evil is an inseparable part of these battles.

- In India, too, these victories are celebrated in different parts of the country over the years. E.g. **Rama is good, Ravana is evil. Durga is good, Mahishasur is evil.**

- However, an exception to this has been the battle **between Mahabali (Asura or demon) and Vamana (avatar of Vishnu),** where Mahabali is revered as the **unchallenged King of Malayalis.**

- There are a few isolated places in India where demons are worshiped. E.g. There are some areas in Bihar and Bengal where **Mahishasur is king of Asur tribes.**

- Historians see these fights between god and demon in the context of fights between brahmins and non-brahmins and tribals in the past.

Aranmula Uthrattathi Boat Race:

- It is staged as a mix of revelry and ritualistic tradition. This event **marks the anniversary of the idol installation at the Sree Parthasarathy temple.**

- It is the oldest river boat race in Kerala **held during Onam (August–September).**

- It takes place at **Aranmula Parthasarathytemple** (dedicated to Lord Krishna and Arjuna) in the **river Pampa**.

- **Palliyodams:** These are Aranmula's unique snake boats ("Chundan Vallam").

- **Vanchipattu (song):** The oarsmen sing traditional boat songs known as Vanchipattu while rowing the boat.

- The oarsmen on board each palliyodam are selected from the village which owns the respective vessel.

- During the race, they are also dressed identically in white dhoti and melmundu.

Aranmula Parthasarathy temple

- Sri Parthasarathy Temple is dedicated to Lord Sri Krishna. It is one of the 108 Divyadesams dedicated to Krishna, an avatar of Vishnu, who is worshipped as Parthasarathi.

- Aranmula Parthasarathy Temple **houses the Thiruvabharanam (the sacred jewels) of Lord Ayyappa, which are taken in procession to the Sabarimala temple every year.**

- The Aranmula Parthasarathi temple is a **simple structure in Kerala style of architecture**and the idol of Parthasarathi is six feet high. The **walls of the temple are beautifully adorned with fine murals of the 18th century**. The temple has **four gopurams (towers) on four sides of its outer wall.**

Humayun's Tomb

- **Humayun's tomb under Mughal Architecture** was built in 1570. After Humayun''s death in 1556, his wife **Bega Begum** began construction on Humayun''s Tomb. It is of particular cultural significance as it was the **first garden-tomb on the Indian subcontinent.**

- The tomb features a **charbagh garden, a high-terraced platform,**and a marble-clad dome. The mausoleum, known as the "**dormitory of the Mughals**," **houses over 150 Mughal family members.**

- The tomb is centred around the **Shrine of the 14th century Sufi Saint, Hazrat Nizamuddin Auliya.**Due to the belief that it is fortunate to be buried near a saint''s grave.

- It was designated as a **World Heritage Site**by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) **in 1993.**

- The **ASI and Aga Khan Trust for Culture** manage the site, ensuring its preservation and protection under various legislations.

Royal burial mounds of Assam

The Charaideo Moidams, a 700-year-old mound-burial system of the Ahom dynasty from Assam, were added to the UNESCO World Heritage List.

What is Charaideo Maidams?

- The **Charaideo Maidams,** represents the late medieval (13th-19th century CE) mound burial tradition of the Tai Ahom community in Assam.

- It enshrines the mortal remains of the members of the Ahom royalty, who used to be buried with their paraphernalia.

- After the 18th century, the Ahom rulers adopted the Hindu method of cremation and began entombing the cremated bones and ashes in a Maidam at Charaideo.

- Out of 386 Maidams or Moidams explored so far, 90 royal burials at Charaideo are the best preserved, representative of and the most complete examples of mound burial tradition of the Ahoms.

The Ahom Dynasty:

- The Ahom dynasty (1228–1826) ruled the Ahom kingdom in present-day Assam, India for nearly 598 years.

- The dynasty was established by **Sukaphaa**, a Shan prince of Mong Mao who came to Assam after crossing the **Patkai Mountains.**

- The rule of this dynasty ended with the **Burmese invasion of Assam**.

- In external medieval chronicles, the kings of this dynasty were called Asam Raja, whereas the subjects of the kingdom called them Chaopha or Swargadeo.

- The Ahom rule lasted till the British annexed Assam in 1826, following **the Treaty of Yandabo.**

FACTS FOR PRELIMS

This year marks the 169th anniversary of the beginning of the Santhal Hul.

- The **Santhal Hul/rebellion** was one of the earliest peasant uprisings against British colonial oppression.
- Every year, the state of Jharkhand celebrates **June 30 as 'Hul Diwas'**, marking the beginning of the rebellion.
- *Santhals*
- The Santal people, also known as Santalis, **were not** the original inhabitants of modern-day **Santhal Pargana,** which includes Dumka, Pakur, Godda, Sahibganj, Deoghar, and parts of Jamtara.
- They migrated from the **Birbhum and Manbhum regions** (present-day Bengal), starting around the late 18th century.
- **Reason for Migration:** The **1770 famine in Bengal** prompted the Santals to begin moving and the British turned to them for help.

- **Current Status:** The Santal community is the **third largest tribal community** in India, spread across Jharkhand-Bihar, Odisha and West Bengal.
- Background of the Genesis of the Santhal Hul Revolt
- **Permanent Settlement Act of 1790:** With the enactment of the Permanent Settlement Act of 1790, the East India Company aimed to bring **more area under settled agriculture** to increase revenue.
- **Settlement in Damin-i-Koh:** The British chose the **heavily forested area of Damin-i-Koh** to be settled by the Santals to ensure a steady stream of revenue.

- The Santhals who migrated due to the 1770 famine in Bengal were promised settlement and agricultural opportunities in Damin-i-Koh.

Colonial Oppression:

- Once settled, the Santals faced colonial oppression.

- They faced repressive practices such as **Land-grabbing** and **Begari (bonded labour).**

- Bonded labour was of two types: **Kamioti** and **Harwahi**.

- Predatory money-lenders and the police became byproducts of the system, exacerbating their plight.

Santhal Hul of 1885:
- Santhal Hul of **1855** was a revolt against imperialism led by four brothers, **Sidho, Kanho, Chand, and Bhairav Murmu**, along with **sisters Phulo and Jhano**.
- **Fought against:** The Santhals also fought against the *upper castes, zamindars, darogas, and moneylenders*, described by the umbrella **term 'diku'.**

- **Reason:** In an attempt to safeguard the economic, cultural, and religious aspects of their lives.

- **Place of Origin of the Revolt:** The rebellion took place in the lush Damin-i-Koh region – 'Damin-i-Koh' meaning **the 'skirts of the hills'** – and took the British by complete surprise.

- These areas include present-day **Sahibganj, Godda, Dumka, Deoghar, Pakur**, and parts of Jamtara in Jharkhand, specifically around the **Rajmahal Hills of eastern Jharkhand's Sahibganj district.**

- **Leadership and Divine Inspiration:** The Murmu brothers, inspired by the Santhal God **Thakur Bonga's** divination, led the rebellion.

- Around 60,000 Santhals participated in the uprising against the East India Company.

- **Guerrilla Warfare:** The Santhals engaged in guerrilla warfare that lasted almost six months.

- More than **15,000 Santhals were killed**, and 10,000 villages were destroyed.

- **Suppression of the Rebellion:** The rebellion was finally crushed on January 3, 1856. The

- The British hanged Sidhu on August 9, 1855, and Kanhu in February 1856.

- Although the insurrection ended, its impact was everlasting.

- Legislations to safeguard the Adivasis in Jharkhand

As a result of the Santhal Hul, two important land tenancy Acts were enacted:

1. The Santhal Pargana Tenancy Act (SPT Act):

- Enabled the right of the Santhals to self govern.

- Enacted in: The SPT Act was **enacted in 1876** by the british as a result of the Santhal Hul revolt,

- Act restricts: The Act prohibits **the transfer of Adivasi lands (urban or rural land) to non-Adivasis.**

- Act allows: The land can only be inherited as per the Act, thus retaining the rights of Santhals to **self-govern their land.**

2. **The Chotanagpur Tenancy Act, (CNT Act):**

- Enacted in: As a result of the **Birsa Movement**, this Act was enacted by the British in **1908**.

- Act Allows: This Act allows land transfers within the **same caste and** certain geographical areas with the approval of the **District Collector.**

- Act Restricts: This Act also restricts the sale of Adivasi and Dalit land, while allowing land transfers between Adivasi individuals from the same police station and Dalits in the same district.

Mercenary spyware

- Mercenary spyware refers to **surveillance software** developed and sold by private companies to various entities, including governments and corporations. These companies typically market their products as tools for law enforcement, intelligence agencies, or cybersecurity firms to monitor individuals or organizations.

- This malware is specifically developed to **infiltrate and compromise** smartphones and other devices stealthily, without the owner''s awareness or permission.

- It primarily targets individuals to monitor their movements and communications and to steal confidential information.

- Such spyware is typically employed in advanced and resource-intensive attacks, making them challenging to identify and counteract.

- **Notable examples of mercenary spyware** include **Pegasus (NSO Group)**, **FinSpy (Fin Fisher)**, and **Galileo (Hacking Team)**.

Deakin university open doors to first PG batch at GIFT city.

GIFT city-

- Gujarat International Finance Tec-City (GIFT City) is a 15.5 square kilometre business district currently under construction in the Gandhinagar district of Gujarat, India. Distinguished as India's inaugural operational greenfield smart city and international financial services centre, GIFT City is envisioned as a **global hub for finance and technology**. Boasting **single-window clearances and approvals**, it offers businesses a plug-and-play infrastructure to facilitate rapid growth.

- The city is designed with robust utility provisions, including:

- **Electricity:** A proposed **400 MV electrical supply line** aims to minimize power outages. The cables will be laid in a utility tunnel with thick concrete walls, ensuring redundancy in their paths.

- **Telecommunication Services:** GIFT City will feature state-of-the-art telecommunications systems based on **FTTX (Fiber to home/office**) concepts. The fault-tolerant architecture of communication lines is designed to maximize service uptime.

- **Piped Gas:** Natural gas is distributed to every building and house through pipelines, a cost-effective and secure alternative to cylinders. The city receives its gas supply from the existing network of the state-owned company for gas transmission pipelines. Piped natural gas is already in distribution in nearby cities like Ahmedabad and Gandhinagar.
- **Solid Waste Management:** GIFT City adopts an advanced solid waste management system. Waste is collected through **vacuum chutes** installed on every floor of buildings and transported to a processing plant. The waste travels through underground chutes at a high speed of 90 km/h and undergoes treatment through various methods, including **plasma gasification.**

National Flag Day

- **National Flag Day in India** is celebrated annually on **July 22** to commemorate the historic day when the **Constituent Assembly of India** adopted the present-day tricolour flag as the **official National Flag** of the country. This significant day marks the official selection of the tricolour flag with its **deep saffron, white, and Indian green stripes,** and the **Ashoka Chakra** in the centre.

Significance of National Flag Day Celebrations

- **Historical Commemoration –**Indian National Flag Day, observed on 22nd July, marks the adoption of India's tricolour National Flag by the Constituent Assembly in 1947. This event occurred just weeks before India gained independence from British colonial rule on 15th August 1947, making it a crucial milestone in the nation's history.
- **Symbol of Unity and Identity –** The National Flag is more than a symbol, it embodies the unity, diversity, and aspirations of the Indian people.

Celebrations reaffirm these values and serve as a reminder of the sacrifices made by freedom fighters who fought for India's freedom.

- **Educational Value –**Through various activities such as educational workshops, lectures, and exhibitions, National Flag Day fosters a deeper understanding among citizens, especially youth, about the flag's history, significance, and the principles it represents—democracy, diversity, and inclusiveness.

- **Patriotic Sentiment –**Celebrations evoke a sense of pride and patriotism among citizens. It encourages respect for national symbols and reinforces the values of independence, sovereignty, and national pride.

Abhinav Bindra awarded Olympic Order by IOC for outstanding services to Olympic Movement

- Abhinav Bindra, the first Indian to win an individual gold at the Olympics, has been honoured with the Olympic Order for his outstanding contributions to the Olympic movement. The Olympic Order is the highest accolade bestowed by the International Olympic Committee (IOC) for exceptional service.

- The award was presented during the **142nd** International Olympic committee Session in Paris.

- Abhinav Bindra is **India's first individual Olympic gold medallist,**who **won the men's 10-meter air rifle event** at the **2008 Beijing Games.**

What is the Olympic Order Award?

- The Olympic Order is the highest award presented by the International Olympic Committee (IOC). Established in 1975, it is awarded to individuals who have rendered distinguished service to the Olympic Movement. This

honour can be bestowed upon IOC members, athletes, and other individuals who have made significant contributions to the development and promotion of the Olympic Games and its ideals.

- The award comes in three grades: gold, silver, and bronze, with the gold medal being the most prestigious. The recipients of the Olympic Order are chosen by the IOC's Executive Board. The award symbolizes the recipient's dedication to the Olympic spirit and their contributions to promoting the values of excellence, friendship, and respect in sports.

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