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CURRENT AFFAIRS

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Monthly Current Affairs – June 2023

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History

Pre-Mauryan Era Signs in Delhi's Purana Qila

Context: A fresh round of excavations at the site of Delhi's Purana Qila or Old Fort has uncovered evidence of the continuous history of the city since the pre-Mauryan era. The findings include shards of Painted Gray Ware pottery which are usually dated to around 1200 BC to 600 BC.

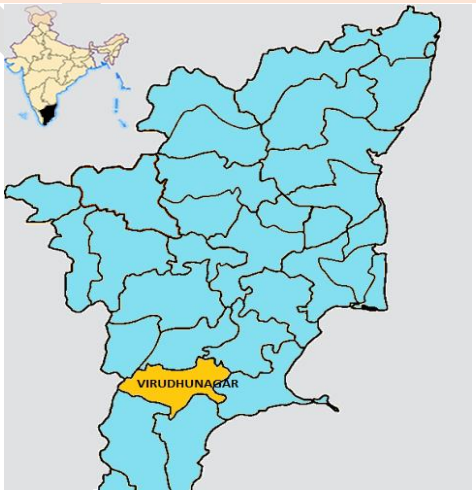
Key Highlights

- Ongoing excavation aims to establish a complete chronology of the site.
- Notable findings include a stone image of Vaikuntha Vishnu, a terracotta plaque of Gaja Laxmi, a stone image of Ganesha, terracotta figurines of humans and animals, beads of various stones, a bone needle etc.
- Earlier excavations have revealed a continuous existence of human habitation and activities spanning 2500 years.
- Excavation so far has revealed nine cultural levels, representing different historical periods, including Pre-Mauryan, Mauryan, Sunga, Kushana, Gupta, Post Gupta, Rajput, Sultanate, and Mughal.

- Purana Qila was built by Mughal Emperor Humayun as a part of his new city of Dinpanah in 16th century.
- Apart from archaeology, textual sources such as Ain-i-Akbari of Abul Fazal (16th century), mention that fort was built at site of Indraprastha.

Mesolithic Scraper, Neolithic Celt Found

Context: A scraper belonging to the mesolithic age and a celt from the neolithic age have been found at Vizhuppanur near Srivilliputhur in Virudhunagar district.



Key Highlights

- The ancient stone tools were found during an exploration by a four-member team on the Kollam Madurai national highway, opposite the government agricultural engineering department's new office at Vizhupanur panchayat.
- The **mesolithic scraper**, measuring 4cm in length and 4.5cm in width, was made of a type of stone called cert.
    - The **mesolithic or microlithic period** dates back to 10,000 BC to 3,000 BC. These tools are also known as microlithic tools, due to their **small size**, as they are made from **splinters** that form when bigger tools are made, in the palaeolithic period.
    - They were used as **arrows, knives and scrappers** in the microlithic age.
- The neolithic period from 3,000 BC to 1,000 BC, marked man's transition from nomadic life to stable life, where they used polished neolithic tools and pottery made by hand and wheel.
    - The **small celt** found here belongs to the **neolithic age**. Its length is 5cm and 5.5cm in width at the bottom and 3cm on top. It is 1.5cm in thickness. It is made of granite stone and is well rubbed and polished. Usually, it was tied to a wooden stick and used for weapons and other purposes.

What is a Celt?

- A celt is a prehistoric tool made of stone or metal, typically used as a cutting or shaping implement. It can serve as an axe, chisel, or adze, and was commonly used during the Neolithic period for various purposes such as woodworking, farming, and construction.
- A shoe-last celt was a polished stone tool used during the early European Neolithic for felling trees and woodworking.

Mesolithic-Era Rock Painting in Andhra's Guntur

Context: A Mesolithic period rock painting depicting a person tilling a piece of land has been found by D. Kanna Babu, former Superintending Archaeologist of the Temple Survey Project (Southern Region) of the Archaeological Survey of India, Chennai, in Orvakallu village in Guntur district, Andhra Pradesh.

Painting of a man tilling land found at cave shelters at Orvakallu village in Guntur district. SPECIAL ARRANGEMENT

Key Highlights

While surveying the **lower River Krishna Valley** to ascertain the architectural features of shrines, he identified a **new prehistoric rock painting** on the **walls** and **ceiling** of natural rock shelters on a hillock at Orvakallu.

- It was noticed that these were shelters for prehistoric humans who lived at this place.
    - Among these five naturally formed caves, two are embellished with distinguished depictions of rock paintings on the back walls and ceilings executed by people of Mesolithic Age, roughly [from] 5000 BC.
- Paintings were made with "**natural white kaolin and red ochre pigments**", as well as that most of them had been "badly damaged" due to exposure to "air and wind". However, some of the sketches and outlines are still intact for the visitors.
- The find throws light on aspects of the social life and culture of the people who lived in the area.
    - One of the paintings depicted a man catching wild goat with his left hand while wielding a hook-like implement to control it.
    - Another showed two couple standing with their hands raised while a child stood behind them.
    - Also, a painted figure of a man holding a plough and appearing to be tilling land — an indication, in his telling, "of a semi-settled life pattern" in which members of this community cultivated crops.

- **Ochre** is a pigment composed of clay, sand, and ferric oxide.
- **Kaolinite** is a soft, earthy, and usually white mineral produced by the chemical weathering of aluminium silicate minerals like feldspar.

Geography

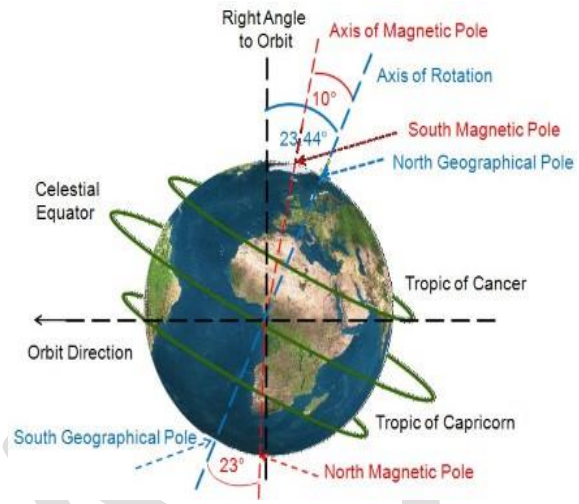
Groundwater Extraction Has Affected the Earth's Tilt

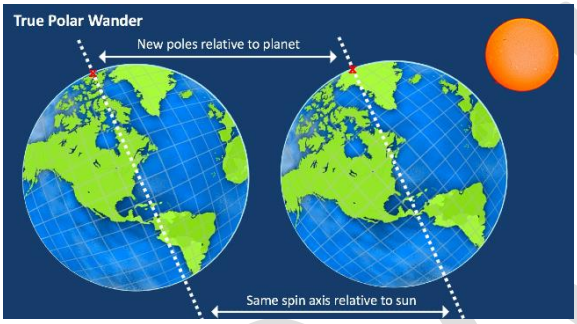
Context: Groundwater pumped up from the earth and moved elsewhere to quench the thirst of humans and their activities has **caused the earth's axis to tilt nearly 80 cm to the east**, a new study has found.

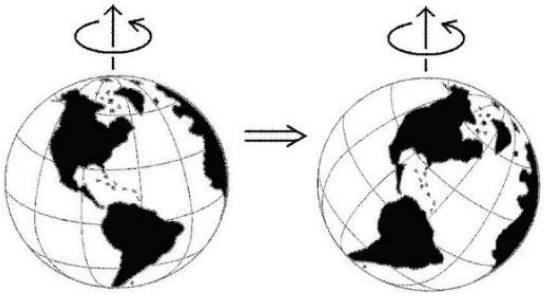
Key Highlights

- Scientists have known for a long time that the **movement of water can affect the earth's rotation**.
    - A study published in 2016, for example, showed how the movement of water around the world contributed to the wobble in the earth's axis.
- Researchers analyzed changes in the drift of Earth's rotational pole and water movement
    - **First**, by accounting for just ice sheets and Glaciers and
    - **Then** by adding different groundwater redistribution scenarios.

- The scientists also said that the **location of groundwater depletion** is important because that **affects how much the axis wanders**.
- With their model, they found that pumping groundwater from **mid-latitude areas affected the drift the most**.
- It is the migration of the magnetic poles over Earth's surface through geologic time.
- The study found that nearly 2,150 billion tonnes of groundwater have been pumped and drained into the oceans between 1993 and 2010, raising sea levels by 6.24 mm.
- They also found that the **most amount of groundwater redistribution** took place in **northwest India** and **western North America**, both mid-latitude regions.
- **Groundwater depletion** has been a particular concern across **India** since the past decade. **About 95% of the groundwater extracted in India is used to irrigate agricultural fields**.







Agriculture

Direct-Seeding Rice (DSR)

Context: It is reported that labour shortages and rains getting delayed are pushing farmers in several leading rice-growing states to adopt DSR method.

Climate Requirements for Rice

- Hot and humid climate;
- Best suited to regions which have high humidity, prolonged sunshine and an assured supply of water;
- Average temperature required throughout the life period ranges from 21 to 37° C.

DSR Method

Direct Seeded Rice (DSR), also known as the '**broadcasting seed technique,**' is a water-saving method of sowing paddy.

DSR is a system wherein rice seeds are sown directly into field, as opposed to traditional method of growing seedlings in a nursery, then transplanting into flooded field.

- In transplanting, farmers prepare nurseries where paddy seeds are first sown and raised into young plants.
- These seedlings are then uprooted and replanted 25-35 days later in main field with standing water.
- In DSR, water is replaced by real chemical herbicides, and in transplanting, standing water acts as herbicide and prevents growth of weeds by denying them oxygen in submerged stage.

Advantages of DSR → Efficient → Sustainable → Economically-viable → No significant reduction of yield under optimal conditions → Conserves scarce resources like water and labours

Regions Associated

- The direct-seeding method has gained traction in various regions, including Punjab, Telangana, and Andhra Pradesh.
- In Andhra Pradesh alone, an NGO has implemented this method on approximately 4,000 hectares, resulting in significant cost savings.

World's Largest Grain Storage Plan

Context: Union Cabinet approved the constitution and empowerment of an Inter-Ministerial Committee (IMC) for facilitation of the "world's largest grain storage plan in the cooperative sector. Centre will implement pilot project in 10 districts.

Major Highlights

Setting up various types of agri-infrastructure at Primary Agricultural Credit Societies (PACS) level: • Warehouse, • Custom hiring center, • Processing units.	IMC will be constituted under: • Chairmanship of Minister of Cooperation with members: ○ Ministry of Agriculture & Farmers' Welfare (MoA&FW), ○ Ministry of Consumer Affairs, Food and Public Distribution (MoCAF&PD) ○ Ministry of Food Processing Industries (MoFPI).	Benefits of the plan • Will strengthen PAC • Empower PAC to undertake various other activities such as: ○ Functioning as Procurement centres for State Agencies/ Food Corporation of India. ○ Serving as Fair Price Shops. ○ Setting up common processing units. ○ Creation of decentralized storage capacity at the local level would reduce food grain wastage.

Polity

Sedition Law can be Retained but with Safeguards: Law Commission

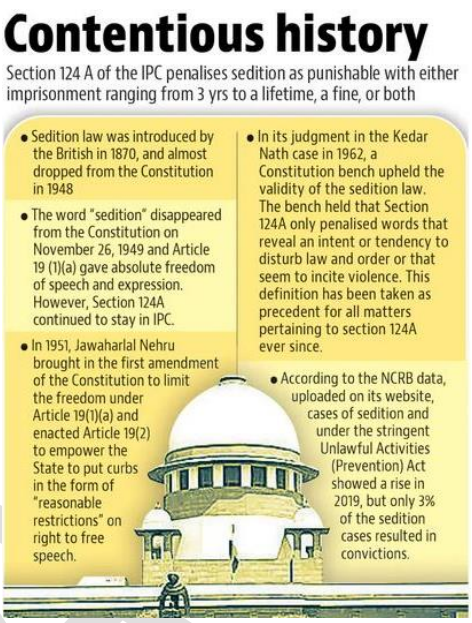
Context: Section 124A of the Indian Penal Code (IPC) dealing with sedition **needs to be retained but certain amendments could be made** for greater clarity regarding its usage, the **22nd Law Commission** has said in its report to the government.

Recommendations on Sedition

- Sedition being a colonial law not a valid ground for its repeal. In view of the misuse of Section 124A, the panel has recommended that the **Centre issue model guidelines to curb any misuse**.
- **FIR be filed only after preliminary inquiry** and **permission from the government** by amending **Section 154** of the Code of Criminal Procedure.
- **Amend Section 124A to align with Kedar Nath's Case** (1962) which underlines the presence of a tendency to incite violence as a precondition to invoke the clause.

What is Sedition?

- Sedition is an offence against the state, and it is covered in the Indian Penal Code as Section 124A.
- Sedition penalises any material which can bring hatred, contempt, or disaffection for the government and has the potential to incite violence or public disorder in the nation.
- **According to Indian Penal Code:** Whoever brings hatred/contempt, exciting disaffection towards the established government by law by: words, either spoken or written signs, visible representation, or otherwise shall be punished.
- Sedition is not said to be done when criticism is done to disapprove and alter measures or administrative actions of the government.
- Sedition is a cognizable, non-bailable, and non-compoundable offenses, entailing life imprisonment as maximum punishment, with or without a fine.
- Sedition is **the most serious offence that can be committed in violation of Article 19**.



Centre Mulling Equal Share in Property to ST Women

Context: The Centre is considering a notification under the **Hindu Succession Act** to apply beneficial provisions to the **Scheduled Tribe women who profess Hinduism** to enable them to **inherit an equal share in the properties of their fathers or Hindu Undivided Families**.

- The benefit of equal inheritance had **so far been denied** to the women of the Schedule Tribes who professed Hinduism.
- **Disputed Provision: Section 2(2)** of the Act excludes these women, which results in the denial of their equal rights to inherit their father's or Hindu Undivided Family (HUF) properties.

Important Case Law: Kamla Neti vs Special Land Acquisition Officer and Others

✓ The Supreme Court had directed the Centre to consider whether an amendment was necessary to withdraw the exemption under the Hindu Succession Act in so far as the applicability of its provisions to the Scheduled Tribes was concerned.

What is Hindu Succession Act, 1956?

- The Hindu Succession Act, 1956 is an Act relating to the succession and inheritance of property.
- This Act lays down a comprehensive and uniform system that incorporates both succession and inheritance.
- This Act also deals with intestate or unwilled (testamentary) succession.
- This Act combines all the aspects of Hindu succession and brings them into its ambit.
- The 1956 Act was amended in September 2005 and women were recognised as coparceners for property partitions arising from 2005.
- The law applies to ancestral property and to intestate succession in personal property, where succession happens as per law and not through a will.

New ART Regulations

Context: The Health Ministry had notified the **Assisted Reproductive Technology Regulations (ART), 2023**, which are **aimed** at providing **donors and patients with better medical care and security** earlier this year.

- The new provisions have **pushed up** the already sky-high **medical costs** and are proving to be a challenge for treating doctors and couples wanting to have children through ART because of the **restricted** and **limited resource availability** in terms of donors.

New Provisions

- The new ART provisions **impose restrictions on the number of times a donor**, male or female, **can donate** (sperm/oocyte) in their lifetime, and specifies age limits for donors.
- The provision states that an **oocyte donor** should be a person who have been **married at least once in their lives and have at least one living child of her own (minimum three years of age).**
- She can donate oocyte only once in **her lifetime and not more than seven oocytes can be retrieved**.
- Also, an **ART bank cannot supply gamete** (reproductive cell) of a single donor to more than one commissioning couple (couple seeking services).
    - Additionally, parties seeking ART services will be required to provide insurance coverage in the favour of the oocyte donor (for any loss, damage, or death of the donor).
- A clinic is **prohibited** from offering to provide a **child of pre-determined sex**. Also checking for genetic diseases before the embryo implantation is needed.

Assisted Reproductive Technology

All fertility therapies that deal with either eggs or embryos are considered to be ART. In general, ART treatments entail surgically removing eggs from a woman's ovaries, fertilizing them in a lab with sperm, and either putting them back into her body or giving them to another woman.

They exclude procedures where only sperm are treated (such as intrauterine—or artificial—insemination) or where a woman takes medication solely to increase egg production without intending to have eggs extracted.

Overall, the new ART laws are restricting the number of donation attempts. They have the potential to increase costs and create challenges for couples relying on assisted reproductive techniques.

Salient Provisions of the Assisted Reproductive Technology (Regulation) Act 2021

- **Rules for ART clinics & banks**
    - Every ART clinic and bank must be registered under the National Registry of Banks and Clinics of India which will maintain a central database with details of such institutions.
    - The registration of such clinics and banks is valid for five years and can be renewed for another five years.
    - It may be cancelled or suspended if the institution violates the provisions of the Act.
- **Conditions for sperm donation & ART services**
    - A registered ART bank can screen, collect and store semen from men aged between 21 and 55 years. It can also store eggs from women aged between 23 and 35 years.
    - Under the Act, female donors need to be married with at least one child of their own, aged at least three.
    - A child born via an ART procedure will be deemed to be the couple's biological child in the eyes of the law and is entitled to all such rights. The donor does not retain any parental rights over the child.
- **Consent and insurance coverage**
    - Such ART procedures require the written informed consent of both the couple and the donor.
    - The couple seeking an ART procedure must provide insurance coverage for the female donor in case of loss, damage, or death of the donor.

Shortcomings of the 2021 Act

- **Exclusion of Unmarried and Heterosexual Couples**
    - The Act excludes unmarried men, divorced men, widowed men, unmarried yet cohabiting heterosexual couples, trans persons, and homosexual couples (whether married or cohabiting) from availing of ART services.
    - This exclusion is relevant as the Surrogacy Act also excludes above said persons from taking recourse to surrogacy as a method of reproduction.
- **Reduces the Reproductive Choices**

  The Act is also limited to those commissioning couples who are infertile - those who have been unable to conceive after one year of unprotected coitus. Thus, it is limited in its application and significantly reduces the reproductive choices of those excluded.

- **Regulation of ART processes**
  - The National and State Board formed under the Surrogacy Act 2021 are also expected to regulate ART services.
  - These boards are to advise the government on policy, review and monitor implementation of the law, and formulate a code of conduct for ART clinics and banks.
- **Offences**
  - Offences under this Act include abandoning or exploiting children born through ART; sale, purchase, or trade of embryos; exploiting the couple or donor in any form; and transfer of an embryo into a male or an animal.
  - Such offences are punishable with imprisonment up to 8 to 12 years and a fine up to Rs 10 to 20 lakhs.
  - Clinics and banks are prohibited from advertising or offering sex-selective ART.
  - Such an offence is punishable with imprisonment ranging between 5 to 10 years or/and a fine of Rs 10 to 25 lakhs.

CERT-In Issues "Guidelines on Information Security Practices"

Context: The **Indian Computer Emergency Response Team (CERT-In)** has released guidelines on information security practices.

- These guidelines, issued under the powers conferred by **clause (e) of sub-section (4) of section 70B of the Information Technology Act, 2000 (21 of 2000)**, apply to all Ministries, Departments, Secretariats, and Offices specified in the First Schedule to the Government of India (Allocation of Business) Rules, 1961, along with their attached and subordinate offices.

Key Highlights

- These guidelines are a roadmap for Government entities and industry to **reduce cyber risk, protect citizen data and improve cyber security ecosystem** in country.
- **Nominate a Chief Information Security Officer** (CISO) for IT Security.
- **Formulate cyber security policy** and **assign roles** and **responsibilities for CISO** and a dedicated cyber security functional team.
- Internal and external audit of entire ICT infrastructure and deploy appropriate security controls based on audit outcome. Ensure proper physical isolation of sensitive and wireless networks.
- **Data Backup policy** should be documented, scheduled and monitored.
- They will serve as a fundamental document for audit teams, including internal, external, and third-party auditors, to assess an organisation's security posture against the specified cybersecurity requirements.
- The guidelines include various security domains such as network security, identity and access management, application security, data security, third-party outsourcing, hardening procedures, security monitoring, incident management, and security auditing.

What is CERT-in?

CERT-In is the **national nodal agency** for responding to computer security incidents as and when they occur. CERT-In was **established in 2004** as a functional organization.

It was established as per **provisions of section 70B of IT Act, 2000 under Ministry of Electronics and Information Technology**.

The Information Technology (Amendment) Act 2008 designated CERT-In to serve as the national agency.

Other Cyber Security Measures taken in India: National Cyber Security Policy, 2013, Indian Cyber Crime Coordination Centre (I4C), etc.

Governance & Social Justice

2.0 For IT Hardware Scheme

Context: Production-Linked Incentive (PLI) Scheme 2.0 for IT Hardware was approved by cabinet for Enhancing India's Manufacturing Capabilities and Enhancing Export. PLI 1.0 for IT hardware was launched in 2021. India's share in global electronics manufacturing has grown from 1.2% in 2014 to 3.75% in FY 2021-22.

Key Features of the Scheme

- **Objective:** Proposes a financial incentive to boost domestic manufacturing and attract large investments in the value chain.
- **Target segment:** Laptops, Tablets, All in-One PCs, Servers and Ultra Small Form Factor (USFF).
- **Tenure:** 6 year.
- **Budget:** Rs 17,000 crore.
- **Incentive Per Company**: Shall be applicable on net incremental sales of manufactured goods over base year (FY 2022-23) subject to ceiling of:
  - ₹ 4,500 Crore for Global companies,
  - ₹ 2,250 Crore for Hybrid (Global/Domestic) companies and
  - ₹ 500 Crore for Domestic companies.

Benefits of the Scheme

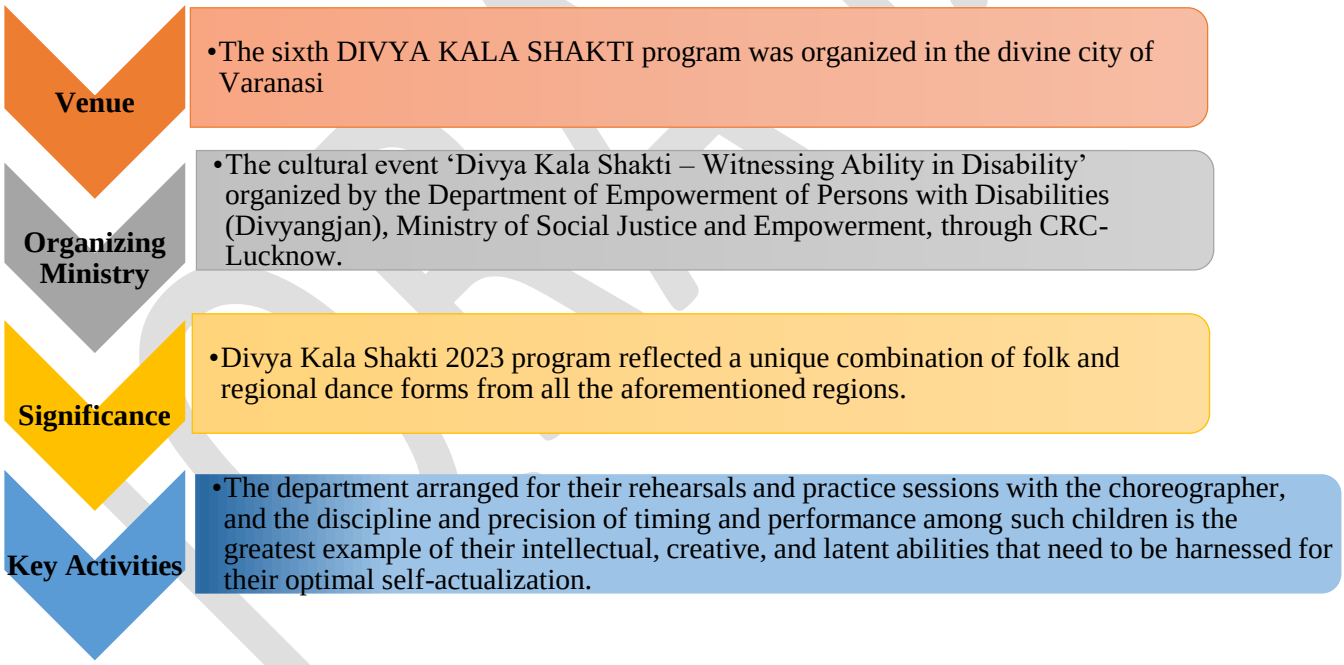
- Total production of about 3.35 lakh crore,
- Bring an additional investment of 2,430 crores in electronics manufacturing.
- Will lead to generation of 75,000 additional direct jobs.

Divya Kala Shakti Program

Context: Recently, the 'Divya Kala Shakti' Program was inaugurated at the Rudraksha Convention & Cultural Centre in Varanasi by Shri Rajesh Aggarwal, Secretary of the Department of Empowerment of Persons with Disabilities, Ministry of Social Justice & Empowerment, Government of India.

Divya Kala Shakti 2023

Approximately 100 artists from six states, namely **West Bengal, Odisha, Jharkhand, Bihar, Uttar Pradesh, and Uttarakhand** performed in the DIVYA KALA SHAKTI 2023 program.



Divya Kala Shakti 2023 Participation

The Divya Kala Shakti 2023 event was witnessed by various dignitaries representing senior government officials, creative personalities, educators, principals, and various disability advocacy groups, among others.

- The sixth DIVYA KALA SHAKTI 2023 program saw the participation of approximately 1,600 spectators from various backgrounds.
- Among the attendees were public representatives, members of the state administration, non-governmental organizations, Asha Workers, Anganwari Workers, primary and secondary teachers, university students, representatives of music Gharana, rehabilitation professionals, and stakeholders of the department.

- These diverse individuals came together to witness the exceptional performances by the talented Divyang children and youth.
- These diverse individuals came together to witness the exceptional performances by the talented Divyang children and youth.

PMJAY Scheme

Context: Cancer treatment, emergency care, orthopaedic and urology (kidney-related ailments) top the tertiary care specialities treatment availed by beneficiaries under the Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (AB PM-JAY) till date, as per data released by the Health Ministry on Wednesday.

Major Highlights

- The yojana has recorded five crore hospital admissions.
- The admissions amounted to ₹61,501 crore under the scheme.
- 49% of Ayushman card recipients are women.
- The PM-JAY empanelled hospital network consists of 28,351 hospitals, including 12,824 private hospitals, across the country.

About PMJAY Scheme

Ayushman Bharat, a flagship scheme was launched as recommended by the National Health Policy 2017, to achieve the vision of Universal Health Coverage (UHC)	PM-JAY is a second component under Ayushman Bharat	The scheme was launched on 23rd September, 2018.
It is the largest health assurance scheme.	It provides: •A health cover of Rs. 5 lakhs per family. •Hospitalization to over 12 crores poor and vulnerable families.	It provides cashless access to health care services.
It covers up to 3 days of pre-hospitalization and 15 days post-hospitalization.	Pre–existing conditions are covered from day one.	There is no restriction on the family size, age or gender.

Govt. Hikes Kharif MSP

Context: The Centre has set the minimum support price (MSP) for paddy sown in the kharif or monsoon season at ₹2,183 per quintal, an increase of ₹143 a quintal from last year's figure.

Important Highlights

- The 2023-24 MSPs for 17 kharif crops and variants were approved at a meeting of the Cabinet Committee on Economic Affairs (CCEA).
- the Centre said that its aim was to ensure reasonably fair remuneration for the farmers and encourage crop diversification, several farmers' organisations said the increase would not cover the rising input costs.
- The MSP for moong is ₹8,558 a quintal, an increase of ₹803 from last year. The MSP for tur or arhar has been set at ₹7,000 a quintal, which is estimated to be 58% above the cost of production.

MSP

- Minimum Support Price (MSP) is a form of market intervention by the Government of India to insure agricultural producers against any sharp fall in farm prices.
- The minimum support prices are announced by the Government of India at the beginning of the sowing season for certain crops on the basis of the recommendations of the Commission for Agricultural Costs and Prices (CACP).
- MSP is price fixed by Government of India to protect the producer - farmers - against excessive fall in price during bumper production years.

Kharif Crop

Kharif crops are the crops that are sown in the rainy season, from June to September.

Paddy | **Maize** | **Millets** | **Pulses** | **Oilseeds** | **Cotton** | **Sugarcane**

508 Districts in Country Are Free of Manual Scavenging

Context: Centre has maintained in recent Parliament sessions that there are **no manual scavenging deaths** and attributed those to 'hazardous cleaning of sewers and septic tanks'. **Budget makes no allocation for manual scavengers' rehabilitation scheme**.

Key Highlights

- The Union Social Justice and Empowerment Ministry has now said that only 508 of the 766 districts in the country have been declared free of manual scavenging.
- According to the scheme for rehabilitation of manual scavengers, the 58,000 identified sewer workers have been given abone-time cash payout of ₹40,000 each.
- In addition, around 22,000 of them have been connected to skills training programmes. Subsidies and loans are available to any of them wishing to set up their own business.
- The scheme for rehabilitation of manual scavengers has now been merged with the **NAMASTE scheme** for 100% mechanisation of sewer work.
- The Union Budget for 2023-24 showed ₹100 crore allocation for the NAMASTE scheme and no allocation for the rehabilitation scheme.

Manual Scavenging

Manual scavenging is a dehumanizing practice that involves the manual cleaning and handling of human excreta from dry latrines, sewers, septic tanks, railway lines, and other such places, typically using basic tools like brooms.

India banned the practice under the Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013 (PEMSR).

Namaste Scheme (National Action for Mechanized Sanitation Ecosystem)

- It was launched in 2022 as a Central Sector Scheme.
- The scheme is being undertaken jointly by the Ministry of Housing and Urban Affairs and the Ministry of Social Justice & Empowerment (MoSJE) and aims to eradicate unsafe sewer and septic tank cleaning practices.

Objective of the Scheme

- Zero fatalities in sanitation work in India.
- All sanitation work is performed by skilled workers.
- No sanitation workers come in direct contact with human faecal matter.

Govt. To Spend ₹2,980 Cr. On Coal, Lignite Exploration

Context: The Cabinet Committee on Economic Affairs (CCEA) on Wednesday approved the continuation of a central sector scheme for "Exploration of Coal and Lignite" with an estimated outlay of ₹2,980 crore from 2021-22 to 2025-26.

Important Highlights

- The approval will provide an outlay of Rs.1650 crore for Promotional (Regional) Exploration and Rs.1330 crore for Detailed Drilling in Non-CIL areas.

- Approximately, 1300 sq. km area will be covered under Regional exploration and approximately 650 sq. km area will be covered under Detailed exploration.
- Exploration for Coal and Lignite is required to prove and estimate coal resources available in the country which helps in preparing detailed project report to start coal mining.

Exploration of Coal and Lignite Scheme

- ✓ **Aim:** To explore and estimate coal resources in the country, facilitating the preparation of detailed project reports for coal mining.
- ✓ **Stages:** Under this scheme, exploration for Coal and Lignite is conducted in two broad stages:
  - Promotional (Regional) Exploration
  - Detailed Exploration in Non-Coal India Limited blocks.

India Emerged as The World's 2nd Largest Producer of Crude Steel

Context: India currently ranks as the **World's 2nd Largest Producer of Crude Steel** with the production of crude steel at 133.596 MT. It **surpassed Japan** in 2018. **China** remains the global **leader** in crude steel production.

Initiatives for Steel Industry

- **Steel Scrap Recycling Policy** for promoting the scientific processing and recycling of ferrous scrap.
- **National Steel Policy 2017** set the targets of achieving a total crude steel capacity of 300 MTPA and total crude steel demand/production of 255 MTPA by 2030-31.
- Policy for providing preference to Domestically Manufactured Iron and Steel Products **(DMI & SP Policy)**
- **Production Linked Incentive Scheme** for domestic production of specialty steel has been approved in 2021.

Poshan App

Context: More than 57,000 migrant workers have registered for the One Nation, One Anganwadi programme under which even if people relocate to another State, they can receive benefits given by the government to children under six years of age and pregnant and lactating women.

Important Highlights

- The Women and Child Development Ministry said this was possible through coordination between the Central and the State governments by using the **Poshan Tracker app** on mobile phones.
- The activities of the Anganwadi centres (child care centres), service deliveries of Anganwadi workers and complete beneficiary management for pregnant women, lactating mothers and children under six. It also digitises and automates physical registers used by workers that helps improve the quality of their work.
  - The Anganwadi workers are being provided smartphones procured through the Government e-Marketplace (GeM) for efficient service delivery.
  - A total of 8.66 lakh such phones have been procured by all States and Union Territories. More than 6.5 lakh Anganwadi workers have been trained so far.
- A nodal person has also been appointed for providing technical support and resolving any issue about downloading the new Poshan Tracker application and its functioning in each State.
- Migrant worker who have registered in their original State can go to the nearest Anganwadi in their current place of residence and use the schemes and services offered.

What is Poshan Abhiyan?

POSHAN Abhiyaan (Prime Minister's Overarching Scheme for Holistic Nutrition) was launched the Prime Minister on 8th March 2018 in Jhunjhunu district of Rajasthan.

Objectives

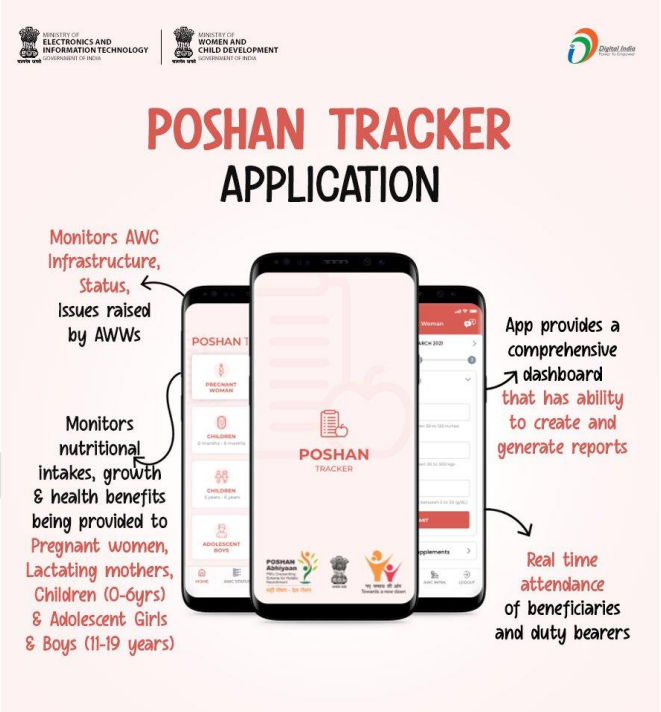
- Prevent and reduce Stunting in children (0- 6 years).
- Prevent and reduce under-nutrition (underweight prevalence) in children (0-6 years).
- Reduce the prevalence of anemia among young Children (6-59 months).
- Reduce the prevalence of anemia among Women and Adolescent Girls in the age group of 15-49 years.
- Reduce Low Birth Weight (LBW).

Admission Help Line: +91 9823256625 & 9579247470 (WhatsApp)
Email: info@iqraias.com, support@iqraias.com

- Since the launch of the Poshan Abhiyan in 2018, a total of 10.6 crore beneficiaries have been registered out of which 47.6 lakh were lactating mothers, 7.48 crore pregnant women and the rest children.

Poshan Tracker App

- The **Ministry of Women and Child Development (MoWCD)** has launched an application called Poshan Tracker.
- The Poshan Tracker management application provides a 360-degree view of the activities of the Anganwadi Centre.
- The app facilitates efficient service delivery by digitizing and automating the tasks performed by Anganwadi Workers.
- To support their work, smartphones procured through Government e-Market (GeM) have been provided to the workers.
- Additionally, a designated individual has been appointed in each state to offer technical support and resolve any issues related to downloading and using the new Poshan Tracker application.
- Migrant workers who have registered in their original state can visit the nearest Anganwadi in their current place of residence to access the schemes and services provided through the app.



80 Castes To Be Added To Central OBC List

Context: Approximately **80 more castes in six States** are now **likely to be added to the Central List of Other Backward Classes (OBCs)** in the coming months, with the National Commission for Backward Classes (NCBC) already processing the approval for most of them.

Important Highlights

- In a report released by the Ministry of Social Justice and Empowerment (MSJE) last week, the government said that under the leadership of Prime Minister it had facilitated the addition of as many as 16 communities to the Central list of OBCs in Himachal Pradesh, Bihar, Jharkhand, Madhya Pradesh and Jammu and Kashmir.
- The communities likely to be added to the Central list are from States such as:
  - **Maharashtra,**
  - **Telangana,**
  - **Andhra Pradesh,**
  - **Himachal**
  - **Pradesh,**
  - **Punjab and Haryana.**
- The **Telangana** government has requested that nearly **40 communities** currently listed under the State OBC list should be added to the Central list.
- **Andhra Pradesh** has sought the addition of the **Turup Kapu community**, whereas **Himachal Pradesh** has asked for the **Majhra** community to be added.
- The **Maharashtra** government has asked that the **Lodhi, Lingayat, Bhoyar Pawar, Jhandse** communities in the State also be added to the Central list of OBCs.

- Similarly, **Punjab** has asked for the **Yadav community** to be included and **Haryana** for the **Gosai/Gosain Community**.

There are currently over 2,650 different communities listed in the Central OBC list for all States and Union Territories, including the 16 communities that were added since 2014.

The Procedure of Addition

- **Articles 15(4) and 16(4) of the Constitution** consist of special provisions for the socially and educationally backward classes of citizens (SEBC) which includes the SCs and STs.
- At present, there are **two OBC lists** - one for the **state** and the **Centre**.
- A caste included in the state OBC list **enjoys reservation benefits** in state government jobs and educational institutions, but not in central government jobs or educational institutions.
- As per the Procedure for **Addition mentioned in the NCBC Act, 1993**, the Commission is mandated to constitute a Bench to examine such proposals and then forward their decision to the Union government including dissent, wherever applicable.
- The **Cabinet must then approve the additions** and bring legislation to this effect. Following this the **President is empowered to notify the change**.
- The Union government introduced the 105th Amendment to the Constitution to reaffirm the right of the individual states to maintain their own OBC list.
- The **Amendment was required after the Supreme Court interpreted in the Maratha Reservation case**, that the 102nd Amendment that gave the NCBC constitutional status had effectively saved 671 State OBC communities from being deprived of benefits.
- **Under Article 342(A), Parliament's approval is necessary** before adding or removing any community from the backward list.

NCBC

- The National Commission for Backward Classes was established in 1993 under the Union Ministry of Social Justice and Empowerment following the Supreme Court's directions in the Indira Sawhney case.
- The 102nd Constitutional Amendment (2018) granted the NCBC constitutional status.
- Objective: The primary objective behind the establishment of the Commission was to evaluate the conditions and challenges faced by the socially and economically backward communities and provide suggestions as necessary for their betterment.

Structure

- The Commission consists of five members i.e. a Chairperson, Vice-Chairperson, and three other members
- The members are nominated by the President by warrant under his hand and seal.
- The service conditions and terms of office of the members are determined by the President.

Functions

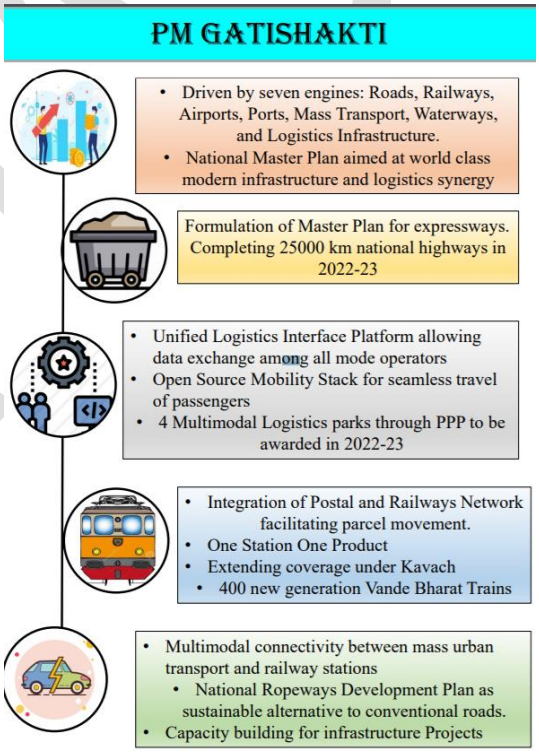
- The NCBC has been tasked with redressing backward-class grievances.
- The NCBC has been mandated to investigate and monitor all matters pertaining to the safeguards granted for the socially and educationally disadvantaged under the Constitution and other laws
- It advises the government on the socio-economic development of socially and educationally disadvantaged groups and assesses their progress.
- The commission must perform other tasks related to the protection, welfare, development, and progress of the socially and educationally disadvantaged that the President may designate by regulation subject to the rules of any law passed by Parliament.
- Article 338B has granted the NCBC the jurisdiction to investigate complaints and welfare measures related to the socially and educationally disadvantaged.
- It has all the powers of a civil court when hearing cases.
- The commission presents an annual report to the president and can also submit a report as and when necessary.

Gati Shakti portal

Context: Industry is hopeful that the government may soon agree to open up access to the **PM Gati Shakti portal** developed for planning multi-modal infrastructure projects, thus **helping facilitate greater private capital investments** especially in **connectivity projects** that are seen as critical to sustain the economy's momentum.

Key Highlights

- **Launched in October 2021**, the PM Gati Shakti di-platform **brings together 16 ministries**, including Railways and Roadways, so as to spur an integrated and coordinated approach to **planning and implementing infrastructure connectivity projects**.
- So far, access to the portal's data, which include detailed maps with existing economic and social infrastructure as well as upcoming projects, is restricted to Central and State government agencies.
- Confederation of Indian Industry (CII) says that some access to the portal's information trove would help not just logistics firms plan operations, but also enable fresh capital spending across allied sectors.
- It has been asked that block the sensitive data and the rest should be made available. That can be a big benefit for all of the planning of the private sector as well. And that will actually help attract more capex and outside funding.



Gati Shakti Portal or National Master Plan for Multi-Modal Connectivity

- Portal **aims** to ensure integrated planning and implementation of infrastructure projects in the next four years, with focus on expediting works on the ground, saving costs and creating jobs.
- The Gati Shakti scheme will subsume the Rs 110 lakh crore National Infrastructure Pipeline (launched in 2019).
- The scheme also **aimed** at increasing cargo handling capacity and reducing the turnaround time at ports to boost trade.
- It also **aims** to have 11 industrial corridors and two new defence corridors – one in Tamil Nadu and other in Uttar Pradesh.
- Extending **4G connectivity** to all villages is another aim. Adding 17,000 kms to the gas pipeline network is being planned.
- It will help in fulfilling the ambitious targets set by the government for 2024-25, including expanding the length of the **national highway network** to 2 lakh kms, creation of more than **200 new airports**, **heliports and water aerodromes**.
- It intends to bring together 16 infrastructure related Ministries.
    - This will help in removing long-standing issues such as **disjointed planning, lack of standardisation, problems with clearances, and timely creation and utilisation of infrastructure capacities**.
- Gati Shakti Digital Platform **involves** the creation of a **common umbrella platform** through which infrastructure projects can be planned and implemented in an efficacious manner by way of coordination between various ministries/departments on a real-time basis.

Six Pillars of Gati Shakti Plan

1.Comprehensiveness (tech led holistic planning)
2. Prioritization of work (no haphazard decisions)
3. Optimization (laying the groundwork before the project is started)
4. Synchronization
5.Analytical 6. Dynamic

Third Edition of National E-Governance Service Delivery Assessment (NeSDA) Portal

Context: The Department of Administrative Reforms & Public Grievances (DAPRG) Secretary has launched the third edition of the National e-Governance Service Delivery Assessment (NeSDA).

Key Highlights

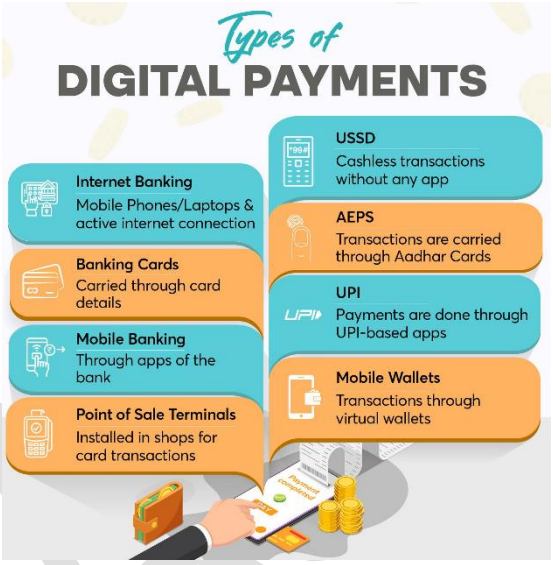
- Two editions of NeSDA study successfully released: NeSDA 2019 and NeSDA 2021.
- Rise in e-Service delivery and shift towards integrated/centralized portals
- Key takeaways from the previous studies:
    - Increase in e-Service delivery
    - Use of integrated/centralized portals for e-Service delivery
    - Improvement in assessment parameter scores
- NeSDA 2021 assessed 1400 services across all States and UTs, compared to 872 in 2019 (over 60% increase)
- 74% of respondents in the citizen survey expressed satisfaction with e-Services provided by States and UTs
- Finance and Local Governance & Utility Services sectors had the highest usage of e-Services by citizens
- NeSDA 2023 launched, marking the third edition of the study
- NeSDA 2023 framework revised to align with contemporary citizen needs and global digital government trends

National e-Governance Service Delivery Assessment (NeSDA) Portal

Topic	Description
National e-Governance Service Delivery Assessment (NeSDA)	Framework launched in 2018 by the Department of Administrative Reforms & Public Grievances (DARPG)
Objective	Measure the depth and effectiveness of existing e-Governance service delivery mechanisms from the citizen's perspective
Framework Basis	Based on the Online Service Index (OSI) of UNDESA eGovernment Survey, customized for the Indian federal structure and the e-Governance landscape of States and UTs
NeSDA Study	Conducted biennially by DARPG
NeSDA 2019	Released in 2020
NeSDA 2021	Released in 2022
NeSDA 2023 Framework Dimensions	▪ Portals Coverage: State, UT, Central Ministry Portals and State, UT, Central Ministry Services Portals, including assessment of City Portal ▪ Focus Sectors and Mandatory Services Coverage: G2C and G2B services across seven sectors (Finance, Labour Employment, Education, Local Governance Utility Services, Social Welfare, Environment, and Tourism) with an expansion to include Transport and Public Grievance ▪ 3. Assessment Parameters: Open Government Data (OGD), E-Participation, and Leveraging Emerging Technologies.

Digital Payments in Panchayats

Context: All panchayats across the country will mandatorily use digital payments for development work and revenue collection from this Independence Day and they will be declared **UPI-enabled**, a letter issued by the Union Panchayati Raj Ministry has said.



Key Highlights

- The States should "announce and inaugurate" the UPI-compliant panchayats in the presence of dignitaries such as Chief Ministers, MPs and MLAs, the Ministry said in the letter to the States and Union Territories.
- The Secretary, Panchayati Raj Ministry, said almost **98% of the panchayats had already started UPI-based payments**.
- Payments worth ₹1.5 lakh crore have been made through the Public Financial Management System (PMFS). Payments to panchayats will now be made digitally. Payments in **cheques and cash** have **almost** been **stopped**.
- Panchayats have been asked to hold meetings with service providers and vendors. A list with details of contact persons from UPI platforms GPay, PhonePe, PayTm, BHIM, Mobikwik, WhatsApp Pay, Amazon Pay and Bharat Pe has been shared by the Ministry.
- By July 15, panchayats have to choose appropriate service providers, and finalise vendors by July 30, as per guidelines by the Ministry. Panchayats have also been asked to choose a single vendor which covers the whole area.

SC Agrees to Hear Delhi Govt's Plea Against Centre's Ordinance

Context: Supreme Court agrees to hear Delhi Government's challenge to ordinance.

Important Points

- Chief Justice of India (CJI) D.Y. Chandrachud has informed the Delhi Government that the Supreme Court will list the Delhi's Government petition. The petition seeks to quash a Central ordinance that gives the Lieutenant Governor control over civil servants in Delhi.
- The Delhi Government has challenged the appointment of the Delhi Electricity Regulatory Commission (DERC) chairperson separately, with the hearing scheduled for July 11.
- The National Capital Territory of Delhi (Amendment) Ordinance, 2023 was promulgated shortly after the Supreme Court's May 11 verdict, which upheld the authority of the Delhi Government to make laws and administer civil services in Delhi.
- The ordinance transfers control over civil servants serving in Delhi to the Lieutenant Governor without amending the Constitution, particularly Article 239AA, which states that power and control over services should be vested in the elected government.
- The petition challenges the provisions of the ordinance that establish a permanent National Capital Civil Service Authority (NCCSA) with the Chief Minister as the chairperson, and the Chief Secretary and Principal Home Secretary as members.
- The NCCSA has the authority over civil service officers in all Delhi Government departments, except public order, police, and land. The Lieutenant Governor's decision would be final in case of a difference of opinion.
- The government argues that giving the Lieutenant Governor the final say collapses the dual scheme of governance envisioned in Article 239AA, which should preserve Delhi's federal system of governance.

Key Highlights of the Ordinance

Restructuring Legislative Powers:

- The ordinance specifies that the Delhi Legislative Assembly will no longer have the authority to legislate on the subject of "services," which falls under the State List.
- Services encompass matters related to appointments, transfers of Delhi government employees, and vigilance.

Establishment of the National Capital Civil Services Authority (NCCSA):

- The NCCSA is a new statutory authority created by the ordinance to make recommendations to the Lieutenant Governor (LG) regarding transfer postings, vigilance, and other related matters.
- The NCCSA comprises the Chief Minister (CM) of Delhi as the Chairperson, along with the Chief Secretary and Principal Secretary of the Home Department.
- Decisions of the NCCSA will be made through majority voting by the members present.

Enhanced Powers of the Lieutenant Governor (LG):

- The LG will now have discretionary powers in his role.
- The LG can approve the recommendations of the NCCSA or send them back for reconsideration.
- In case of a difference of opinion between the LG and the Authority, the LG's decision will be final.

Ordinance-making Power of the President and Governor

- The term "Ordinance" refers to a law promulgated by the State or Central Government without the approval of the Legislature.
- The power to promulgate ordinances is vested in the Indian Councils Act, 1861, Government of India (GoI) Act, 1909, and GoI Act, 1935.
- The authority to issue ordinances is specified under Article 123 (Power of President to promulgate Ordinances during the recess of Parliament) and Article 213 (Power of Governor to promulgate Ordinances during the recess of the Legislature).

Centre will Ensure Execution of SoO Pact

Context: Manipur Chief Minister N. Biren Singh on June 26 said Union Home Minister Amit Shah had assured that the Centre would ensure the implementation of the Suspension of Operations (SoO) agreement with Kuki insurgent groups in the hill areas.

Key Highlights

- The source said the removal of the Armed Forces (Special Powers) Act (AFSPA) from valley districts was emerging as a challenge as Meitei insurgent groups launched attacks from denotified areas, making it difficult for the security forces to launch operations without taking the help of civil administration.
- Out of 92 police stations, the AFSPA has been removed from 19 police stations in seven districts, all in the valley.
- While the SoO groups were under watch, the valley-based insurgent groups which entered from Myanmar were difficult to track, the source said, adding that there have been multiple incidents in the past when the Army had to withdraw from an area or release suspects in the wake of protests.

What is Suspension of Operations (SoO) Agreement?

- It was a **ceasefire agreement** signed in **2008**, with the primary objective of initiating political dialogue with Kuki insurgent groups and **meant ending violence and hostilities from all sides**.
- It was signed by the **Centre, the Manipur Government** with two umbrella groups, the **Kuki National Organisation (KNO) and the**

Who are Kukis?

The Kukis are a multi-tribal ethnic group that live in India's north-eastern regions of Manipur, Mizoram, and Assam, as well as parts of Bangladesh and Myanmar. They live primarily in the hills.

United People's Front (UPF), comprising 25 groups – 17 under KNO and 8 under the UPF.

- There are nearly 30 Kuki insurgent groups in Manipur, of which 25 are under SoO Agreement.
- Instead of the demand for a separate state, the Kuki outfits agreed to a '**Kukiland territorial council'**, which would have financial and administrative powers independent of the Manipur Assembly.

Terms of the SoO Agreement

- **Tenure**
  - Period of the SoO agreement is one year; it is extendable according to the progress of its implementation.
  - The SoO has been extended by the Government almost every year since 2008, with Kuki outfits threatening to breach the agreement by taking up arms again and boycotting the Government.
- **Monitoring of implementation**
  - A committee called the Joint Monitoring Group (JMG), with representatives from all the signatories, has been formed.
- **No operations**
  - Security forces, including state and central forces, are not to launch any operations, nor can the underground groups (UG).
- **Designated camps**
  - The militant cadres are to be confined in designated camps identified by the Government. Arms are deposited in a safe room under a double-locking system. The groups are given arms only to guard their camps and protect their leaders.
- **Responsibilities of insurgents**
  - The signatories of UPF and KNO shall abide by the Constitution of India, the laws of the land and the territorial integrity of Manipur. They are prohibited from committing all kinds of atrocities, extortion, among others.
- **Rehabilitation package**
  - As a rehabilitation package, the UG cadres living in the designated camps are given a monthly stipend of Rs 5000.
- **Current Stance on SoO Agreement**
  - On March 10 2023, the Manipur government decided to withdraw from the Suspension of Operations (SoO) agreement with two militant groups, Kuki National Army (KNA) and Zomi Revolutionary Army (ZRA), alleging their involvement in inciting agitation among forest encroachers.

Draft for Green Credits Programme, To Reward Environmental Initiatives

Context: The Ministry of Environment, Forest and Climate Change (MoEFCC) has notified the draft 'Green Credit Programme (GCP)' implementation rules 2023.

Objectives of GCP

- Create a market based mechanism for providing GCs to individuals, organizations, local bodies, gram panchayats, private sectors etc. for environment positive actions.

- Create mass movement around environment positive actions and realize the vision of Mission LiFE.
- GCs will be tradable outcomes and will be made available for trading on a domestic market platform.
- An activity generating GCs may also get Carbon Credits from the same activity under the carbon market.
- The Indian Council of Forestry Research and Education is the administrator of the GCP, responsible for its implementation, management and monitoring.
- GCP was announced during the Union Budget 2023, aligning with India's climate goals under Paris Agreement and realizing the vision of "Mission LiFE".
- GCP aims to leverage a competitive market-based approach for Green Credits thereby incentivising voluntary environmental actions of various stakeholders.

What is the Green Credit Programme?

The 'Green Credit' means a singular unit of an incentive provided for a specified activity, delivering a positive impact on the environment.

- The Green Credit Programme as a mechanism that complements the domestic Carbon Market.
- While the domestic carbon market focuses solely on CO2 Emission reductions, the Green Credit System aims to meet other environmental obligations as well, incentivizing sustainable actions by companies, individuals, and local bodies.
- The green credits will be tradable and those earning it will be able to put these credits up for sale on a proposed domestic market platform.
- It was first announced in the 2023-24 Union Budget with a view to leverage a competitive market-based approach and incentivize voluntary environmental actions of various stakeholders.

Mission LiFE

The Mission LiFE was launched by the Prime Minister of India in the presence of U.N. Secretary-General. 'Mission LiFE' (Lifestyle for Environment) is a new initiative for a sustainable and healthy lifestyle.

Topic	Details
Mission LiFE (Lifestyle for Environment) (launched in Oct 2022) is a global movement initiated by India to promote an environmentally conscious lifestyle.	LiFE Lifestyle For Environment
Need	Addressing environmental degradation and climate change at the individual and community level
Aim	It aims to replace mindless consumption with mindful utilization and encourages individuals and communities to undertake climate-friendly actions in their daily lives.
Approach	Focus on individual behaviours, co-create globally, leverage local cultures
Objectives	Promote environmentally conscious lifestyle, nudge individuals to undertake climate-friendly actions, create a global network of Pro-Planet People (P3)
Example	Promoting Sustainable Transportation: Encouraging individuals to use public transport, carpooling, cycling, or walking instead of private vehicles to reduce carbon emissions and promote a greener commute.
Other related initiatives	Glasgow Climate Meet (Cop26), Panchamrit strategy, International Solar Alliance, National Action Plan on Climate Change, National Clean Air Programme (NCAP), National Biofuel Policy

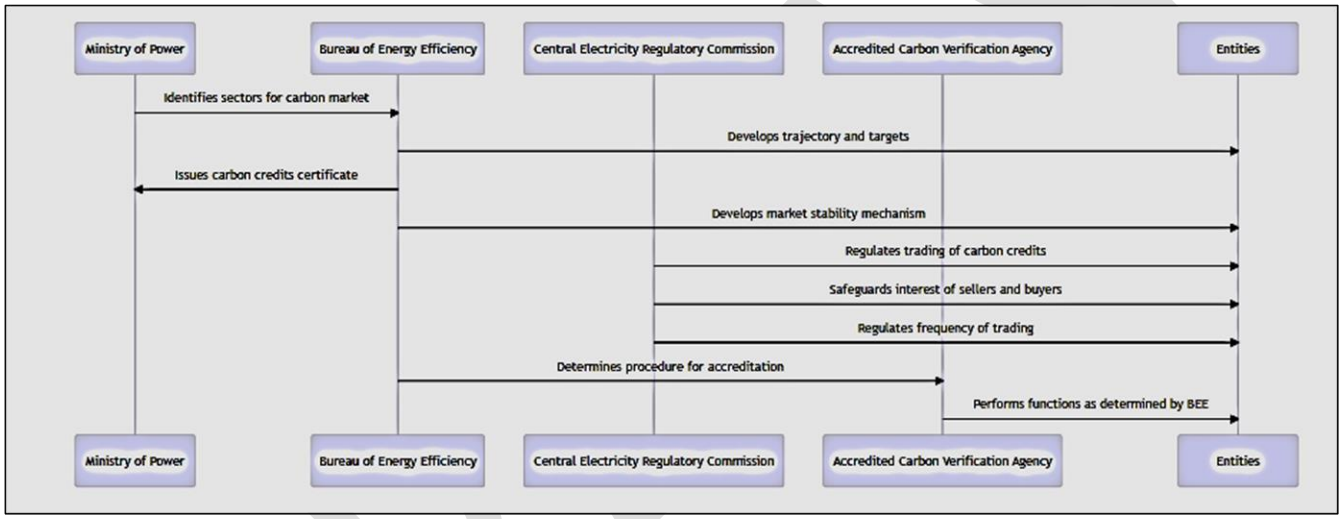
Ministry of Power Notifies Carbon Credit Trading Scheme (CCTS)

Context: CCTS 2023 provides **to set up a carbon credit trading market** as the country **aims at decarbonizing economy** and has committed to **cut emissions by 45 percent from 2005 levels by 2030.**

- CCTS was first announced under Energy Conservation Act 2001 which was amended by Energy Conservation (Amendment) Bill 2022.

Key Highlights

- **Set up National Steering Committee (NSC)** aka Indian Carbon Market Governing Board (ICMGB), **headed by power and environment secretaries**, to govern and oversee the functions of Indian Carbon Market (ICM).
- **Bureau of Energy Efficiency (BEE) would be the administrator** for carbon market and set targets for reduction in emissions, issue carbon credit certificates and accredit carbon verification agencies.
- **Central Electricity Regulatory Commission (CERC) will be regulator** for all trading activities.
- **Grid Controller of India will be the registry** of ICM.
- Carbon markets are a tool for putting a price on carbon emissions- they establish trading systems where carbon credits or allowances can be bought and sold.
- A carbon credit is a kind of tradable permit that equals one tonne of carbon dioxide removed, reduced, or sequestered from atmosphere.



Pradhan Mantri Matsya Sampada Yojana (PMMSY)

Objective: The Pradhan Mantri Matsya Sampada Yojana (PMMSY) was introduced in the 2019-20 Budget with the aim of fostering a sustainable and responsible development of the fisheries sector in India. The key goals include achieving an annual growth rate of 9% in fish production, reaching a target of 22 million metric tons by 2024-25, creating direct employment for 15 lakh fishers and fish farmers, and doubling the incomes of those involved in the fisheries industry by 2024.

Implementation

The PMMSY is structured as an umbrella scheme with two components:

- Central Sector Scheme: The central government will bear the project cost, providing 100% funding.
- Centrally Sponsored Scheme: The states and union territories (UTs) will implement the sub-components/activities, with the cost being shared between the central government and the respective states.
- North Eastern & Himalayan States: 90% central share and 10% state share. Other States: 60% central share and 40% state share.
- To ensure effective planning and implementation, a well-structured framework will be established for PMMSY. The approach will follow a "Cluster or area-based approach" with comprehensive linkages and end-to-end solutions to achieve optimal outcomes.

Sarbananda Sonowal launches 'SAGAR SAMRIDDHI'

Context: Union Minister of Ports, Shipping & Waterways (MoPSW) and Ayush Shri Sarbananda Sonowal launched 'SAGAR SAMRIDDHI' - the online dredging monitoring system - in order to accelerate 'Waste to Wealth' initiative of the Ministry here today. Secretary of MoPSW Sudhansh Pant along with other senior officials of the Ministry, Major Ports and Organisations also attended this programme.

What is Sagar Samridhi?

Sagar Samridhi is a system developed by the National Technology Centre for Ports, Waterways and Coasts (NTCPWC) as an improvement over the old Draft & Loading Monitor (DLM) system. It aligns with the Atmanirbhar Bharat and Make in India initiatives.

System Capabilities

- Real-time Dredging Progress Reporting
- Daily and Monthly Progress Visualizationfamr
- Dredger Performance and Downtime Monitoring
- Easy Location Tracking with Loading, Unloading, and Idle Time Snapshot

Significance of Sagar Samridhi

Sagar Samridhi improves project implementation, reduces dredging costs, promotes environmental sustainability, and enhances transparency and efficiency. It has the potential to save significant costs for Major Ports and Waterways in India.

Guidelines Related to Dredging in India

- **Dredging Guidelines for Major Ports (2021):** These guidelines provide a framework for planning, technical investigations, dredged material management, and cost estimation for Major Ports.
- **'Waste to Wealth' Concept (March 2023):** This update introduces a provision in the bidding documents to reduce dredging costs by suggesting beneficial ways to use dredged material, such as in construction projects and for environmental improvement like beach nourishment.

CHAMPIONS 2.0

Context: Recently, the Union Minister for the Ministry of Micro, Small & Medium Enterprises, Shri Narayan Rane launched the 'CHAMPIONS 2.0 Portal'.

Important Highlights

- The event showcased the launch of various initiatives of the Ministry of MSME, dedicated towards growth and development of MSMEs such as 'CHAMPIONS 2.0 Portal' and 'Mobile App for Geo-tagging of Cluster Projects and Technology Centers' by the Chief Guest and Guest of Honor.
- Results for 'MSME Idea Hackathon 2.0' were declared and 'MSME Idea Hackathon 3.0' for women entrepreneurs was launched.
- Addressing the gathering, Shri Narayan Rane emphasized the importance of MSMEs in the country's GDP and exports and expressed hope that MSMEs will contribute to 50% of the country's GDP by 2030. He congratulated all stakeholders on the event's success and urged everyone to take steps towards making India a USD 5 trillion economy.

Background

Recognizing the invaluable role played by MSMEs in realizing the United Nations Sustainable Development Goals (SDGs), the United Nations General Assembly designated June 27 as "Micro-, Small, and Medium-sized Enterprises Day." Aligned with this global observance, the Ministry of MSME launched the CHAMPIONS 2.0 Portal with the objective of raising awareness about the remarkable contributions made by MSMEs.

- Appreciating the role of Indian MSMEs in the growth of the country's economy, Union Minister highlighted, that since 2014, India's GDP ranking has seen a significant jump from 10th to 5th position.
- On this occasion, both the Union Ministers motivated entrepreneurs by distributing certificates to Gold and Silver ZED-certified MSMEs. During the event, 400 crore Margin Money subsidy was also released digitally to 10,075 beneficiaries of new Prime Minister's Employment Generation Programme (PMEGP) units.
- The event also included the signing of MoUs between the following organizations.
    - Ministry of MSME and SIDBI, to create a portal for 'PM VIshwakarma KAushal Samman' (PMVIKAS) by SIDBI.
    - Ministry of MSME and GeM, with the objective of sharing of Udyam Registration data with GeM for last mile registration of MSMEs in the Public Procurement eco-system.
    - Ministry of MSME and the Industry Department, Government of Tripura, for sharing of Udyam Registration data through API, easing policy making and targeted distribution of scheme benefits.
    - Ministry of MSME and Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE) for giving guarantee coverage to the beneficiaries of the MSME sector.
    - National Small Industries Corporation (NSIC) and National Scheduled Castes Finance and Development Corporation (NSFDC) & National Scheduled Tribes Finance and Development Corporation (NSTFDC), to promote mutual collaboration for supporting SC/ ST entrepreneurs under National SC-ST Hub and various schemes being implemented by NSFDC and NSTFDC.
    - NSIC, LG Electronics India Private Limited, and Electronics Sector Skill Council of India to establish a Centre of Excellence (CoE) by LG Electronics in NTSC Chennai and Hyderabad.

An Overview of CHAMPIONS 2.0 Portal

The CHAMPIONS 2.0 Portal serves as a comprehensive and user-friendly grievance redressal platform for MSMEs. Its inception dates back to June 1, 2020, under the guidance of the Ministry of Micro, Small & Medium Enterprises. The acronym "CHAMPIONS" symbolizes the Creation and Harmonious Application of Modern Processes for Increasing Output and National Strength. This revolutionary portal operates on a Hub & Spoke Model, leveraging a central hub in New Delhi and multiple spokes located in various offices and institutions of the Ministry across different states.

Objectives of CHAMPIONS 2.0 Portal

The CHAMPIONS 2.0 Portal aims to address the challenges faced by MSMEs in managing their cluster projects efficiently. Additionally, it strives to ensure speedy and effective redressal of grievances, acting as a guiding hand for MSMEs navigating through government schemes and policies. This comprehensive platform also provides expert guidance and advisory services in crucial areas such as finance, marketing, technology, raw material procurement, labor management, infrastructure development, and capacity building. By facilitating direct connections between MSMEs and key officials from the Ministry, State Governments, lending institutions, and government agencies, the portal fosters collaboration and support for the growth of these enterprises. Moreover, it acts as a vital source of information, disseminating details about all schemes initiated by the Ministry of MSME.

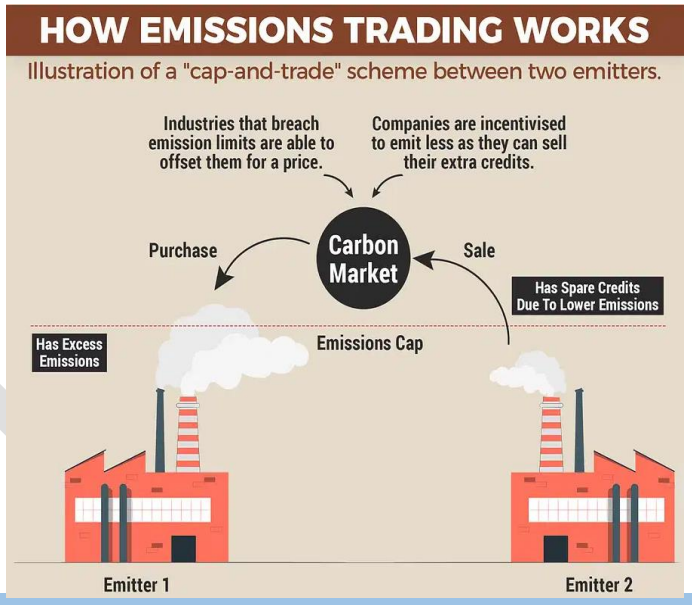
Enhancements and New Features

The revamped CHAMPIONS 2.0 Portal incorporates cutting-edge artificial intelligence (AI)-driven chatbots to enhance user experience and streamline interactions. With language inclusivity in mind, the portal is now available in 11 languages, including Hindi, Gujarati, Bengali, and Kannada, among others. Furthermore, a real-time feedback mechanism has been introduced for comprehensive analysis. Leveraging geotagging through the mobile application, projects can now be monitored, tracked, and evaluated in real-time, ensuring transparency and effective resource utilization. Geotagging involves adding precise geographical metadata, including latitude and longitude coordinates, to digital maps.

Cabinet Clears NRF Bill to Offer Strategic Direction to Research

Context: The Union Cabinet approved the **National Research Foundation (NRF) Bill, 2023**.

- The legislation **aims** to **establish the NRF as an apex body** to provide "**high-level strategic direction**" to scientific research in the country under the National Education Policy (NEP) at an estimated cost of ₹50,000 crores between 2023 and 2028.



Key Highlight

- The **Department of Science and Technology (DST) will be the "administrative**" department of the NRF, which will have a governing Board of eminent researchers and professionals.
- The **Prime Minister will be the ex-officio president** of the Board and the **Union Ministers of Science and Technology and Education ex-officio vice-presidents**.
- The NRF's **functioning** will be **governed by** an **executive council chaired by the Principal Scientific Adviser** to the Government of India.
- The new law will **repeal the Science and Engineering Research Board (SERB)** established by Parliament in 2008 and subsumes it into the NRF.
- NRF was meant to ensure that scientific research was conducted and funded equitably with greater participation from the private sector.
- When the NRF starts functioning, close to ₹36,000 crores is expected from the private sector (as investments into research). The NRF will **prioritise research funding** and the executive council will decide on what areas need support.
- Bill was necessary because current laws made it hard for private research organisations to contribute to a funding body such as the NRF.

National Education Policy, 2020

The National Education Policy 2020 aims to bring transformational reforms in school and higher education and thus shape India into a global knowledge superpower. The Union Cabinet chaired by Prime Minister Shri Narendra Modi approved the National Education Policy 2020 on July 29, 2020. This policy replaced the 34-year-old National Policy on Education (NPE), in 1986. It is Built on the foundational pillars of Access, Equity, Quality, Affordability, and Accountability, this policy is aligned with the 2030 Agenda for Sustainable Development.

Biofertilizer Scheme

Context: The Cabinet Committee on Economic Affairs (CCEA) on Wednesday approved the PM-PRANAM (PM Programme for Restoration, Awareness, Generation, Nourishment, and Amelioration of Mother Earth) scheme, a promise made in the last Budget.

Key Highlight

- Union Fertilizer Minister Mansukh Mandaviya told reporters after the meeting that the new scheme would promote the use of nutrient-based biofertilizers for sustainable agriculture and it would have a total outlay of ₹3,70,128.7 crores.
- The scheme was aimed at saving the soil and promoting sustainable, balanced use of fertilizers, and it involved the participation of State governments.

What is PM-PRANAM Scheme?

- PM-PRANAM stands for PM Programme for Restoration, Awareness, Nourishment and Amelioration of Mother Earth.

- PM-PRANAM was first announced in the 2023-24 Budget by the Union government.
- The scheme aims to reduce the use of chemical fertilizers by incentivizing states to adopt alternative fertilizers.
- **Objective:** Encourage the balanced use of fertilizers in conjunction with bio fertilizers and organic fertilizers.
    - Reduce the subsidy burden on chemical fertilizers, which was around Rs 2.25 lakh crores in 2022-2023.

Key Features of the Scheme

Financing	•The scheme will be financed by the savings of existing fertilizer subsidies under schemes run by the Department of Fertilizers, Ministry of Chemicals & Fertilizers. •There will be no separate budget for the PM-PRANAM scheme.
Subsidy Savings and Grants	•The Centre will provide 50% of the subsidy savings to the states as a grant. •Out of the grant, 70% can be used to create assets related to the technological adoption of alternative fertilizers and production units at various levels. •The remaining 30% can be used to reward and encourage farmers, panchayats, and other stakeholders involved in fertilizer reduction and awareness generation.
Calculation of Fertilizer Reduction	•The reduction in urea consumption by a state will be compared to its average consumption of urea over the previous three years. •This calculation will determine the eligibility for subsidy savings and grants.
Promotion of Sustainable Agriculture	•Encouraging the use of biofertilizers and organic fertilizers will promote sustainable agricultural practices. •This will enhance soil fertility, reduce environmental pollution, and support long-term agricultural productivity.

What is Biofertilizer?

It consists of a carrier medium rich in live microorganisms. When applied to seed, soil or living plants, it increases soil nutrients or makes them biologically available. Biofertilizers contain different types of fungi, root bacteria or other microorganisms. They form a mutually beneficial or symbiotic relationship with host plants as they grow in the soil.

International Relations

India, Nepal Sign Pacts on Energy, Transport

Context: India to import 10,000 MW of electricity from Nepal, says Modi, who highlights the close cultural link between the two countries; he calls for **fasttracking projects related to the Ramayana circuit**.

Important Highlights

- Both countries signed a series of agreements on energy and transport, including the export of Nepal's hydropower to Bangladesh through Indian territory.
- India would take forward the 2022 India¬ Nepal vision document for cooperation in the power sector that sets an ambitious goal in India ¬Nepal power trade and transmission.
- A long¬ term Power Trade Agreement has been signed between India and Nepal today. Under this agreement, we have set a target of importing 10,000 MW of electricity from Nepal in the coming years.
- An MoU between NHPC and VUCL (Vidyut Utpadan Company Ltd.) of Nepal was signed, for the development of Phukot Karnali Hydroelectric Project and a Project Development Agreement for Lower Arun Hydroelectric Project between SJVN (India) and Investment Board of Nepal.
- A 35-km cross-border railway line linking Jaynagar in Bihar to Kurtha in Nepal.
- Both the country signed the Revised Transit Agreement (1992) that will help Nepal access to India's inland waterways.
- Also, Inaugurated a cargo train from Bathnaha in India to Nepal Customs Yard. Also inaugurated integrated checkposts (ICPs) at Nepalgunj in Nepal and Rupaidiha on the Indian side.
- They participated in the ground breaking ceremony of ICPs at Bhairahawa and Sonauli as well as Phase-II facilities a part of the Motihari-Amlekhgunj Petroleum Pipeline.

Significance of the Pact

These pacts will enhance the common treatment of Indian and Nepali citizens in the two countries in terms of residence, property, business, and movement.

Al Mohed Al Hindi 23 Exercise

Context: Recently, the sea phase of the second edition of the bilateral exercise 'Al Mohed Al Hindi 23' took place off the coast of Al Jubail, Saudi Arabia. Exercise 'Al Mohed Al Hindi 23' provides a platform for the two countries to strengthen their military ties and deepen cooperation between their navies.

Mandate

- It aims to carry out tactical manoeuvres, search and rescue operations, and an electronic welfare drill to enhance interoperability.

Participation

- Indian Navy and the Royal Saudi Naval Force (RSNF)
- INS Tarkash, INS Subhadra and Dornier Maritime Patrol aircraft (MPA) participated in the exercise from the Indian side.
- The RSNF was represented by HMS Badr and Abdul Aziz, MH 60R helo and UAV.

Activities

- During the three-day exercise at sea, a diverse range of maritime operations were conducted.
- The 'Al Mohed Al Hindi 23' exercise concluded with a debriefing session at sea, which was followed by the traditional steam past ceremony.

India & Germany Submarine Deal

Context: India and Germany discussed the progress of a deal for the **procurement of six advanced conventional submarines** by the Indian Navy under Project-75I.

Key Highlights

- The submarine deal could become a **"flagship project**".
- Both nations want to intensify military cooperation with other branches of the Navy and the Air Force.
- This was the **first visit of a German Defence Minister to India since 2015**.

Significance

- The project would **aid in boosting the core submarine/ship building industry**.
- It is one of the **Largest 'Make in India' Projects**. It will facilitate faster and more significant absorption of technology and create a tiered industrial ecosystem for submarine construction in India.
- It **Ensures Self-Reliance and reduces current dependence on imports** and gradually ensures the dependability of supplies from indigenous sources.
- It will also greatly enhance the manufacturing/industrial sector, especially the MSME by development of an industrial eco-system for manufacture of associated spares/systems/equipment related to submarines.

Project-75I

- Project 75 is a significant initiative undertaken by the Indian government in collaboration with foreign manufacturers to build advanced submarines for the Indian Navy**.**
- P-75 (I) submarine project is listed in Phase I of the Indian Navy's 30 Year indigenous submarine construction plan approved by the Cabinet Committee on Security (CCS) on 13 Jul 1999.
- The plan envisages the construction of 24 submarines indigenously along with public and private industries, of appropriate designs in two phases.
- Project-75(I) envisages indigenous construction of six modern conventional submarines (including associated shore support, Engineering Support Package, training and spares package) with contemporary equipment, weapons & sensors including Fuel-Cell based AIP (Air Independent Propulsion Plant), advanced torpedoes, modern missiles and state of the art countermeasure systems.

India's Election Commission (ECI) and Panama's Electoral Tribunal (ET) Signed MOU

Context: In a significant development, India's Election Commission (ECI) and Panama's Electoral Tribunal (ET) have solidified their collaboration in the field of election management and administration. The two institutions signed a Memorandum of Understanding (MoU) in Panama City, establishing an institutional framework for ongoing cooperation.

Important Highlights

- The Election Commission of India and Electoral Tribunal (ET) of Panama today signed a Memorandum of Understanding in Panama City to establish the institutional framework for their ongoing cooperation in the field of election management and administration.
- A three member ECI delegation led by Chief Election Commissioner of India Shri Rajiv Kumar held interactions with Presiding Magistrate, Electoral Tribunal of Panama Mr. Alfredo Juncá Wendehake on strengthening collaboration and knowledge exchange between the two Election Management Bodies (EMBs).

Importance of Collaborative Efforts

- The partnership between the ECI and Panama's ET reflects a growing recognition of the significance of sharing best practices and fostering global partnerships in the realm of election management.
- As democracies continue to evolve, cooperation between electoral bodies becomes crucial in addressing common challenges and ensuring the integrity of electoral processes.
- The MoU lays the foundation for a productive exchange of knowledge, expertise, and technological advancements, benefiting not only India and Panama but also contributing to the broader advancement of democratic principles worldwide.
- India's commitment to engaging with its international counterparts underscores its dedication to promoting democratic values and strengthening electoral systems globally.

Significance of the MoU

- The signing of this MoU with Panama marks a significant milestone in the ECI's efforts to expand its international cooperation.
- As part of its 'International Cooperation Programme,' the ECI has previously signed MoUs with Mexico, Brazil, and Chile.
- This latest agreement is the fourth MoU signed by the ECI with an Election Management Body in the Latin American region, bringing the total number of MoUs between the ECI and Election Management Bodies/international organizations worldwide to 31.
- The ECI is committed to engaging with electoral bodies worldwide and enhancing democratic processes globally. Furthermore, it is equally dedicated to sharing its expertise and knowledge in conducting free, fair, and transparent elections with counterparts in other countries.

India and Singapore

Context: Grievances and Pensions, Government of India, and The Public Service Division of the Republic of Singapore signed a Protocol Document.

Important Highlights

- The Protocol extends the current Memorandum of Understanding (MoU) on Cooperation in the field of Personnel Management and Public Administration for five more years, until 2028.
- The MoU was signed by Shri V. Srinivas, Secretary of the Department of Administrative Reforms and Public Grievances, and Mr Simon Wong, High Commissioner of Singapore to India.
- The signing ceremony was attended by senior officers from the Singapore High Commission and the Department of Administrative Reforms and Public Grievances.
- The event also included a virtual address by the Permanent Secretary of the Public Service Division, Republic of Singapore.
- The objective of the MoU is to strengthen the partnership between the two countries through various forms of cooperation between their Public Service officers.
- Areas of cooperation under the MoU include Administrative Reforms & Public Sector Transformation, Public Service Delivery, Leadership and Talent Development, E-Governance, Capacity Building, and Training.

Areas of Cooperation as per MOU

Areas of Cooperation	Explanation
Administrative Reforms & Public Sector Transformation	Collaborating on identifying and implementing administrative reforms to enhance efficiency, transparency, and accountability in public service delivery. Promoting innovation and learning from successful initiatives.

Areas of Cooperation	Explanation
Public Service Delivery	Sharing knowledge and best practices to ensure efficient and citizen-centric service delivery. Focus on service quality management, grievance redressal mechanisms, and leveraging technology for improved accessibility and responsiveness.
Leadership and Talent Development	Nurturing effective leadership and developing skilled personnel. Exchange of expertise in leadership development, talent management, and succession planning to address evolving challenges in public administration.
E-Governance	Collaborating on digital transformation initiatives. Sharing experiences, best practices, and technological innovations for effective administration, data management, and citizen engagement.
Capacity Building and Training	Enhancing the skills and knowledge of public servants. Exchanging training modules, organizing joint workshops, seminars, and utilizing e-learning platforms to build capacity and respond to emerging challenges.

India, U.S. Review Export Control Regulations

Context: India and the U.S. pledged to streamline their export control regimes for critical technologies at the inaugural **India-U.S. Strategic Trade Dialogue** (IUSSTD).

Key Highlights

- IUSSTD focused on ways in which both governments can facilitate the development and trade of technologies in critical domains such as **semiconductors, space, telecom, quantum, AI, defence, bio-tech and other**.
- Both sides reviewed the relevant bilateral export control regulations with the **objective of building and diversifying resilient supply chains** for these strategic technologies.

India-US Strategic Trade Dialogue (IUSSTD)

- India-US Strategic Trade Dialogue (IUSSTD) is a key mechanism to take forward the strategic technology and trade collaborations envisaged under the India-US initiative on Critical and Emerging Technologies (iCET).
- The iCET was conceived as an initiative which will be spearheaded by the National Security Councils of the two countries to expand partnership in critical and emerging technologies. The two most prominent aims of the iCET are to elevate and expand strategic technology partnerships and defense industrial cooperation between India and the US.
- The two sides reviewed ongoing cooperation in multilateral export control regimes and agreed to share best practices and focused on ways in which both governments can facilitate the development and trade of technologies in critical domains such as semiconductors, space, telecom, quantum, AI, defence, bio-tech and others.
- Both sides agreed to enhance awareness among the industry, academia and other stakeholders about the export control regimes through workshops and other activities.
- The two sides also reviewed the relevant bilateral export control regulations with the objective of building and diversifying resilient supply chains for these strategic technologies.
- They acknowledged that the dialogue would be instrumental to enabling co-production, co-development and enhanced industrial collaborations in critical technologies.

ISRO, Norway and the 'Svalbard Mission'

Context: The Norwegian Ambassador has paid a visit to the ISRO Chairman. The meeting concluded with a mutual agreement on the importance of maintaining a continued partnership and fostering increased engagements between India and Norway in the field of space exploration and technology.

- This visit offers an occasion to recall the challenging Svalbard mission which took place 26 years ago at Ny-Alesund, Svalbard.

India Norway Relations

- India and Norway have enjoyed a cordial relationship since relations were established between the two countries in 1947.
- Prior to Independence, a Danish-Norwegian trading station was established in Tranquebar (Tharangambadi), Tamil Nadu in the 17th Century.
- In 1952, the India Fund was established with the objective of providing development assistance with a focus on fisheries.
- Norway has expressed support for India's claim to membership of export control regimes such as the Missile Technology Control Regime (MTCR), the Wassenaar Arrangement (WA), and the Australia Group (AG).

Economic Relations

- The Norwegian Pension Fund Global is likely one of India's largest single foreign investors with investments worth $9.5 billion, as of 2019.
- Norway's exports to India include nonferrous metals, natural gas, plastic in primary form, crude minerals, and chemicals.
- Norway's imports from India include apparel and accessories, textile yarns, metal manufactures, rice, and other miscellaneous manufactured goods.
- India revised its Double Taxation Avoidance Agreement (DTAA) which was signed with Norway in 1986 in 2011.

India Strategy

In December 2018, the Government of Norway launched a new 'India Strategy' which has set out clear priorities for the Norwegian government to develop bilateral cooperation with India. The five pillars of the Strategy are:

- ✓ Democracy and a rules-based world order
- ✓ Oceans
- ✓ Energy
- ✓ Climate and Environment
- ✓ Research, higher education, and global health

India-Norway Svalbard Mission in 1997

- In 1997, 4 Scientists from Indian Space Research Organisation (ISRO) travelled to the Svalbard Rocket Range.
- Antrix had signed an agreement with the Norwegian Space Centre for the sale of a Rohini RH-300 Mk.II Sounding Rocket.
- The RH-300 Mk-II was given a new name by the Norwegian Space Centre as Isbjorn-1, which translates literally as 'Polar Bear-I.'
- On the technical side, the Norway mission presented unique challenges for ISRO.
- The Rohini rockets had till then flown only in the tropical hot and humid conditions in India. On the other hand, the Svalbard archipelago sits in the Arctic Ocean and temperatures were on the extremely low side.
- ISRO had shipped the RH-300 Mk-II to Norway after qualifying it for arctic weather conditions.
- However, the rocket, unfortunately, did not achieve the predicted height, rising only up to 71 km.
- The reason was a strange one. To keep the ambient temperature at 18 degrees Celsius, it was kept covered with a velostat shroud. The idea was that it would pierce through the cover during launch. Instead, the rocket dragged it along, and the increased drag resulted in a lower altitude.
- Nevertheless, the Norwegian scientists seemed quite happy with the launch for the data collected during the flight led to some new findings.

Blue Economy • The India-Norway Task Force on Blue Economy for Sustainable Development was launched jointly in 2020. • The Task Force aimed to develop and implement joint initiatives between the two countries and mobilize stakeholders from both countries at the highest level.	**Cooperation in Various Fields** • Norway, with the world's fifth-largest commercial fleet, is cooperating closely with India in ship recycling and shipbuilding activities. • The two countries are also partners in the education sector as major institutions in India such as the Indian Institute of Technology-Madras and the Institute of Wind Energy in Chennai have collaborated with Norwegian institutes. • The Norwegian company, Piql was involved in the digitization of India's historical monuments such as the Taj Mahal, Dholavira in Gujarat, and the Bhimbhetka Caves in Madhya Pradesh.
Climate Investments • Norway has expressed intent to invest $1 billion in the next five years in climate investments, clean energy, and ocean technology in various countries including India. India's vast potential for solar energy makes it a suitable partner for partnership with Norway. • Norway is also collaborating with the National Institute of Wind Energy to expand Wind energy infrastructure in India.	**Science and Technology** • India's Polar Research Station "Himadri" which was established at Ny Alesund in Svalbard, Norway in 2008 hosts teams of researchers each year. • IndARC was deployed in 2014 at Kongsfjorden fjord, Svalbard, Norway as India's first underwater moored observatory in the Arctic region with the goal of studying the Arctic climate and its influence on the monsoon. • India and Norway have also initiated projects to combat marine litter and plastic pollution.

India, UAE Target $100 Bn in Non-Oil Trade by 2030

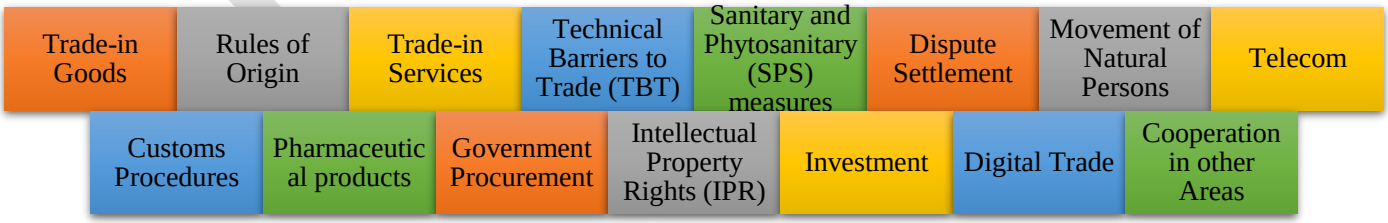
Context: India and the UAE on Monday set a target to increase the non-oil trade from the current $48 billion to $100 billion by 2030.

Key Highlights

- The goal to achieve $100 billion in non-oil trade was set during the first meeting of the Joint Committee of India-UAE Comprehensive Economic Partnership Agreement (CEPA).
- The target of $100 billion will not include the oil trade. It was also agreed to set up certain sub-committees and councils.
- In the meeting, it was also decided to set up a new sub-committee to handle issues related to services trade. India-UAE CEPA council will be set up to further facilitate the implementation of the agreement.

India-UAE Comprehensive Economic Partnership Agreement (CEPA)

The Agreement is a comprehensive agreement, which will cover:



Status of Trade

- India and the UAE have been each other's leading trading partners.
- From USD 180 million per annum in the 1970s, India-UAE bilateral trade has steadily increased to USD 60 billion in FY 2019-20 making the UAE, India's third-largest trading partner.

Exports

The UAE is also the second-largest export destination of India.

Investments

- The UAE is also the eighth largest investor in India with an estimated investment of USD 18 billion
- India and the UAE have recently entered into a Memorandum of Understanding (MoU) whereby the UAE has committed USD 75 billion towards infrastructure development in India.

Economic Importance of UAE

- The UAE is an important source of India's energy supply and a key partner of India in the development of strategic petroleum reserves, upstream, and downstream petroleum sectors.

Significance

- The India-UAE CEPA will further cement the already deep, close and strategic relations between the two countries and will create new employment opportunities, raise living standards, and improve the general welfare of the peoples of the two countries.

What is CEPA?

- It is a kind of free trade pact that covers negotiation on the trade in services and investment, and other areas of economic partnership.
- It may even consider negotiation in areas such as trade facilitation and customs cooperation, competition, and IPR.
- Partnership agreements or cooperation agreements are more comprehensive than Free Trade Agreements.
- CEPA also looks into the regulatory aspect of trade and encompasses an agreement covering the regulatory issues.
- India has signed CEPAs with South Korea and Japan.

Background of India-UAE CEPA

- India and the UAE enjoy excellent bilateral relations, which are deep-rooted and historical, sustained and nurtured by close cultural and civilizational affinities, frequent high-level political interactions, and vibrant people to people linkages.
- The India-UAE comprehensive strategic partnership was initiated during the visit of the Prime Minister of India to UAE in 2015.

Highlights of Progress Made in India and Africa

Context: It was remarked at the 18th CII-EXIM Bank Conclave on 'India-Africa Growth Partnership".

- The bilateral trade of India with Africa grew by 9.26% in FY 2022-23 reaching almost $100 Billion.
- India's goal is to double the trade volume to US$ 200 Billion by 2030.
- The exports and imports are approximately balanced with exports being US$ 51.2 Billion and imports being US$ 46.65 Billion in FY 2022-23.
- 27 Least Developed Countries (LDCs) of Africa benefit from the Duty-Free Tariff Preference on non-reciprocal basis already.
- Free Trade Agreements (FTAs) and Comprehensive Economic Partnership Agreement (CEPA) can be explored with other African countries as well.

About India Africa partnership

- Long history of partnership, with solidarity and political affinity going back to the early 1920s when both regions were fighting against colonial rule and oppression.
- However, India's economic engagement with Africa began intensifying in the early 2000s.

Importance of Africa

- With abundant mineral reserves, oil and natural gas reserves, Africa can help India's quest for energy security.
- Critical to India's security, especially the Horn of Africa region.
- Support of African countries is important for India's aim of gaining a permanent seat in UNSC.

India Gifts INS Kirpan to Vietnam

Context: India gifted the **indigenously-built in-service missile corvette INS Kirpan** to **Vietnam** to enhance its naval capabilities.

- Both Ministers identified means to **enhance** existing areas of collaboration, especially in the field of **defence industry cooperation, maritime security and multinational cooperation**, the Ministry said.
- Gen. Phan also visited headquarters of the Defence Research and Development Organisation (DRDO) and discussed ways to enhance "defence industrial capabilities by cooperation in defence research and joint production".
- In June **2022**, India and Vietnam signed an **MoU on mutual logistics support** in presence of the two Defence Ministers during Mr. Singh's visit to the South East Asian nation.
- The two Defence Ministers also signed the **'Joint Vision Statement on India-Vietnam defence partnership towards 2030.'**

INS Kirpan

- INS Kirpan is a Khukri class missile corvette displacing 1,350 tonnes and was commissioned into the Navy on January 12, 1991.
- It has a displacement of close to 1,400 tonnes, a length of 91 metres, a beam of 11 metres and is capable of speed in excess of 25 knots.
- The ship is fitted with a medium-range gun, 30 mm close-range guns, chaff launchers, and surface-tosurface missiles, according to the Navy.
- They can perform coastal and offshore patrol, coastal security, surface warfare, anti-piracy, and Humanitarian Assistance and Disaster Relief (HADR) operations.

India – Egypt Strategic Partnership

Context: India and Egypt signed an agreement on a strategic partnership as Prime Minister Narendra Modi held bilateral talks with President Abdel Fattah El-Sisi in Cairo. The Government of Egypt bestowed the highest honour of the land — the Order of the Nile — on the visiting Indian leader and Mr. Modi described his first state visit to Egypt as "historic".

Key Highlights

- The four agreements that were signed during the visit (June 24-25) of the honourable Prime Minister — first, the most important, and a landmark development in the history of bilateral relationship was the signature on the strategic partnership between India and Egypt. It was signed by the Honourable Prime Minister Modi and the Honourable President El-Sisi of Egypt.
- The strategic partnership will have broadly the following elements:
  - Political
  - Defense and Security
  - Economic engagement
  - Scientific and academic collaboration.
  - Cultural and people-to-people contact
- Three memoranda of understanding (MoUs) in the fields of agriculture, archaeology and antiquities, and competition law were also signed, the Ministry of External Affairs said.
- The two sides discussed multilateral cooperation at the G-20 and other subjects such as food, energy security and climate change.
- In a special gesture from Mr. Sisi, Mr. Modi received the Order of the Nile, the topmost state honour of Egypt. Among the past recipients of this honour were the late Sultan Qaboos (the ruler of Oman), Nelson Mandela and Suharto, former President of Indonesia.

India-Egypt Relations

India and Egypt signed a friendship treaty in 1955. In 1961, India and Egypt along with Yugoslavia, Indonesia and Ghana established the Non-Aligned Movement (NAM).

- **Bilateral Trade**
  - India's trade with Egypt stood at USD 6,061 million in 2022-23, having declined by 17% over the previous year.
  - Nearly a third of it was petroleum related.
  - India was Egypt's sixth largest trading partner, while Egypt was India's 38th in 2022-23.
  - Indian investments in Egypt are spread over 50 projects totalling USD 3.15 billion. Egypt has invested USD 37 million in India.
- **Defense Cooperation**
  - The two Air Forces collaborated on the development of fighter aircraft in the 1960s, and Indian pilots trained their Egyptian counterparts from the 1960s until the mid-1980s.
  - Both the Indian Air Force (IAF) and Egyptian air force fly the French Rafale fighter jets.
  - In 2022, a pact was signed between the two countries that have decided to also participate in exercises and cooperate in training.
  - The first joint special forces exercise between the Indian Army and the Egyptian Army, "Exercise Cyclone-I" was completed in January 2023 in Jaisalmer, Rajasthan.
- **Cultural Relations**
  - The Maulana Azad Centre for Indian Culture (MACIC) was established in Cairo in 1992. The centre has been promoting cultural cooperation between the two countries.

The India-U.S. Deal for 31 MQ-9B Drones

Context: U.S President Joe Biden and Prime Minister Narendra Modi welcomed India's plans to **procure General Atomics MQ-9B High Altitude Long Endurance (HALE) Unmanned Aerial vehicles (UAV),** the joint statement issued last week after talks between the two leaders said.

- This sets the stage for the **acquisition of 31 of these armed UAVs**, 15 Sea Guardians for the Indian Navy and 16 Sky Guardians — eight each for the Indian Army and Air Force.

Key Highlights

- MQ-9Bs, which will be assembled in India, will enhance the Intelligence, Surveillance, and Reconnaissance (ISR) capabilities of India's armed forces across domains.
- General Atomics will also establish a Comprehensive Global Maintenance, Repair and Overhaul (MRO) facility in India in support of India's long-term goals to boost indigenous defence capabilities.
- The procurement process has commenced with the Defence Acquisition Council (DAC) chaired by Defence Minister Rajnath Singh according the Acceptance of Necessity (AoN) on June 15, the first step in the process.
  - The deal will be executed through the Foreign Military Sales (FMS) route of the U.S. government and is expected to take a few months to be concluded.
- On this a Ministry of Defence (MoD) statement said the AoN noted the estimated cost of $3,072 million provided by the U.S. government. "However, price will be negotiated once policy approval of the US Government is received.

About MQ-9B

- MQ-9B has two variants:
  - the Sky Guardian
  - the Sea Guardian, its maritime variant.

- The MQ-9B is designed to fly over the horizon via satellite for up to 40 hours, depending on configuration, in all types of weather and safely integrate into civil airspace, according to its manufacturer.
- For example, one of the MQ-9 B variants configuration can include a 360-degree surface-search maritime radar, automatic identification system, sonobuoy monitoring system, and sonobuoy dispensers for persistent anti-surface and anti-submarine warfare missions.
- The MQ-9B can provide roughly 80% of the capability of a large human-flown maritime patrol aircraft at about 20% of its cost per hour.

- For the Army and Air Force, the MQ-9Bs can provide round-the-clock surveillance looking far beyond the borders, for instance on the movement of Chinese military buildup and troop movement along the Line of Actual Control (LAC) and deep inside. It also seamlessly integrates with other U.S.-origin platforms that India operates, the P-8Is, AH-64 Apache attack helicopters, MH-60R multi-role helicopters among others expanding MQ-9B's multi-domain mission set.
- The primary reason that Indian Navy is keen on these UAVs is that it will significantly reduce the wear and tear on manned aircraft, its fleet of 12 P-8I long range maritime patrol aircraft, as well as reduce crew fatigue in keeping an eye over the wide expanse of the Indian Ocean Region and beyond.

Status of MQ-9 in India

The MQ-9 is a significant technological leap from the original RQ-1/MQ-1Predator that heralded the arrival of long endurance armed drones at the end of the twentieth century. The Indian Navy has leased two MQ-9As from General Atomics with the maiden flight taking place on November 21, 2020. In their two years of operation till November 2022, they had completed 10,000 flight hours, and "helped the Indian Navy to cover over 14 million square miles of operating area.

Military Exercises, Defence & Security

IAF and Army Carry Out Joint Exercise in The Central Sector

Context: The Indian Air Force (IAF) has carried out a joint exercise with the Indian Army in the central sector with deployment of multiple combat assets to check the operational readiness of the two forces.

Important Highlights

- The exercise follows the IAF's two strategic missions over the Indian Ocean region that involved Rafale and Su-30MKI jets.
- A few days ago, a fleet of Su-30MKI jets of the IAF carried out a strategic mission over the Indian Ocean region for eight hours, days after a similar operation was carried out by four Rafale aircraft.
- The Su-30MKI jets flew over the south-western region of the Indian Ocean demonstrating their operational prowess and capability to carry out long-range missions.

- The IAF carried out the two missions at a time China has been ramping up its presence in the Indian Ocean region, which is largely considered as the backyard of the Indian Navy.

Sukhoi 30 MKI	Rafale
• Sukhoi 30 MKI is a Twin-seater, Multi-role, Long range Fighter / Bomber / Air Superiority Aircraft. • It was developed by Russia's Sukhoi Aviation Center and built under license by India's Hindustan Aeronautics Limited (HAL) for the Indian Air Force (IAF). • There are many variants of Sukhoi-30 aircraft, and the variant used by Indian Air Force is Sukhoi 30 MkI. • There are many variants of Sukhoi-30 aircraft, and the variant used by Indian Air Force is Sukhoi 30 MkI. • Range – 3000 Km, Maximum Speed – Mach 2.	• These are twin-engine medium multi-role combat aircraft. • Rafale jets are developed by the French company Dassault Aviation and they can carry out interceptions during the same flight. • Aircraft is fitted with an on-board oxygen generation system (OBOGS) and that is why; it does not require liquid oxygen re-filling or ground support for oxygen production. • The aircraft are capable of carrying a range of potent weapons. European missile maker MBDA's Meteor beyond visual range air-to-air missile, SCALP cruise missiles and MICA weapons system will be the mainstay of the weapons package of the Rafale jets.

3rd India-Vietnam Maritime Security Dialogue

Context: Defence Minister Rajnath Singh held talks with his Vietnamese counterpart General Phan Van Giang. The two sides have been focussed on further boosting bilateral defence ties and reviewing the situation in the South China Sea, a region that is subject to growing Chinese assertiveness. Both sides also exchanged views on regional and global issues of mutual interest. With India laying increased emphasis on its Act East policy, Vietnam has emerged as a key partner, and defence engagements between the two nations include wide-ranging contacts between the services, military-to-military exchanges, capacity-building, and training programmes.

Important Highlights

- ✓ **Addressing Regional Concerns**
  - Collaborative response to China's assertive actions in the South China Sea
  - Upholding international law and addressing territorial disputes
  - Countering Chinese influence and maintaining stability in the Indo-Pacific region
- ✓ **Strengthening Strategic Partnership**
  - Cornerstone for the India-Vietnam strategic partnership
  - Contributing to regional stability, economic growth, and energy security
  - Safeguarding maritime interests and enhancing bilateral ties
- ✓ **Maintaining Maritime Domain Awareness**
  - Collaborative efforts in maritime surveillance, intelligence sharing, and joint patrolling
  - Combating illicit activities and common security threats
  - Enhancing preparedness and responsiveness in safeguarding maritime interests
- ✓ **Energy Security**
  - Joint exploration and development of offshore energy resources
  - Enhancing energy security and reducing dependence on external sources
  - Promoting sustainable development and mitigating energy supply vulnerabilities
- ✓ **Economic Connectivity**
  - Utilizing maritime cooperation to develop alternative economic corridors and connectivity projects
  - Enhancing regional economic integration and diversifying trade routes
  - Reducing dependency on China's infrastructure initiatives and fostering connectivity

Two Warships Launched

Context: Two warships of different classes were launched into the water, while the keel of a third vessel was laid on Tuesday at Larsen & Toubro (L&T) shipyard at Kattupalli in Chennai. All these are being built by the Kolkata-based defence shipyard Garden Reach Shipbuilders and Engineers Ltd (GRSE).

Important Highlights

- The ships launched were Anjadip, the third Anti-Submarine Shallow Water Craft (ASWSWC), and Sanshodhak, the fourth Survey Vessel Large (SVL), while the keel was laid for the seventh ASWSWC, the GRSE said in a statement.
- Part of the construction has been sub-contracted to L&T Shipbuilding.
- The contract for building four SVL ships was signed between the Ministry of Defence and the GRS on October 30, 2018.
- As per the build strategy, the first ship would be built at GRSE, Kolkata, and the construction of the remaining three ships up to the outfitting stage has been subcontracted to L&T Shipbuilding.
- Similarly, the contract for building eight ASWSWC ships was signed between MoD and GRSE on April 29, 2019, and four ships are being built at GRSE and the balance four ships subcontracted to L&T Shipbuilding.

Anjadip

- The ship has been named Anjadip after the island of Anjadip, located off Karwar.
- It signifies the strategic maritime importance of the Island.
- The island is connected to the mainland by a breakwater and is part of INS Kadamba.
- The building of eight ASW SWC ships is as per the contract signed between MoD and Garden Reach Shipbuilders & Engineers (GRSE), Kolkata.
- Four ships are being built at GRSE, Kolkata and the construction of a balance of four ships has been given to M/s L&T Shipbuilding, Kattupalli as per the terms of the contract.
- This Arnala class ship will replace the Abhay class ASW Corvettes of the Indian Navy.
- They are designed to undertake the following operations:
- Anti-submarine operations in coastal waters,
- Low-Intensity Maritime Operations (LIMO), and
- Mine Laying operations including subsurface surveillance in littoral waters.

Three Theatre Commands to be Established

Context: Indian Army, Navy, and Air Force have achieved a consensus on establishment of three theatre commands by 2024, each headed by a senior three-star general (Lieutenant Generals, Air Marshals, or Vice Admirals).

Key Highlights

- These commands will be responsible for managing northern borders with China, western front with Pakistan, and a maritime command in peninsular India.
- Theatre Command means putting specific number of personnel from three services (Army, Navy and Air Force) under a common commander in a specified geographical territory.
- Shekatkar committee and Kargil review committee had recommended the creation of theatre commands.
- India has 19 military commands with 17 (Army 7, IAF 7, and Navy 3) of them service-oriented.
- Currently, India has two unified commands:
  - Andaman and Nicobar Command, which is geographical.

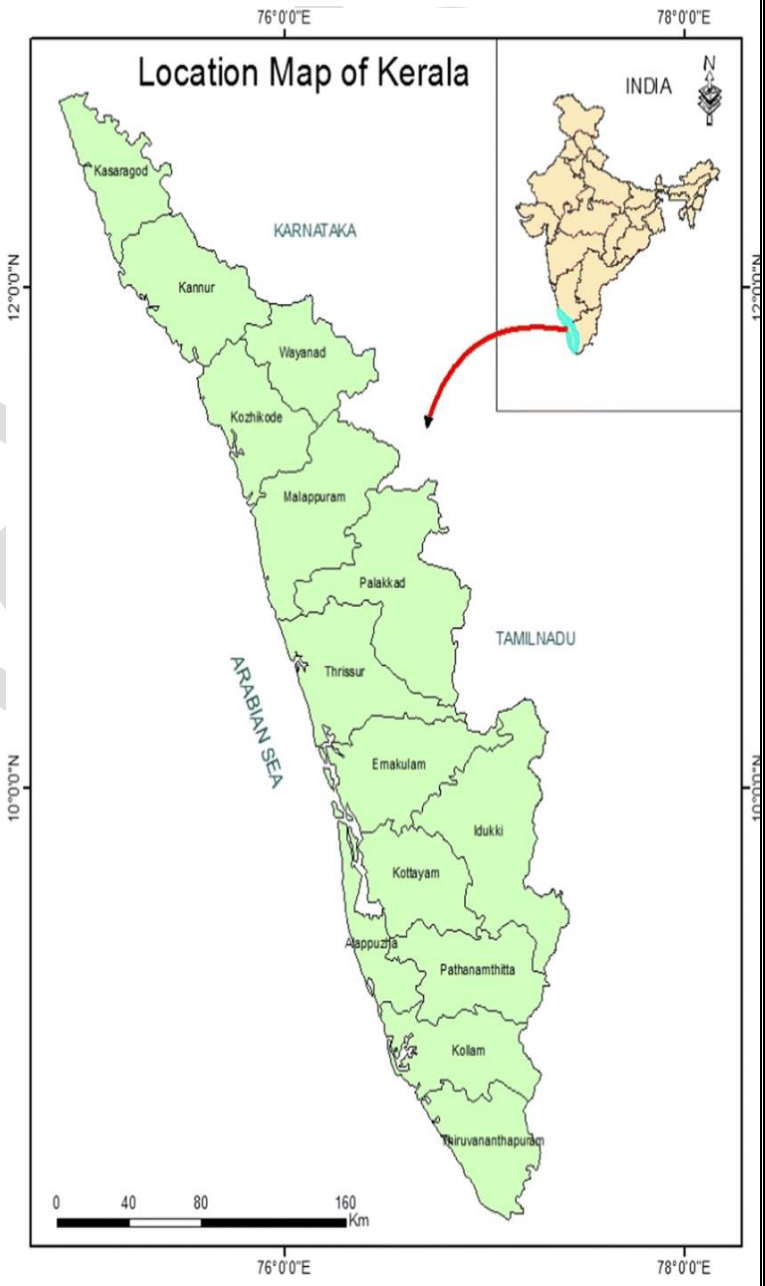
- Strategic Forces Command, which is functional and handles the country's nuclear arsenal.

- Significance of Theatre Command
  - Build integrated war-fighting machinery in a cost-effective manner.
  - Enhance synergy and coordination among three services and enabling more effective management of national security challenges.
  - Streamline planning and military operations.

Environment

56 Flapshell, Black Turtles Dead

Context: Fifty-six turtles were burnt to death after a fire broke out on five acres of wetland at Payyanki, near Cheruvathur, in Kasaragod in Kerala on Sunday.



Important Highlights

- Twenty-two Indian flapshell and 34 black turtles, which come under Schedule I and Schedule II of the Wildlife Protection Act, were burnt to death.
- A case had been registered under Section 9 of the Wildlife Protection Act.

Indian Flapshell Turtles

- The Indian flapshell turtle is a freshwater species of turtle and is found in many states.
- 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 a relatively small soft-shell turtle with a carapace length of up to 350 millimetres.
- They live in the shallow, quiet, often stagnant waters of rivers, streams, marshes, ponds, lakes and irrigation canals, and tanks.
- Scientific Name: Lissemys punctate
- **Conservation Status**
  - IUCN Red List: Vulnerable
  - CITES: Appendix II
  - Wildlife (Protection) Act, 1972: Schedule I

Black turtles

- A freshwater species and there are 29 species of freshwater turtles and tortoises found in India.
- Scientific Name: Nilssonia nigricans.
- **Conversation Status**
  - IUCN Red List: Critically Endangered.
  - CITES: Appendix I.
  - Wildlife (Protection) Act, 1972: No legal protection.

5th June: 50th Anniversary of The World Environment Day

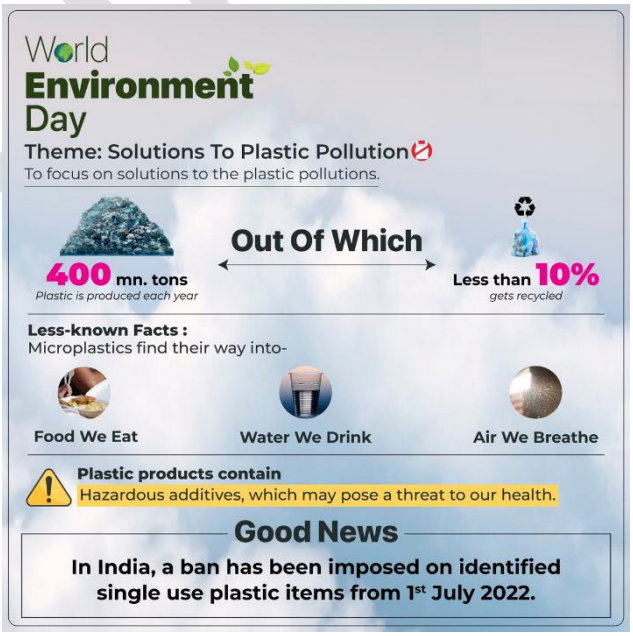
Context: WED has been led by United Nations Environment Programme (UNEP) since its inception in 1973. World Environment Day, held annually on 5 June, brings together millions of people from across the globe, engaging them in the effort to protect and restore the Earth. This year marks the event's 50th anniversary.

World Environment Day 2023

- The 50th anniversary of World Environment Day will be hosted by Côte D'Ivoire, with the theme of "solutions to plastic pollution".
- Ministry of Environment, Forest and Climate Change (MoEF&CC) has launched Amrit Dharohar and Mangrove Initiative for Shoreline Habitats and Tangible Incomes (MISHTI) initiatives.

World Environment Day (WED)

- Observed on 5th June every year.
- World Environment Day (WED) was established by the UN General Assembly (UNGA) in 1972 on the first day of the Stockholm Conference on the Human Environment.
- It was first established by the United Nations General Assembly in 1972.
- Over 150 countries participate in various activities to celebrate this day.
- World Environment Day is an important day to raise awareness and encourage action for the protection of our planet.
- In 1974, the first WED was held with the theme "Only One Earth".



EIACP Programme

Context: The Ministry of Environment, Forest and Climate Change (MoEF&CC), Government of India envisages to celebrate the World Environment Day 2023 with a thrust on the Mission LiFE.

Key Highlights

- The Environmental Information, Awareness, Capacity Building and Livelihood Programme (EIACP) is aligned with the Mission LiFE initiative.
- The Ministry of Environment, Forest and Climate Change (MoEF&CC) aims to celebrate World Environment Day 2023 with a focus on Mission LiFE.
- Mission LiFE promotes sustainable living and responsible use of resources to safeguard the environment.

- A month-long mass mobilization campaign is underway to generate awareness and advocacy for Mission LiFE.
- Central Ministries, State/UT Governments, institutions, and private organizations are involved in spreading the message of Mission LiFE.
- Various activities have been organized nationwide to raise awareness, including awareness drives, training programs, plantation drives, and awareness programs in schools and colleges.
- The initiatives aim to sensitize people about the importance of sustainable practices, reducing waste, saving water and energy, and adopting eco-friendly habits.
- The programme also focuses on coastal and marine conservation, coir industry promotion, and engaging students through eco-clubs.
- The EIACP Programme Centres conducted numerous activities, with over 2,300 participants taking part in the events.
- The EIACP Programme Centre at CECB, Raipur set a world record by taking a LiFE pledge from over 12.38 lakh people for environmental conservation.

EIACP

- The Environmental Information, Awareness, Capacity Building and Livelihood Programme (EIACP) is a sub-scheme aligned with Mission LiFE.
- It is implemented by the Ministry of Environment, Forest and Climate Change (MoEF&CC).
- Previously known as Environmental Information System (ENVIS), it was renamed to EIACP in 2023.
- ENVIS was established in 1983 with a focus on providing environmental information to decision-makers and researchers.
- The objective of EIACP is to serve as a platform for disseminating environmental information, facilitating informed policy formulation, and promoting alternate livelihoods through green skilling.
- There are 60 EIACP Centres actively engaged in raising awareness about sustainable actions and promoting environmental consciousness.

Warming Oceans Make It Harder to Forecast Cyclones in Arabian Sea

Context: Experts say cyclones in the Bay of Bengal, being far more frequent, were better understood; **Arabian Sea has seen fewer cyclones historically because of relatively colder sea surface temperatures, but now it is heating up more than average.**

Important Highlights

- Most cyclones around India tend to originate in the Bay of Bengal but global warming, as scientists have been pointing out for a while now, is causing the Arabian Sea to be heating up more than average and increasingly stronger cyclones like Biparjoy are forming.
- Biparjoy was situated about 700 km west of Goa. As per the IMD forecast, it was to move away from the Gujarat coast to dissipate into the sea without reaching land in either Kutch, Gujarat or Pakistan.
- Four days before Biparjoy commenced landfall, did the IMD first suggest that the storm would strike India.
- Contrast this with the most recent storm, Mocha, in the Bay of Bengal. On May 9, the IMD forecast that Mocha, then located in the South Andaman sea, would recurve (sharply change direction) towards the Bangladesh-Myanmar coasts.
- This was the trajectory that the cyclone largely adhered to when it made landfall on May 14 between Cox's Bazaar (Bangladesh) and Sittwe (Myanmar).
- Cyclone Yaas in May 2021, Cyclone Mandous in December 2022 and Cyclone Gulab in September 2021 – all major storms in the Bay of Bengal in recent years that made landfall – followed paths predicted by the IMD at least four or more days in advance.
- The last major cyclonic storm in the Arabian Sea before Biparjoy — Cyclone Tauktae — also threw a surprise. Its direction could be gauged only two days before landfall.

Challenge Arabian Sea Cyclone Forecasts

- **Difficult to predict:** India Meteorological Department (IMD) has over the years been largely accurate in forecasting the direction and intensity of cyclones in India, however, it takes more time to accurately forecast the trajectory of storms that originate in the Arabian Sea, than those in the Bay of Bengal.
- **Global Warming:** Most cyclones around India tend to originate in the Bay of Bengal but global warming is causing the Arabian Sea to heat up more than average. Nearly 48% of cyclones here never reached land, as opposed to only 13% in the Bay of Bengal.
- **Factors Unique to Arabian Sea**: The Arabian Sea has a much deeper - up to 40 meters – layer of warm water compared to that in the Bay of Bengal. Many times, these sub-surface values aren't captured in the cyclone prediction models and that's why, the strength and speed of the cyclones aren't accurately captured in advance.

LEED Net Zero Certifications

Context: **India has emerged as a top country with LEED Zero green building projects**, outperforming the United States of America and China, said the US Green Building Council (USGBC) and Green Business Certification Inc (GBCI).

Key Highlights

- LEED Zero recognises projects that have reached net zero or net positive status in the **categories of carbon, energy, water, or waste**.
- According to the GBCI's findings, out of 150 LEED Zero certified projects, **India has 45% or 73 such projects**, with **Haryana and Tamil Nadu leading the race** in certifications.
- **The United States and China have the second and third** most LEED Zero certifications, with 47 (30%) and 15 (10%) certifications respectively.

About LEED Net Zero Certifications

- ✓ LEED rating system provides a framework for healthy, efficient, carbon and cost-saving green buildings.
  - It is a globally recognized certification system developed by U.S.
  - Green Building Council and administered by Green Business Certification Inc.
  - It achieves and recognizes building at four certification level (Certified, Silver, Gold, Platinum).
- ✓ LEED India Programme is administered by Indian Green Building Council (IGBC).
- ✓ Green Rating for Integrated Habitat Assessment (GRIHA) is India's own green building rating system jointly developed by The Energy & Resources Institute (TERI) and Ministry of New and Renewable Energy.
  - GRIHA is a five-star rating system. This rating is valid for 5 years.

- **Net zero refers to a state in which the greenhouse gases going into the atmosphere are balanced by removal from the atmosphere.** The term net zero is important because – for CO2 at least – this is the state at which global warming stops.
  - India's leadership position in LEED Zero projects reflects its commitment to sustainability and the adoption of innovative green building practices.
  - It is also in line with India's ambitious target of achieving net zero GHG emissions by 2070.
- LEED Zero has four categories that recognise net-zero status in carbon, energy, water, and waste over a period of 12 months.

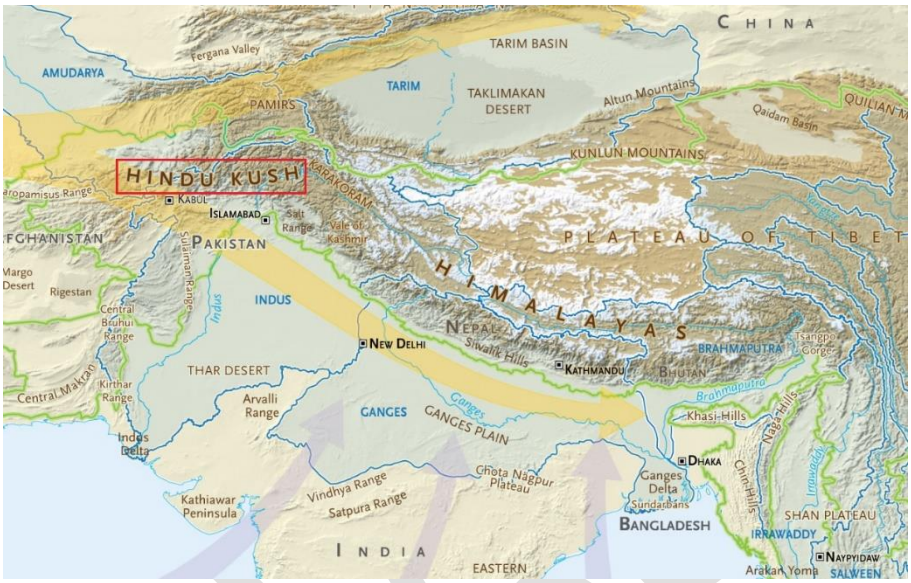
Himalayan Glaciers

Context: Himalayan glaciers could **lose 80% of their volume** if **global warming** isn't controlled.

Important Facts

- **Himalayas** are the great mountain system of Central Asia **spanning cross 8 countries – Afghanistan, Bangladesh, Bhutan, China, India, Nepal, Myanmar, and Pakistan**.

- It runs northeast to southwest and divides the valley of the Amu Darya to the north from the Indus River valley to the south.
- To the east the **Hindu Kush** supports the **Pamir range** near the point where the **borders of China, Pakistani-controlled Kashmir, and Afghanistan meet**.
- The eastern end of the Hindu Kush in the north merges with the **Karakoram Range**.
- It runs southwest through Pakistan and into Afghanistan, finally merging into minor ranges in western Afghanistan.



- The **highest peak** is **Mount Tirich Mir**, which rises near the Pakistan-Afghanistan border.
- Towards its southern end, it connects with the **Spin Ghar Range** near the Kabul River.
- **Hindu Kush Himalayas** are the world's most important **'water tower'**, being the source of 10 of Asia's largest rivers.
- It is the **Earth's 3rd Pole** as it's the storehouse of the 3rd largest body of snow on our planet after the Antarctic and the Arctic.
- The Hindu Kush Mountains were **centers of Buddhism**, including the **Bamyan Buddha**.
- It has also been a gateway for invasions into the Indian subcontinent, a growing region for the Taliban and al-Qaeda, and a theater of modern warfare in Afghanistan.

UN Adopts World's First Treaty to Protect the High Seas

Context: The world's first international treaty to protect the high seas was adopted at the United Nations, creating a landmark environmental accord designed to protect remote ecosystems vital to humanity.

Important Highlights

- The treaty, officially known as the treaty on **"Biodiversity Beyond National Jurisdiction" or BBNJ**, also introduces requirements to carry out environmental impact studies for proposed activities to be carried out in international waters.
  - Such activities would include anything from fishing and maritime transport to more controversial pursuits, like deep-sea mining or

BBNJ: Overview

- It was launched at the One Ocean Summit in February 2022, the High Ambition Coalition on BBNJ aimed for a common and ambitious outcome.
- It is a legally binding International agreement on the conservation and sustainable use of marine biological diversity in areas beyond national jurisdiction.
- It covers the high seas, beyond exclusive economic zones or national waters of countries. These areas account for almost half of the Earth's surface.
- Before this, the UN Convention on the Law of the Sea, adopted in 1982, was the last attempt to extend governance farther into the ocean, as it added regulations to oceans within 12 nautical miles of countries' coastlines.

Need for BBNJ

- Currently, only 1% of these areas are under protection. As of 2023, 90% of big fish populations are depleted and 50% of coral reefs are destroyed mainly due to overfishing.

even geo-engineering programs aimed at fighting global warming.

- The treaty also establishes principles for sharing the benefits of "marine genetic resources" (MGR) collected by scientific research in international waters.
- The purpose of this treaty is to prevent species extinctions caused by overfishing, oil extraction, deep-sea mining, and other environmentally impactful activities on the high seas.

About Ratification

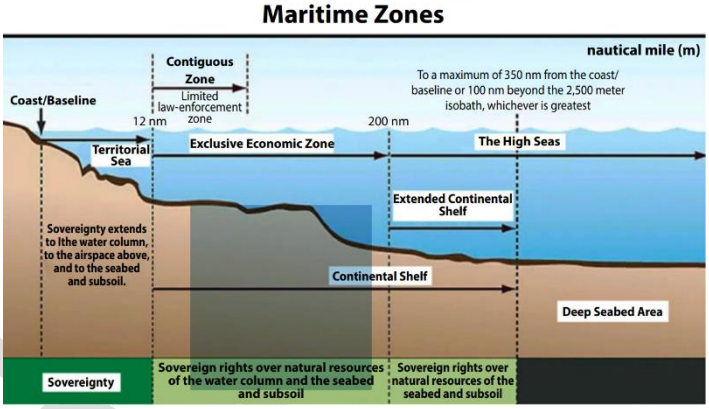
- Treaty has been signed by nearly 200 nations after 15 years of discussions. However, the treaty still needs to be ratified by at least 60 member nations to take effect.
- The next ocean conference in June 2025 in Nice, France, is expected to witness the completion of ratifications.

India and BBNJ

India has been actively involved in the negotiations for the development of an international legally binding instrument for the conservation and sustainable use of BBNJ under the United Nations Convention on the Law of Sea (UNCLOS).

High Seas

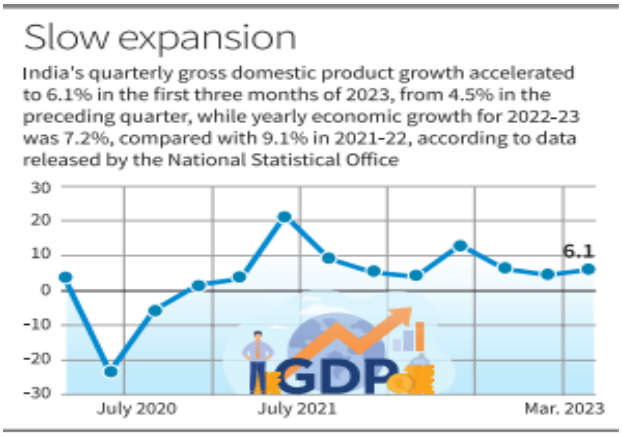
- ✓ It refers to the areas of the world's oceans and seas that are beyond any national jurisdiction.
- ✓ These are the waters that do not fall under the sovereignty of any specific country.
- ✓ The high seas are collectively considered a global common, belonging to all humankind.



Economy

GDP Expanded 6.1% in 2022-23's Last Quarter

Context: India's GDP growth accelerated to 6.1% in the January to March 2023 quarter, lifting the economy's expansion in 2022-23 to 7.2% estimated earlier, according to the provisional national income data released by the National Statistical Office (NSO).



Key Highlights

- The Gross Value Added (GVA) in the economy is reckoned to have **risen 7% in 2022-23**, compared with 8.8% in 2021-22.
- Manufacturing GVA growth **slid to just 1.3% from 11.1%** a year earlier, despite a 4.5% rebound in the final quarter after six months of contraction.
- Three of eight broad economic activity segments recorded high GVA growth than in 2021-22. Sectors such as:
  - **Agriculture:** GVA grew 4%, up from 3.5% in the previous year.
  - **Real Estate and Service sector:** real estate and professional services sectors saw their GVA grow 7.1%, compared with 4.7% in 2021-22.
  - **Other sectors:** GVA of the trade, hotels, transport and communication sectors, as well as services related to broadcasting grew 14% faster than the previous year.

National Statistical Office

- It was created by merging National Sample Survey Office (NSSO), Computer Centre and Central Statistical Office (CSO).
- It was firstfirst envisaged by Rangarajan Commission.
- It is a nodal agency for planned development of the statistical system.
- It regulates andmaintains norms and standards in the field of statistics.

Gross Value Added

It is the value of goods and services produced minus the value of intermediate consumption.

Gross Value Added = GDP + subsidies on products - taxes on products

Retail Inflation Likely Eased in May

Context: Economists estimate that **consumer inflation** may have **eased** further last month **due to moderation in food prices**; on a sequential basis, however, **retail inflation** is expected to have **inched up 0.4%** in May compared with a 0.2% decline in April.

Consumer inflation: Inflation measured by consumer price index (CPI) is defined as the change in the prices of a basket of goods and services that are typically purchased by specific groups of households.

Important Highlights

- India's consumer inflation could moderate further from April's 18- month low of 4.7%. The food price rise likely to have cooled further in May even as prices of some items like milk, rice and pulses moved up on a month-on-month basis.
- The National Statistical Office will release the Consumer Price Index (CPI).
- Rice and Wheat prices increased 10% and 8% in May, compared with a year ago.
- On a sequential basis, the index inched up to 0.4% in May compared to a 0.2% decline in the month before.

Consumer price indexes (CPIs): Consumer price indexes (CPIs) are index numbers that measure changes in the prices of goods and services purchased or otherwise acquired by households, which households use directly, or indirectly, to satisfy their own needs and wants.

RBI Holds Rates, Vows to Keep Price Stability

Context: MPC keeps repo rate unchanged at 6.50%; RBI forecasts real GDP growth for 2023-24 at 6.5%, projects CPI inflation to average 5.1% this fiscal year.

Important Highlights

- The Reserve Bank of India's Monetary Policy Committee (MPC) decided unanimously on Thursday to keep the policy repo rate unchanged at 6.50%.
- The MPC also decided to remain focused on withdrawal of accommodation to ensure that inflation progressively aligns with the target, while supporting growth.

Repo Rate

Repo rate is the rate at which the Reserve Bank of India (RBI) lends to other banks. The commercial banks make a repurchase agreement with the RBI and sell the G-secs and buy back at a different rate on the agreed price.

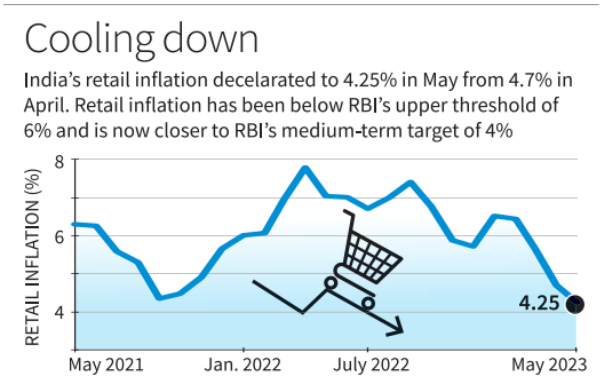
- The increased repo rate will discourage banks to borrow from the RBI and lending to the customers. This in turn will reduce the liquidity and demand in the market. It is part of the contractionary monetary policy.
- On the other hand, decreased repo rate will encourage banks to borrow and lend to customers increasing the liquidity and demand in the market. This is a part of the Expansionary Monetary Policy.

Retail Inflation Cooled Down to 4.25% In May

Context: India's **retail inflation eased** further in May to a **20-month low of 4.25%,** from 4.7% in April, with price rise in food items faced by consumers moderating to 2.91%.

Important Highlights

- This is the third successive month that inflation has remained below the Reserve Bank of India's (RBI's) upper tolerance limit of 6% after a prolonged streak above it.
- Base effects from May 2022 when retail inflation was over 7% also played a role in lowering the inflation rate this May.
- On a month-on-month basis, however, price levels continued to firm up, with the Consumer Price Index (CPI) rising 0.51% for the second successive month, while the Consumer Food Price Index (CFPI) ticked up 0.7%, compared to 0.6% in April.
- Urban consumers faced slightly higher inflation at 4.27% than their rural counterparts (4.17%).
- However, food inflation was lower in urban areas, easing significantly to 2.43% from 3.7% a month earlier.
- In comparison, rural food price rise moderation was less benign, cooling to 3.2% in May from 3.9% in April.
- Among food items, vegetables and edible oils contributed the most to the cooling inflation pace, with prices falling 16% and 8.8% from May 2022 levels, respectively.
- At the same time, inflation in cereals (12.7%), pulses (6.6%), milk (8.91%) and spices (17.9%) remained areas of concern.



Consumer Food Price Index (CFPI)

- Consumer Food Price Index (CFPI) measures changes in the retail prices of food items consumed by a defined population group in a given area with reference to a base year.
- Like the Consumer Price Index (CPI), the CFPI is also calculated on a monthly basis. The methodology of CFPI remains the same as that of CPI.
- The National Statistical Office (NSO) under the Ministry of Statistics and Program Implementation started releasing the CFPI for three categories – Rural, Urban, and Combined – separately on an All-India basis with effect from May 2014.
- CFPI (Rural/Urban/Combined) is based on ten sub-groups contained in the "Food and Beverages" group of CPI.

Cereals and products	Meat and fish	Egg	Milk and products	Oils and fats
Fruits	Vegetables	Pulses and products	Sugar and Confectionery	Spices

'100 Days 100 Pays' Campaign

Context: The Reserve Bank of India (RBI) has recently initiated the '100 Days 100 Pays' campaign, aimed at tracing and settling the top 100 unclaimed deposits of every bank in every district within a span of 100 days.

Important Highlights

- The campaign aims to reduce the quantum of unclaimed deposits in the banking system and return them to their rightful owners/claimants.
- As of February, the total amount of unclaimed deposits transferred to the RBI by Public Sector Banks was ₹35,012 crore.

Unclaimed Deposits

Unclaimed deposits are funds that have been inactive for ten years or more. Banks transfer these deposits to the RBI's "Depositor Education and Awareness" (DEA) Fund. Depositors can still claim their deposits, including interest, from the bank(s) where the deposits were held, even after they have been transferred to the DEA Fund.

- The RBI had previously announced the development of a web portal to enable the search for unclaimed deposits across multiple banks, enhancing the access of depositors/beneficiaries to such data.
- Unclaimed deposits include balances in savings/current accounts not operated for 10 years and term deposits not claimed within 10 years from maturity.
- Banks transfer these unclaimed deposits to the Depositor Education and Awareness (DEA) fund maintained by the RBI and display the list of unclaimed deposits on their websites.

May Wholesale Prices Drop 3.48%

Context: India's wholesale prices remained in deflationary mode for the second month in a row in May, with prices falling 3.48%, and all categories reporting a contraction in prices compared with May 2022, when inflation had hit a record high of 16.6%.

Important Highlights

- Effects of a high base from last May, when taxes on petroleum products were slashed near the month-end, dragged fuel and power prices lower into a 9.2% deflation, while manufacturing products' prices shrank 3%.
- Primary articles recorded a deflation of 1.8% and the wholesale food index dropped 1.6% compared with a 0.2% rise in April 2023, when overall wholesale prices had recorded a 0.92% deflation.
- Decline in the rate of inflation in May 2023 is primarily contributed by fall in prices of mineral oils, basic metals, food products, textiles, non-food articles, crude petroleum & natural gas, and chemical & chemical products," the Commerce and Industry Ministry said in a statement.
- ICRA chief economist said this was the lowest WPI inflation since November 2015 and deflation was likely to persist at about 2.5-3.5% in June due to base effects from last year, when wholesale prices rose 16.2%.

Wholesale Price Index (WPI)

The Wholesale Price Index (WPI) is the average change in prices of a fixed basket of commodities at the first point of bulk sale in the domestic market over a particular period of time. This is looked at from the manufacturer's and wholesalers' points of view. It is compiled and published by the Office of Economic Adviser on a monthly basis.

Significance of WPI

- It gives estimates of inflation for the entire economy at the wholesale transaction level. This enables the government to intervene quickly to control inflation, particularly inflation in vital goods before the price increase reaches retail prices.
- For several sectors of the economy, the WPI is utilized as a deflator by the CSO when measuring GDP. It's also used to deflate nominal production values in high-frequency IIP.
- WPI is often used by users in commercial contracts for indexing.
- WPI is also one of the important macro indicators that global investors use to make investment decisions.
- The WPI-based inflation estimates are also used by the government in the formation of trade, fiscal, and other economic policies.
- WPI is also utilized in the delivery of raw materials, machinery, and building work for escalation clauses.
- Price adjustment (escalation) provisions in long-term sales and purchase contracts are frequently

Change in Base Year of WPI

- In May 2017, WPI's base year was updated from 2004-05 to 2011-12.
- WPI with Base 2011-12 has a number of key new features:
- The basket's contents have been raised from 676 to 697 items.
- To ensure thorough coverage and representativeness, the number of quotations has been increased from 5842 to 8331.
- To eliminate the impact of fiscal policy, the new definition of the wholesale price index excludes taxes. This also aligns the new WPI series with worldwide practices by bringing it closer to the Producer Price Index.
- In comparison to the Arithmetic mean used in the WPI 2004-05 series, the item level indices are compiled using a statistically robust Geometric mean.
- A distinct WPI Food Index has been launched as part of the updated WPI series.
- The WPI food index tracks changes in the pricing of food commodities at the producer level.

used by businesses looking for effective ways to deal with price increases.	• Food inflation in India might be efficiently monitored using the WPI Food Index and the CPI Food Price Index.

RBI Released Financial Stability Report (FSR)

Context: The Reserve Bank released the **27th issue of the Financial Stability Report (FSR),** which reflects the collective assessment of the Sub-Committee of the Financial Stability and Development Council (FSDC) on risks to financial stability and the resilience of the Indian financial system.

Key Highlights

- The global economy is facing heightened uncertainty amidst banking system fragility in certain countries, persisting geopolitical tensions and moderating but elevated inflation.
- Despite global headwinds, the Indian economy and the domestic financial system remain resilient, supported by strong macroeconomic fundamentals.
- Continuing growth momentum, moderating inflation, narrowing current account deficit and rising foreign exchange reserves, ongoing fiscal consolidation and a robust financial system are setting the economy on a path of sustained growth.
- Healthy balance sheets of banks and corporates are engendering a new credit and investment cycle and brightening the prospects of the Indian economy.
- The capital to risk-weighted assets ratio (CRAR) and the common equity tier 1 (CET1) ratio of scheduled commercial banks (SCBs) rose to historical highs of 17.1 per cent and 13.9 per cent, respectively, in March 2023.
- SCBs' gross non-performing assets (GNPA) ratio continued its downtrend and fell to a 10-year low of 3.9 per cent in March 2023 and the net non-performing assets (NNPA) ratio declined to 1.0 per cent.
- Macro stress tests for credit risk reveal that SCBs would be able to comply with the minimum capital requirements even under severe stress scenarios. The system-level capital to risk-weighted assets ratio (CRAR) in March 2024, under baseline, medium and severe stress scenarios, is projected at 16.1 per cent, 14.7 per cent and 13.3 per cent, respectively.

Some Key Terms

Non-Performing Asset: NPA refers to a classification for loans or advances that are in default or are in arrears on scheduled payments of principal or interest.

Gross Non-Performing Asset: These assets are the sum of all the loans that have been defaulted by the individuals who have acquired loans from the financial institution.

Net Non-Performing Asset: These are the amount that is realised after the provision amount has been deducted from the gross non-performing assets.

CRAR: The Capital Adequacy Ratio, also known as CRAR, is used to protect depositors and promote the stability and efficiency of financial systems around the world.

CET1: It includes equity instruments where returns are linked to the banks' performance and therefore the performance of the share price. They have no maturity.

- According to Basel-III norms, banks' regulatory capital is divided into Tier 1 and Tier 2, while Tier 1 is subdivided into Common Equity Tier-1 (CET-1) and Additional Tier-1 (AT-1) capital.

Science & Technology

ISRO Launches Next-Generation Navigational Satellite Nvs - 01

Context: ISRO launches NVS-01 which is India's first second-generation satellites envisaged for NavIC (Navigation by Indian Constellation) services.

Key highlights of NVS-01

- NVS-01, weighing 2,232 kg satellite - heaviest in constellation, was launched using Geosynchronous Satellite Launch Vehicle (GSLV) rocket.

- It'll have indigenously developed Rubidium atomic clock to provide accurate locations.
- It has a mission life of over 12 years, which in itself is longer than 10-year life of first-generation (existing) satellites.
- It'll send signals in a third frequency, L1, which increases interoperability with other satellite-based navigation systems.
- It would provide real-time positioning and timing services over India and a region approximately 1,500 km around mainland.

Navigation by Indian Constellation: NavIC

NavIC, earlier known as Indian Regional Navigation Satellite System (IRNSS), is designed with constellation of seven satellites.

- Three satellites are placed in geostationary orbit and four satellites are placed in inclined geosynchronous orbit.
- NavIC offers two services - Standard Position Service (SPS) for civilian users and Restricted Service (RS) for strategic users.
- These two services are provided in both L5 (1176.45 MHz) and S band (2498.028 MHz).
- Application of Regional Navigation Satellite System are Terrestrial, Aerial and Marine Navigation; Disaster Management; Precise Timing; Scientific research; etc.

New Exoplanet Discovered

Context: A new Jupiter-size exoplanet with the highest density known till this date and mass 13 times than that of Jupiter, has been discovered by an international team of scientists led by Prof. Abhijit Chakraborty at the Exoplanet Research Group of the Physical Research Laboratory (PRL), Ahmedabad.

Overview

- A new Jupiter size exoplanet, called **TOI 4603b or HD 245134b**, with highest density (~14 g/cm3) known till this date, and mass 13 times that of Jupiter has been discovered.
- It is located 731 light years away and orbits a sub-giant F-type star TOI4603 (Initially discovered by MIT-Led NASA's Transiting Exoplanet Survey Satellite (TESS)).
- Discovery is made using indigenously made PRL Advanced Radial-velocity Abu-sky Search spectrograph (PARAS), at Mt. Abu, by scientist from Physical Research Laboratory (PRL), Ahmedabad. Other exoplanet discovery made by India K2-236b (2018) and TOI-1789b (2021).

Exoplanet

An exoplanet is any planet beyond our solar system. Most exoplanets orbit other stars, but free-floating exoplanets, called rogue planets, orbit galactic center and are untethered to any star.

Compositions of exoplanets range from very rocky (like Earth) to very gas-rich (like Jupiter and Saturn). Massive giant exoplanets have mass greater than four times that of Jupiter.

- TOI 4603b falls into transition mass range of massive giant planets and low-mass brown dwarfs with masses ranging from 11 to 16 times the mass of Jupiter.
- Brown dwarfs are objects which have a size between that of a giant planet like Jupiter and that of a small star.

Medium Range Ballistic Missile Agni1 Test Fired in Odisha

Context: A successful training launch of a medium range ballistic missile, Agni 1, was carried out by the Strategic Forces Command from APJ Abdul Kalam Island, Odisha on Thursday.

About Agni 1

- It has a range of 700–900 km.
- It can carry a nuclear warhead. It has an estimated payload of 1000 kg.
- It is a single-stage, solid-fuel missile.

Rare Higgs Boson Decay Observed in Large Hadron Collider (Lhc) Experiments

Context: Physicists working with the Large Hadron Collider (LHC) particle-smasher at CERN, in Europe, reported that they had detected a Higgs boson decaying into a Z boson particle and a photon. This is a very rare decay process that tells us important things about the Higgs boson as well as about our universe.

Important Highlights

The New Result

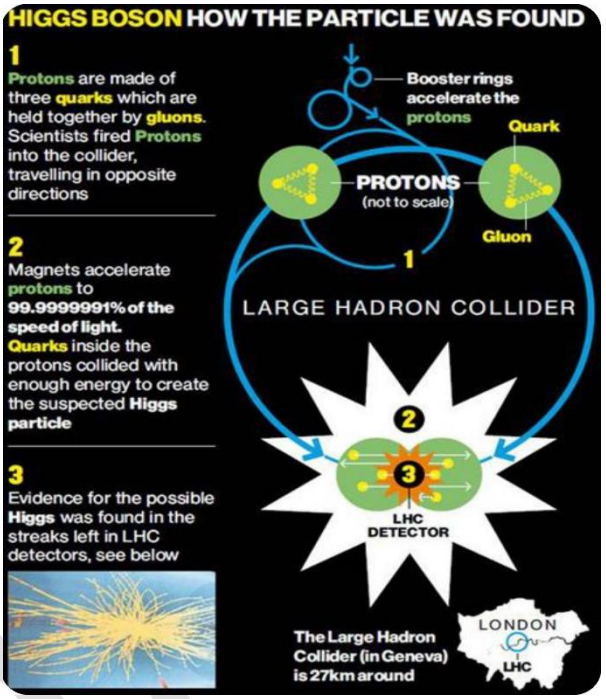
- Because it is so heavy, the Higgs boson is an unstable particle that decays into lighter particles. We can't always say which combination of particles it will decay into. However, the theory that describes the properties of fundamental particles has clearly predicted the probability that it will take a given path.
- For example, this theory, called the Standard Model, says that a Higgs boson will decay to a Z boson and a photon 0.1% of the time. This means the LHC needed to have created at least 1,000 Higgs bosons to have been able to spot one of them decaying to a Z boson and a photon.
- As it happens, the Z boson is also unstable. According to Martin Bauer, an associate professor at the Institute for Particle Physics Phenomenology, Durham University, Z bosons decay to two muons some 3% of the time. If the detectors at the LHC were looking for a pair of muons plus a photon created at the same time, Dr. Bauer estimated that the LHC would have had to create at least 30,000 Higgs bosons to observe the decay just once.
- This is why, even though the Higgs boson was discovered more than a decade ago at the LHC, it is only now that physicists are confirming this decay pathway.

Is this a new finding?

- The two detectors that announced the new measurement, called ATLAS and CMS, had in fact looked for and found the decay before as well (in 2018 and 2020).
- On this occasion, however, the two teams combined their data, collected "between 2015 and 2018", and as a result "significantly increased the statistical precision and reach of their searches," according to a CERN statement.
- This significance is even now not high enough for the teams to claim a Higgs boson decayed to a Z boson and a photon with 100% certainty, reflecting the rarity of the decay pathway.

What is Higgs Boson?

- The Higgs boson is a type of boson, a force carrying subatomic particle.
- It carries the force that a particle experiences when it moves through an energy field, called the Higgs field, that is believed to be present throughout the universe.
- It is the fundamental particle associated with the Higgs field, a field that gives mass to other fundamental particles such as electrons and quarks.
- A particle's mass determines how much it resists changing its speed or position when it encounters a force.
- Not all fundamental particles have mass.
- It has a short lifespan. Once it is created during the particle collisions, it sticks around for merely less than a trillionth of a billionth of a second or, more precisely, 1.6 x 10-22 seconds.



Satellites, AI to Help Certify Fields Growing Organic Cotton

Context: A **satellite in space could be involved in determining whether your favourite cotton dress is organic**. A new initiative by the **European Space Agency** (ESA) and **Global Organic Textile Standard** (GOTS) plans to combine data from satellite images and artificial intelligence (AI) to keep track of **cotton certification** in India.

Key Highlights

- The project is a collaboration between ESA, GOTS and AI company Marple that will automatically **classify cotton fields in India** in line with cultivation standards.
- ESA's Business Applications and Space Solutions programme, the initiative will **train AI models to 'read' ESA satellite data to identify and classify cotton fields** in India.
- The initiative will identify cotton fields that meet predetermined standards as well as support those that demonstrate potential for a seamless transition to organic cultivation.
- **Primary objective** of the collaboration is to bolster the integrity of organic cotton by developing advanced risk assessment techniques and to prevent fraud throughout the supply chain.
- The programme has already had a **successful pilot run in Uzbekistan**, one of the world's top cotton producers, in 2021.
- The data from the pilot project showed a **98% accuracy in differentiating** between organic cotton fields and conventional ones.
- The project will be implemented across various cotton growing regions in India where organic cotton production plays a significant role. The first results are expected to be available in late 2023.

Indigenous Heavyweight Torpedo Successfully Tested

Context: The Navy test-fired an indigenously designed and developed heavyweight torpedo, Varunastra, with a live warhead against an undersea target.

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Email: info@iqraias.com, support@iqraias.com

Key Highlights

- Induction of Varunastra has begun after extensive trials.
- It will become the mainstay of antisubmarine torpedo for all Naval warships.
- It will replace the older torpedoes on all naval ships that can fire a heavyweight torpedo.
- Varunastra is a ship-launched anti-submarine torpedo and was designed and developed by the Naval Science and Technological Laboratory in Visakhapatnam under the Defence Research and Development Organisation.

Varunastra Features

- Varunastra torpedo is powered by an electric propulsion system with multiple 250 KWs silver oxide zinc (AgOZn) batteries.
- It can achieve speeds in excess of 74 km/h, weighs around 1.5 tonnes and can carry 250 kg of conventional warhead.
- This torpedo has more than 95 per cent indigenous content.
- It is the only torpedo in the world to have a GPS-based locating aid.
- It is an electrically-propelled anti-submarine torpedo capable of targeting quiet submarines, both in deep and shallow waters.

What are Torpedos?

They are self-propelled, underwater projectiles that can be launched from ships and aircraft. These are designed to detonate on contact or in close proximity to a target.

Will The WHO's 'Pandemic Treaty' Leave Out Antimicrobial Resistance?

Context: In late May, the latest version of the draft Pandemic Instrument, also referred to as the "pandemic treaty," was shared with member states at the World Health Assembly.

Important Highlights

- Recently, the latest version of the draft Pandemic Instrument, also referred to as the "pandemic treaty," was shared at the World Health Assembly (the decision-making body of WHO).
  - While earlier drafts of the Pandemic Instrument drew on guidance from AMR policy, however, after the first round of negotiations, all of these insertions, are now at risk for removal.
- Work on the Pandemic Instrument began in December 2021 after the WHA agreed to a global process to draft and negotiate an international instrument in this regard.

About Pandemic Treaty

- It aims to prevent pandemics, save lives, reduce disease burden and protect livelihoods, through strengthening the world's capacities for preventing, preparing for and responding to, and recovery of health systems from, pandemics.
- It fosters on an all-of-government and all-of-society approach and laid out aspects on pandemic prevention, preparedness, and response.

Need of the treaty

- Enable countries to strengthen national, regional, and global capacities and resilience to future pandemics.
- Early detection and prevention of pandemics.
- Response to any future pandemics by ensuring universal access to medical solutions.

Scientists Develop Synthetic Embryos Using Stem Cells

Context: Scientists from the University of Cambridge and California Institute of Technology have reported creating the world's first synthetic human embryo models using stem cells and without using eggs or sperm.

Important Highlights

- These structures have no organs like the brain or the heart and are at very early stages of human development.

- These have cells that would proceed to form the placenta, yolk sac and the embryo, said scientists about a research that is yet to be published in journals but has been accepted for publication.
- Scientists said the study was triggered by their need to understand the black box period of human development.
- The black box period is the period following 14 days after fertilisation, which is the agreed limit for scientists to grow and study embryos in a lab.
- Scientists in India said the work presented vast research possibilities but equally posed ethical questions. Human embryos developed from IVF are governed by laws but there are no regulations on stem cell-based models of human embryos.

Stem Cells

A cell with the unique ability to develop into specialised cell types in the body. Provide new cells for the body as it grows, and replace specialised cells that are damaged or lost.

Two unique properties:

- Can divide over and over again to produce new cells.
- As they divide, they can change into the other types of cell that make up the body.

Solar Ultraviolet Imaging Telescope (Suit) Delivered to ISRO

Context: The Solar Ultraviolet Imaging Telescope (SUIT), a unique space telescope developed by Pune's Inter-University Center for Astronomy and Astrophysics (IUCAA) has been delivered to the Indian Space Research Organisation (ISRO).

About

- SUIT, developed by Pune's Inter-University Center for Astronomy and Astrophysics (IUCAA), is set to be integrated with ADITYA-L1 mission along with its 6 other payloads.
- SUIT is one of the main payloads on Aditya-L1.
- It will provide full disk images of Sun in 2000 - 4000 A wavelength range.
- Full disk images in entire wavelength range have never been obtained.

Significance

It will answer fundamental questions like:

- Existence of a higher temperature atmosphere above cooler surface.
- Origin and variation of near-ultraviolet radiation from Sun.
- High energy explosions such as solar flares observed in solar atmosphere, etc.
- Aditya-L1, propelled by Polar Satellite Launch Vehicle (PSLV) XL, is first Indian space mission to observe Sun and solar corona.
- It'll be inserted in a halo orbit around Lagrangian point 1 (L1) of Sun-Earth system, which is about 1.5 million km from Earth.
- Other solar missions: NASA's Parker Solar Probe, European Space Agency's Solar and Heliospheric Observatory, China's Kuafu-1 solar probe etc.

Aditya-L1 Mission

- It is India's first dedicated scientific mission to study the Sun.
- The spacecraft will be placed in a halo orbit around the first Lagrange point, L1, which is 1.5 million km from the Earth towards the Sun.
- A satellite around the L1 point has the major advantage of continuously viewing the Sun without occultation/eclipses.
- Aditya-L1 carries seven payloads to observe the photosphere, chromosphere, and the outermost layers of the Sun (the corona) using electromagnetic and particle detectors.
- The satellite will be launched by a PSLV-XL launch vehicle from Sriharikota.

GEMCOVAC-OM mRNA Vaccine

Context: India's **first indigenous mRNA vaccine (GEMCOVAC-OM)** for the Omicron variant, was approved under emergency use guidelines by the **Drug Controller General of India**.

Key Highlights

- It is developed by **Pune-based Gennova Biopharmaceuticals Ltd**.
- It is India's first mRNA vaccine developed to address the problems in the earlier approved mRNA vaccines.
- This mRNA-based vaccine uses spike protein of the **omicron variant (BA.1) of the SARS- CoV-2** as an antigen.
- It was **stable in a 2-8°C range** and could therefore be stored in ordinary refrigerators.
- The vaccines could be administered as an intradermal (ID) injection only (into the skin) via a "needle-free" PharmaJet system.
- It is **tested at the National Institute of Virology (NIV)** against the newest (Omicron subvariant), XBB 1.16, and it is shown to be effective.
- It is indicated as a single booster dose in individuals aged more than 18 years administered at least 4 months after completion of primary vaccination with either Covishied or Covaxin.
- mRNA is a molecule that contains the instructions or recipe that directs the cells to make a protein using its natural machinery.

m-RNA Based Vaccine

- mRNA vaccines work by introducing a piece of mRNA that instructs the cells to produce the viral protein.
- As part of a normal immune response, the immune system recognizes that the protein is foreign and produces specialized proteins called antibodies.
- Antibodies protect the body against infection by recognizing individual viruses or other pathogens, attaching to them, and marking the pathogens for destruction.
- Once produced, antibodies remain in the body, even after the body has rid itself of the pathogen.
- If a person is exposed to a virus after receiving mRNA vaccination for it, antibodies can quickly recognize it, attach to it, and mark it for destruction before it can cause serious illness.
- Individuals who get an mRNA vaccine are not exposed to the virus, nor can they become infected with the virus by the vaccine.

Y Chromosome, 'Master of Maleness'

Context: Many animal species have a **genuine fear of losing the Y chromosome in the distant future**. This has happened in some species that have naturally lost this chromosome. Such animals provide us with models to understand the process of sex-chromosome turnover and a means to repurpose another chromosome into a sex chromosome. It has been discovered that the **Y chromosome possesses genes linked to ageing and lifespan regulation**.

Key Highlights

- Scientists published the complete genetic sequence of the Y chromosome in 2003. This sequence provided an outline of 23 million bases of the 60 million or so bases that together make up the Y chromosome.
- In total, the chromosome encoded for only 55 genes and accounted for around 2% of the genetic material inside a cell.
- Many researchers jokingly refer to the Y chromosome as the "juvenile delinquent" among chromosomes thanks to its abundance of repetitive sequences, poor functional utility (with a small number of genes), reluctance to socialise (i.e. recombine with other chromosomes), and a high proclivity to degenerate over the course of evolution.
- Indeed, because it has little potential to recombine, the diminutive Y chromosome has been passed from father to son, carrying the legacy of generations.

- Scientists have extensively studied it to understand human migration and evolution. It has also fuelled countless debates, unravelled the mysteries of paternity, revealed genetic diversity, and illuminated the intricate tapestry of our shared past.

Why Y Chromosome Matter?

- Studies conducted by researchers at the University of Virginia School of Medicine, U.S., and Uppsala University, Sweden, together with others have shown that LoY in humans occurs with age and is associated with several debilitating medical conditions – a finding that has been validated in mice with LoY, resulting in weak heart muscles (cardiomyopathy), stretched or thickened heart tissue (fibrosis), and heart failure.
- In another paper published in June, researchers performed an analysis of 29 primate sex chromosomes and suggested that in the last 80 million years, there has been a rapid evolution of the Y chromosome.
- This is exemplified by the fact that the human Y chromosome is about one-third as big as the X chromosome. So, many animal species, including humans, have a genuine fear of losing the Y chromosome in the distant future.

Examples

- Rodents, which have naturally lost their Y chromosome.
- Genome sequences of the Neanderthals, an ancient relative of the modern human, harbour telltale signs of the replacement of the Y chromosome beginning from modern humans.
    - This suggests that such replacement is not new to the human lineage, and that it is quite possible that the Y chromosome may have to relinquish its coveted title of "master of maleness" to another chromosome in the times to come.

Background: Vital Genes

- In a landmark genetic study, published in March 2003 in the American Journal of Human Genetics, researchers reported that around 0.5% of all the men in the world have inherited a Y chromosome from the Mongol emperor Genghis Khan or one of his descendants.
- While the Y chromosome has been at the centre of many scientific and social controversies involving sex determination and gender discrimination, we would be better off not underestimating its influence on other aspects of health as well.
- In fact, contrary to initial assumptions that the chromosome is degenerating and shrinking over time, and possibly has little functional role, researchers have discovered of late that the Y chromosome possesses genes that are vital to biological functions, including those linked to ageing and lifespan regulation (recent studies have shed light on an intriguing connection between the human Y chromosome and longevity).
- In the animal kingdom (including mammals), scientists have noticed substantial differences in lifespan between the sexes: the females tend to live longer than the males.
    - This phenomenon has been attributed largely to the absence of a second Y chromosome in males, exposing the deleterious mutations in the X chromosome.
- It is also well known that men lose the Y chromosome (LoY) with age and that this is associated with a higher frequency of cancers, Alzheimer's disease, and a shorter lifespan.
    - This has been corroborated by studies on mice models that showed that LoY resulted in shorter lifespans and that older mice with LoY displayed significant memory deficiencies compared to younger mice.
- However, a recent study in fruit flies from France's National Centre for Scientific Research, published in the journal Nature Ecology and Evolution on June 12, attributed the longevity to the phenotypic sex of the animal rather than the presence of a Y chromosome.
    - Phenotypic sex refers to an individual's sex as deduced from their genitalia.

Phonons & Quantum Computing

Context: Recently, IBM published a paper in which it claimed to have demonstrated that a quantum computer could solve a useful problem that today's conventional computers can't. IBM researchers have developed an Acoustic Beam-Splitter to manipulate Phonons to be used for Quantum Computing.

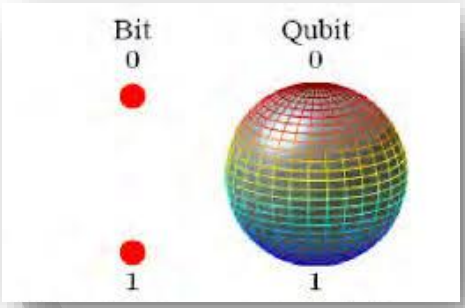
Quantum Computing

Quantum computing is a rapidly emerging technology. It harnesses the laws of quantum mechanics to solve problems that seems to be too complex for classical computers.

Quantum mechanics is a subfield of physics. It describes the behavior of particles like atoms, electrons, photons, etc. in the molecular and sub molecular realm.

Qubits

Quantum computers use qubits as their basic units of information. A qubit can be a particle — like an electron; a collection of particles; or a quantum system engineered to behave like a particle.



Phonons & Photons: What are They?

- Photons are packets of light energy; similarly, phonons are packets of vibrational energy.
- Researchers can manipulate electrons using electric currents, magnetic fields, etc. and photons with mirrors, lenses, etc., they needed new tools to manipulate phonons. Therefore, acoustic beam-splitter has been developed.
  - Beam-splitters are used widely in optics research.
  - When a beam-splitter is placed in the light's path, it will split the beam into two, that is, it will reflect 50% of the photons to one side and let the other 50% pass straight through.

Acoustic Beam - Splitter

- It is a tiny device resembling a comb, with 16 metal bars jutting out of it.
- It was placed in the middle of a two-mm-long channel of lithium niobate.
- Each end of the channel had a superconducting qubit — a qubit whose circuit components were superconducting — that could both emit and detect individual phonons.
- The whole setup was maintained at an ultra-low temperature.
- If these phonons were converted to sound, their frequency would be too high for humans to hear.
- Each phonon in the study represented, according to the paper, the "collective" vibration of around one quadrillion atoms.
- The team found that these phonons interacted with the comb just like photons interact with an optical beam-splitter.
- When a phonon was emitted from the left side of the channel, it was reflected half of the time and transmitted to the right side the other half.
- When phonons were emitted simultaneously from the left and the right sides, they both ended up on one side (as expected).

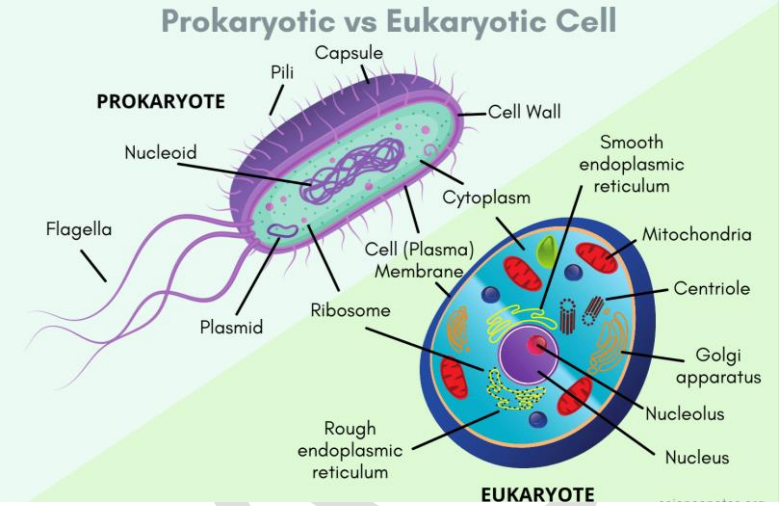
How Prokaryotes Led to Eukaryotes?

Context: Organisms on planet Earth are broadly divided into prokaryotes and eukaryotes. Prokaryotes are unicellular, do not have any organelles such as mitochondria, and their DNA is not packaged into a nucleus. Eukaryotes have mitochondria, their DNA is packaged into a nucleus, and most eukaryotes are complex, multicellular beings.

Key Highlights

- About 50 years ago, a subset of unicellular organisms, the Archaea, were shown to have a different line of descent as compared to bacteria. The two differ in the composition of their cell walls, and in the sequence of some of their genes.
- The term Archaea, was used because the first members of this domain were found living in extreme environments of very high temperatures or very high salt.

- One group of archaea were shown to have proteins that closely resembled eukaryotic proteins. These organisms are found in a geological formation where geothermally heated water is forced out of a ridge in the Atlantic Ocean floor at a depth of 2400 meters below sea level.
- Many other related members were later found in unusual ecosystems, and came to be collectively called the Asgard, which is the home of the Gods in Norse mythology.
- The mitochondria, which are the energy-generating organelles of eukaryotic cells, and the photosynthesizing chloroplasts found in plant cells, have evolved from free-living bacteria.
- The ancestor of mitochondria was a proteobacteria that was engulfed by an Asgard archaean organism. Descendants of this endosymbiotic union gave rise to animals, fungi and plants.
- In plants, the Asgard-mitochondrial union was followed by the intake of a photosynthesizing cyanobacterium, which became the chloroplast.



Basis of Differenciation	Prokaryotes	Eukaryotes
Size	Generally smaller (1-10 μm)	Generally larger (10-100 μm)
Nucleus	No true nucleus	True nucleus
DNA	Circular DNA	Linear DNA with histones
Membrane-bound organelles	Absent	Present (e.g., mitochondria, endoplasmic reticulum)
Cell division	Binary fission	Mitosis and meiosis
Flagella	Simple, not membrane-bound	Complex, membrane-bound
Cell wall	Usually present (peptidoglycan or other materials)	Present in some (e.g., plants, fungi)
Examples	Bacteria, archaea	Protists, fungi, plants, animals

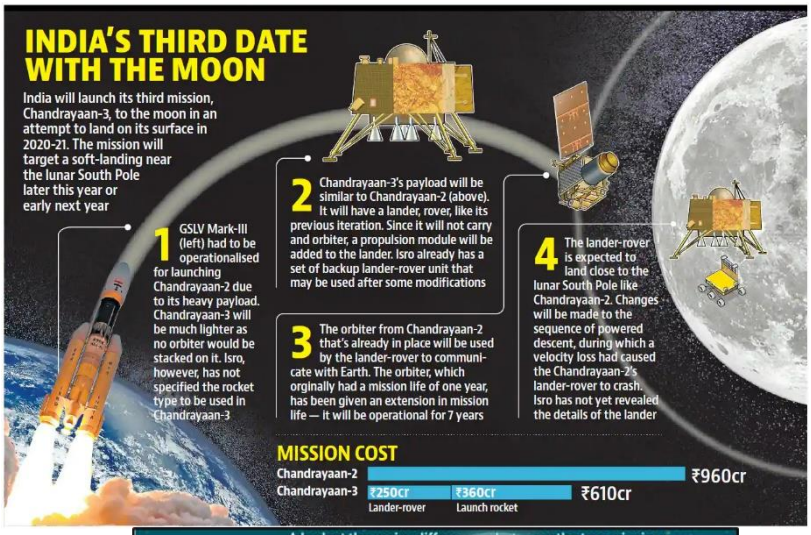
Chandrayaan-3

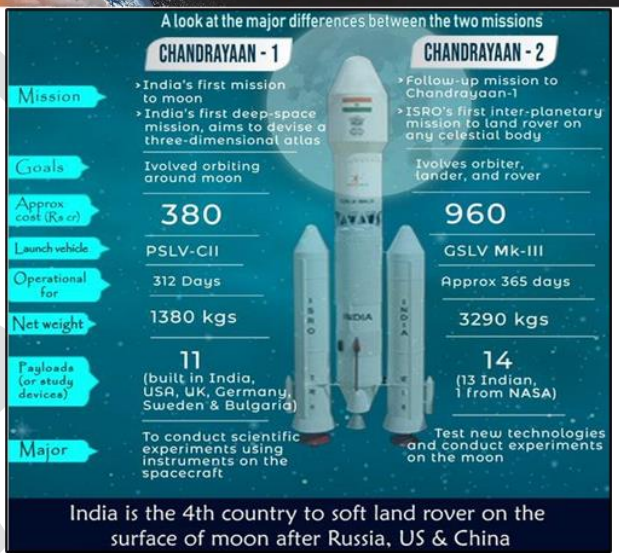
Context: India's third moon exploration mission, slated for a mid-July launch, will share the names associated with the 2019 Chandrayaan-2 lunar adventure.

Key Highlights

- The Indian Space Research Organisation (ISRO) plans to retain the names of the Chandrayaan-2 lander and rover for their Chandrayaan-3 equivalents as well.
- This means, the Chandrayaan-3 lander will bear the name Vikram (after Vikram Sarabhai, the father of the Indian space programme) and the rover, Pragyan (wisdom), to move around, feel and understand the lunar surface.
- The ISRO had lost the Chandrayaan-2 lander-rover configuration and the payloads aboard after Vikram crashed on the lunar surface while attempting a soft landing.

- ISRO's plans to launch the third moon mission in mid-July aboard the LVM3 (formerly GSLV Mk-III) rocket from Sriharikota.
- A propulsion module will carry the lander-rover configuration to a 100-km lunar orbit. Once the Vikram lander module makes it safely to the moon, it will deploy Pragyan, "which will carry out in-situ chemical analysis of the lunar surface during the course of its mobility", the ISRO said.
- The lander, rover and the propulsion module will have payloads for performing experiments designed to give scientists new insights into the characteristics of earth's lone natural satellite.
- The lander will have four payloads — Radio Anatomy of Moon Bound Hypersensitive Ionosphere and Atmosphere (RAMBHA), Chandra's Surface Thermophysical Experiment (ChaSTE), Instrument for Lunar Seismic Activity (ILSA) and the LASER Retroreflector Array (LRA).
- The six-wheeled rover will have two payloads — the Alpha Particle X-ray Spectrometer (APXS) and the LASER Induced Breakdown Spectroscope (LIBS).
- In addition to these, there will be one payload on the propulsion module, the Spectro-polarimetry of Habitable Planet Earth (SHAPE).





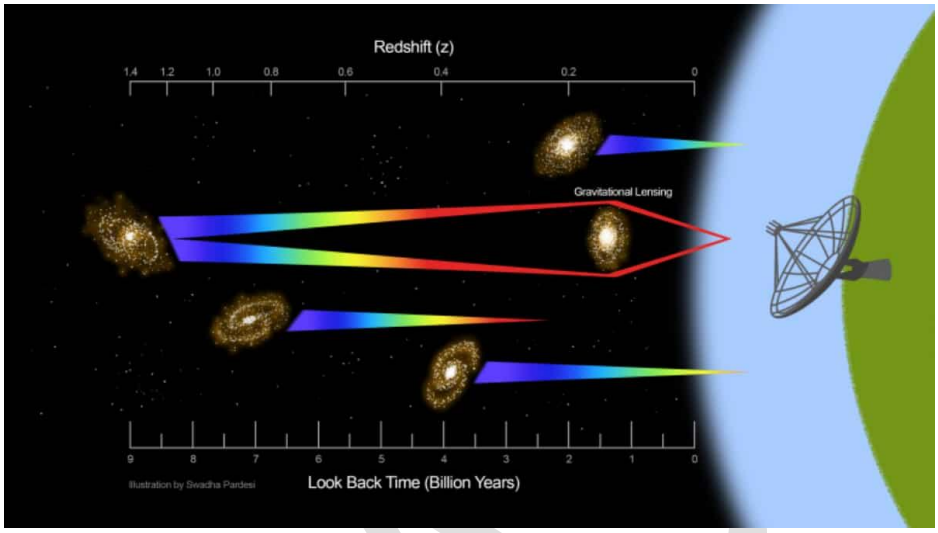
India's Largest Radio Telescope Plays Vital Role in Detecting Universe's Vibrations

Context: India's Giant Metrewave Radio Telescope (GMRT) was among the world's six large telescopes that played a vital role in providing evidence confirming the presence of gravitational waves using pulsar observations.

Key Highlights

- An international team of astronomers from India, Japan and Europe has published the results from monitoring pulsars, called 'nature's best clocks', by using six of the world's most sensitive radio telescopes, including India's largest telescope, the Pune-based GMRT.
- These results provide a hint of evidence for the relentless vibrations of the fabric of the universe, caused by ultra-low frequency gravitational waves. Such waves are expected to originate from a large number of dancing monster black hole pairs, crores of times heavier than our sun.
- The team, consisting of members of European Pulsar Timing Array (EPTA) and Indian Pulsar Timing Array (InPTA) consortia, published their results in two papers in the Astronomy and Astrophysics journal and shared that their results hint at the presence of such gravitational waves in their data set.
    - A time aberration was observed in the signals emerging from these pulsars, their studies suggest.

- Pulsars are a type of rapidly rotating neutron stars that are essentially embers of dead stars which are present in our galaxy.
- A pulsar is like a cosmic lighthouse as it emits radio beams that flashes by the Earth regularly akin to a harbour lighthouse.



- In order to detect gravitational wave signals, scientists explore several ultra-stable pulsar clocks randomly distributed across our Milky Way galaxy and create an 'imaginary' galactic-scale gravitational wave detector.

India's Giant Metrewave Radio Telescope (GMRT)

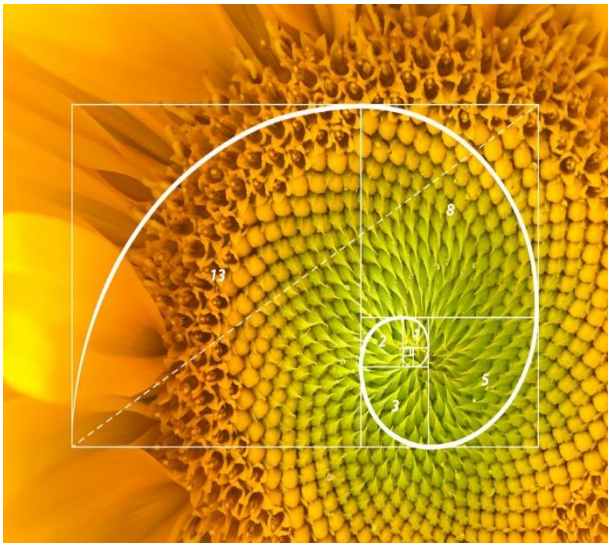
- It is an array of thirty fully steerable parabolic radio telescopes of 45 meter diameter.
- It functions at the meter wavelength part of the radio spectrum because man-made radio interference is considerably lower in this part of the spectrum in India and there are many outstanding astrophysics problems which are best studied at meter wavelengths.
- GMRT is an indigenous project. Its design is based on the `SMART' concept - for Stretch Mesh Attached to Rope Trusses.
- It is **Built and operated by** National Centre for Radio Astrophysics - Tata Institute of Fundamental Research, (NCRA-TIFR), Pune.

The Fossil That's Changing What We Know About Patterns In Nature

Context: Fibonacci spirals are so common in plants today that they are believed to represent an ancient and highly conserved feature, dating back to the earliest stages of plant evolution and persisting in their present forms. But a new study, based on 407-million-year-old fossils, challenges this.

Key Highlight

- A new study examined the spirals in the leaves and reproductive structures of a fossilised plant dating back 407 million years.
- The new study discovered that all of the spirals observed in this particular species did not follow this same rule. Today, only a very few plants don't follow a Fibonacci pattern.



What are Fibonacci Spirals?

- In mathematics, the Fibonacci sequence is a sequence in which each number is the sum of the two preceding ones.
- Numbers that are part of the Fibonacci sequence are known as Fibonacci numbers.
- A Fibonacci spiral approximates the golden spiral using quarter-circle arcs inscribed in squares derived from the Fibonacci sequence.

Fibonacci Spirals in Nature

- Spirals occur frequently in nature and can be seen in plant leaves, animal shells and even in the double helix of our DNA.
- In most cases, these spirals relate to the Fibonacci sequence – a set of numbers where each is the sum of the two numbers that precede it (1, 1, 2, 3, 5, 8, 13, 21 and so on).
- Pinecones, leaves, and animal shells exhibit Fibonacci spirals.
- In a study that analysed 6,000 pinecones, Fibonacci spirals were found in 97% of the examined cones.
- Fibonacci spirals are not just found in pine cones. They are common in other plant organs such as leaves and flowers.

Non-Fibonacci spirals

- The study examined the arrangement of leaves and reproductive structures in the first group of plants known to have developed leaves, called clubmosses.
- Specifically, we studied plant fossils of the extinct clubmoss species Asteroxylon mackiei.
- The fossils which were studied are now housed in museum collections in the UK and Germany but were originally collected from the Rhynie chert– a fossil site in northern Scotland.
- The study took images of thin slices of fossils and then used digital reconstruction techniques to visualise the arrangement of Asteroxylon mackiei's leaves in 3D and quantify the spirals.
- Based on this analysis, the scientist discovered that leaf arrangement was highly variable in Asteroxylon mackiei. In fact, non-Fibonacci spirals were the most common arrangement.
- The discovery of non-Fibonacci spirals in such an early fossil is surprising as they are very rare in living plant species today.

UN Recommends New Treaty to Ensure Peace & Security in Outer Space

Context: The United Nations (UN) has released a policy brief titled "For All Humanity — The Future of Outer Space Governance," recommending the development of a new treaty and frameworks to ensure peace, security, and sustainable space activities.

Key Highlights

- **Increasing Satellite Launches:** The number of satellite launches has seen a significant rise in recent years, driven by government and private sector involvement. Leading countries such as the United States, China, India, and Japan are actively engaged in space missions, including lunar exploration and resource exploitation.
- **Lack of International Framework:** The absence of an agreed international framework poses challenges for space resource exploration, exploitation, and utilization. Establishing mechanisms to address jurisdiction, control, liability, and environmental responsibility is crucial.
- **Coordination and Space Traffic Management:** The current coordination of space traffic lacks uniform standards, making it difficult for countries with limited space capacity. Developing effective coordination frameworks for space situational awareness and object maneuvers will enhance safety and security.
- **Space Debris and Environmental Concerns:** The proliferation of space debris poses threats to operational spacecraft. Addressing legal considerations regarding jurisdiction, control, liability, and environmental pollution caused by space debris is vital. Technological advancements for space debris removal require corresponding legal frameworks.

Recommendations

- **New Treaty for Peace and Security:** The UN recommends negotiating and developing a new treaty to ensure peace, security, and prevent an arms race in outer space. This treaty would establish international norms, rules, and principles for responsible space activities.

- **Coordinated Space Situational Awareness:** Member states are urged to establish an effective framework for coordinating space situational awareness, object maneuvers, and space events. This coordination will enhance the safety and security of space operations.
- **Space Debris Removal Framework:** The UN calls for the development of norms and principles for space debris removal, taking into account legal and scientific aspects. Addressing the issue of space debris will contribute to a sustainable space environment.
- **Sustainable Space Resource Framework:** An effective framework is recommended for the sustainable exploration, exploitation, and utilization of space resources, particularly on celestial bodies like the Moon. This framework would ensure responsible and equitable resource activities.

The recommendations from the UN policy brief aim to enhance global governance in outer space and address emerging challenges in a multilateral and cooperative manner. These proposals will be further discussed at the upcoming UN Summit of the Future in September 2024.

Cost-Effective Li-ion Battery Recycling Technology

Context: The Ministry of Electronics and Information Technology (MeitY) has transferred a cost-effective Li-ion battery recycling technology to nine recycling industries and start-ups as part of the Mission LiFE under the "Promote circularity campaign."

Important Highlights:

- **Novel Recycling Technology**: The indigenously developed technology can process various types of discarded Li-ion batteries, recovering more than 95% of Lithium (Li), Cobalt (Co), Manganese (Mn), and Nickel (Ni) contents in the form of high-purity oxides/carbonates. The process involves leaching and hierarchical selective extraction of metal values through a solvent extraction process.
- **Secondary Raw Materials**: The recovered materials can be used for battery manufacturing or in other potential applications, contributing to a circular economy and reducing the dependence on primary resources.
- **Centre of Excellence on E-waste Management**: MeitY has developed this technology at the Centre for Materials for Electronics Technology (C-MET), Hyderabad, in collaboration with the Government of Telangana and industry partner M/s Greenko Energies Pvt. Ltd., Hyderabad. This initiative falls under the Centre of Excellence on E-waste Management established at C-MET.
- **Front Runner in Circular Economy**: MeitY is at the forefront of showcasing the outcomes of technology development in the circular economy domain. The ministry's efforts demonstrate India's progress in this area, even compared to major economies.

Li-ion Battery

A lithium-ion (Li-ion) battery is a rechargeable battery that utilizes a lithium compound as one electrode material. Unlike non-rechargeable lithium batteries that use metallic lithium, Li-ion batteries use intercalated lithium compounds. The battery consists of an electrolyte and two electrodes, which form the essential components of a Li-ion battery cell. During discharge, lithium ions migrate from the negative electrode to the positive electrode, and during charging, they return back to the negative electrode.

The transfer of this cost-effective Li-ion battery recycling technology marks a significant step towards sustainable and responsible management of electronic waste in India. It showcases the country's capabilities in developing innovative solutions for a circular economy and reducing environmental impact.

DST Supported Technologies Brings Solutions for Plastic Pollution

Context: The Department of Science and Technology (DST) is supporting a range of technologies aimed at addressing the global issue of plastic pollution. By focusing on reducing, reusing, and recycling plastic waste, they developed a Pilot scale mobile plant that converts plastic waste into fuel.

Important Highlight

- **ICT-Poly Urja Process:** The ICT-Poly Urja process involves collecting and sorting different types of plastic waste, such as bottles and packaging materials. A specially designed catalyst called Cu@TiO2 is added to the plastic waste, which facilitates the breakdown of the plastic into smaller molecules. The mixture is then heated under moderate conditions, undergoing a process called Catalytic Thermo Liquefaction (CTL), which transforms the plastic waste into Hydrocarbon Oil (HC-Oil).

Hydrocarbon Oil (HC-Oil)

Hydrocarbon Oil (HC-Oil) refers to a type of fuel produced through the conversion of plastic waste using advanced processes such as Catalytic Thermo Liquefaction (CTL). HC-Oil is derived from the breakdown of plastic molecules into smaller hydrocarbon compounds. It possesses a high energy content, making it suitable for various applications, including heating, steam generation, and electricity production. The production of HC-Oil from plastic waste offers a sustainable alternative to traditional fossil fuels and contributes to reducing environmental pollution and promoting a

- **Versatile Fuel Source:** The resulting HC-Oil is a highly energy-rich fuel that can be utilized for multiple purposes. It can be burned to generate heat, produce steam, or even generate electricity. This fuel offers a sustainable alternative to traditional fossil fuels, reducing dependence on non-renewable resources.
- **Efficiency and Mobility:** The ICT-Poly Urja process stands out for its energy efficiency, requiring less energy compared to conventional methods such as pyrolysis and gasification. Moreover, the mobile nature of the plant, mounted on a vehicle, provides operational advantages. It can be easily transported to different locations, enabling efficient waste management and fuel production on-site.

New Low Cost Technology Reduces Textile Effluent Pollution

Context: In a remarkable development, a textile and apparel industry in Telangana's Hanumakonda district has achieved a major breakthrough in wastewater treatment. By harnessing an innovative technology that combines biosurfactants and membrane technology, the industry has successfully treated its textile effluent in a cost-effective and environmentally friendly manner.

Important Highlights

- Textile wastewater contains various pollutants such as dyes, dissolved solids, suspended solids, and toxic metals, requiring efficient treatment before discharge.
- To tackle this challenge, NIT Warangal, in collaboration with Prime Textiles located in Kakatiya Mega Textile Park (KMTP), has developed a pilot-scale textile effluent treatment plant. This cutting-edge system integrates bio surfactants, cavitation, and membrane technologies.
- Under the guidance of esteemed scientists from NIT Warangal, including Prof. Shirish H. Sonawane and Dr. Murali Mohan Seepana, along with the expertise of Dr. Ajey Kumar Patel, the team embarked on extensive research.
- With the assistance of Dr. Mousumi Debnath from Manipal University Jaipur (MUJ), bio surfactants were extracted from microorganisms found in textile effluent and contaminated soil.
- The incorporation of bio surfactants in the Moving Bed Biofilm Reactor (MBBR) system revolutionized the treatment process.
- It efficiently removed dyes, significantly reducing operational time and costs compared to conventional methods.
- The utilization of cavitation, an advanced oxidation process (AOP), not only lowered installation expenses but also minimized the environmental impact associated with wastewater treatment.

How does this Technology Work?

Technology Components	Function
Biosurfactants	Aid in the removal of dyes from wastewater in the Moving Bed Biofilm Reactor (MBBR). Improve dye removal efficiency, reduce operational time, and lower costs compared to other biological treatment methods.
Cavitation	Advanced oxidation process (AOP) that destroys pollutants in wastewater by creating pressure variations, resulting in the formation and implosion of small cavities. Generates oxidizing radicals in-situ for pollutant degradation. Reduces installation costs and carbon footprint.
Membrane Technology	Enhances separation and removal of pollutants. Surface modification using sol-gel process with boehmite sol reduces pore size to nano-scale. Improves membrane performance for efficient pollutant separation.
Overall Treatment Process	Coagulation to remove suspended solids' turbidity. Biofilm growth in MBBR for heavy metal reduction and degradation of biodegradable pollutants. Cavitation for pollutant destruction and energy generation. Use of surface-modified membranes for efficient pollutant separation.
Pilot Plant Capacity	200 Litres Per Day
Treatment Outcome	Produces treated water suitable for agricultural use and cleaning purposes. Offers an effective and sustainable solution for textile wastewater treatment, showcasing the potential for greener practices in the industry.

AI to Find an Antibiotic Against a Superbug

Context: Scientists from the United States and Canada have harnessed the power of Artificial Intelligence (AI) to identify and develop a potent antibiotic called Abaucin. This breakthrough offers new hope in the fight against Acinetobacter baumannii, a drug-resistant superbug that poses a significant threat to public health.

Understanding Acinetobacter Baumannii

Acinetobacter baumannii is a highly resistant bacterium responsible for severe infections such as pneumonia, meningitis, and wound infections. It is categorized as a "red alert" human pathogen by the World Health Organization (WHO) due to its ability to develop resistance to existing antibiotics. This superbug primarily thrives in healthcare settings, making it challenging to eliminate.

Antibiotic Resistance and its Implications

Antibiotic resistance occurs when bacteria adapt and become impervious to the effects of antibiotics, rendering traditional treatments ineffective. Overuse and misuse of antibiotics have contributed to the rise of drug-resistant bacteria, leading to a global health crisis. Infections that were once treatable, including pneumonia and tuberculosis, are becoming increasingly difficult to manage.

Introducing Abaucin

Abaucin is an innovative compound that exhibits potent activity against Acinetobacter baumannii. Its discovery was made possible through the application of AI and machine-learning models. By training a network with a dataset of around 7,500 molecules, scientists identified abaucin as a structurally distinct compound with the ability to inhibit the growth of the superbug. Experimental validation confirmed its remarkable antibacterial properties.

Mechanism of Action

Abaucin works by disrupting the normal function of the CCR2 protein in bacteria. This disruption hampers the movement of specific molecules inside the bacterial cells, preventing them from reaching the outer membrane. Consequently, the growth of Acinetobacter baumannii is impeded, reducing its ability to cause infections.

Significance and Future Implications

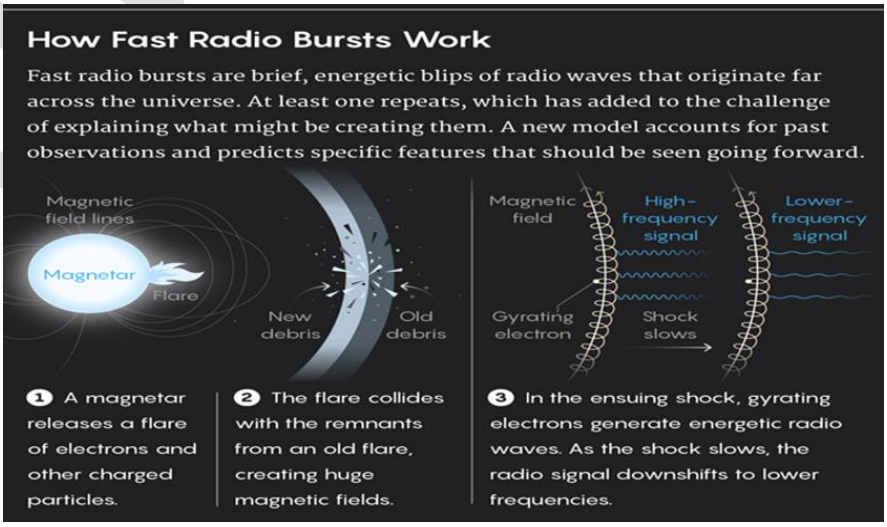
The discovery of Abaucin represents a major advancement in the battle against drug-resistant superbugs. With its narrow-spectrum antibiotic activity targeting Acinetobacter baumannii, this breakthrough paves the way for potential new treatments and therapeutic strategies. By leveraging AI and innovative approaches, scientists are tackling the pressing challenge of antibiotic resistance and opening new possibilities for combating other drug-resistant bacteria in the future.

Fast Radio Burst: A Cosmic Event

Context: Fast radio bursts are bright flashes of light that appear for a few milliseconds and then vanish. Since the first FRB was discovered in 2007, 140 more were discovered until June 2021, according to a post on the MIT website.

Key Points

- Astronomers have reported a new fast radio burst (FRB) with unique characteristics.
- FRBs are bright flashes of light that last for milliseconds and have unknown origins.
- The newly discovered FRB, named FRB 20190520B, emits frequent repeating bursts of radio waves and weaker radio waves between bursts.
- This behavior is similar to another FRB called FRB 121102, discovered in 2012.
- The discovery raises questions about the nature of FRBs and their usefulness in studying intergalactic space.
- The National Science Foundation's Karl G Jansky Very Large Array (VLA) and other telescopes were used to study the FRB.
- The similarities between FRB 20190520B and FRB 121102 suggest the existence of two different mechanisms producing FRBs or variations in behavior at different stages.
- Possible sources of FRBs include superdense neutron stars and magnetars with strong magnetic fields.



Fast Radio Burst

- Fast Radio Bursts (FRBs) are fleeting bursts of radio waves originating from distant regions beyond our Milky Way galaxy, lasting only a few milliseconds. The discovery of this phenomenon dates back to 2007.

- Notably, these bursts exhibit a unique property called dispersion, wherein the radio waves disperse as they traverse through matter.
- Higher frequency bursts arrive at telescopes earlier than lower frequency ones, enabling researchers to glean valuable insights about the medium through which these radio bursts travel.
- The origins of FRBs remain a perplexing enigma, with their occurrences being highly unpredictable and spanning various corners of the universe, including our own galaxy.
- Astronomers postulate that potential sources for FRBs could be superdense neutron stars that emerge following a supernova event or magnetars—neutron stars possessing exceptionally intense magnetic fields.
- The CHIME project has played a pivotal role in advancing our understanding of FRBs, nearly quadrupling the number of detected bursts to date. In its inaugural year of operation (between 2018 and 2019), the project's telescope detected an impressive tally of 535 new FRBs.
- With continued observations and investigations, astronomers hold hope that the origins of FRBs will soon be unveiled, bringing us closer to unraveling their captivating mysteries.

Health

National Sickle Cell Anaemia Elimination Mission

Context: The Prime Minister of India recently inaugurated the National Sickle Cell Anaemia Elimination Mission (NSCAEM) in Shahdol, Madhya Pradesh.

Key Highlights

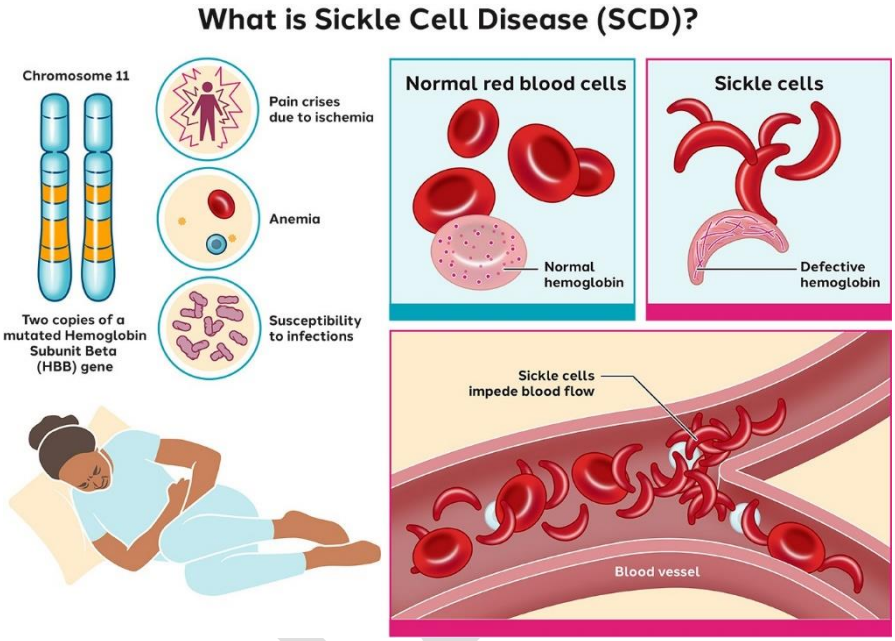
- **Launch of Training Modules:** The Prime Minister launched training modules for primary, secondary, and tertiary care, focusing on medical officers, staff nurses, Community Health Officers, Auxiliary Nurse Midwives, and Accredited Social Health Activist workers. These modules will enhance their knowledge and skills in managing sickle cell anaemia.
- **Awareness and Counselling Modules:** Additionally, awareness and counselling modules were released for non-health functionaries, parents, teachers, patients, caregivers, and pregnant women. These modules aim to spread awareness about sickle cell disease and provide guidance on managing the condition effectively.
- **Distribution of Sickle Cell Genetic Status Cards:** Beneficiaries received Sickle Cell Genetic Status Cards, emphasizing the importance of checking genetic compatibility before marriage. This measure plays a vital role in preventing the transmission of the disease to future generations.
- **Digital Cards for AB-PMJAY Beneficiaries:** As part of the event, the Prime Minister launched the distribution of approximately 3.57 crore digital cards to Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (AB-PMJAY) beneficiaries. In Madhya Pradesh alone, 1 crore physical cards were distributed to beneficiaries.
- **Objective of the Elimination Program:** The National Sickle Cell Anaemia Elimination Mission, introduced in the Union Budget 2023, aims to address the health challenges of sickle cell disease across 17 high-focus states. These states include Gujarat, Maharashtra, Rajasthan, Madhya Pradesh, and others. The program seeks to improve care, reduce disease prevalence, and eliminate sickle cell genetic transmission by 2047.
- **Ambitious Screening Target:** Over the next three years, the program plans to screen approximately 7.0 crore people, demonstrating a commitment to early diagnosis and intervention. This extensive screening effort will contribute to better management and control of sickle cell disease.

Sickle Cell Anaemia (SCA)

It is a genetic disorder affecting the shape and function of red blood cells (RBCs). It is a prevalent inherited blood disorder, particularly among populations of African, Asian, and Mediterranean descent. Here's what you need to know about SCA:

Nature of SCA

- SCA causes the RBCs to take on a sickle or crescent moon shape, which makes them rigid, sticky, and prone to getting stuck in blood vessels.
- This can lead to blocked blood flow, causing severe pain, tissue damage, and organ failure.
- The disorder affects millions of people worldwide, with a significant impact on the affected individuals and their families.



Prevalence in India

- In India, SCA is prevalent in certain tribal and non-tribal communities across states such as Maharashtra, Madhya Pradesh, Chhattisgarh, Gujarat, Odisha, Jharkhand, and Bihar.
- According to the Indian Council of Medical Research (ICMR), around 1.2% of the Indian population carries the sickle cell trait (SCT), indicating they have one copy of the mutated gene responsible for SCA.
- Individuals with SCT usually do not exhibit symptoms but can pass the gene to their children.

Transmission and Genetic Risk

- SCA is inherited in an autosomal recessive manner. If both parents carry the SCT, there is a 25% chance that their child will inherit SCA.
- It is crucial for individuals with a family history of SCA or belonging to high-risk communities to be aware of the genetic implications and consider genetic counseling.

Report & Index

Global Annual to Decadal Climate Update 2023-2027 and State of Global Climate 2022

Context: The **World Meteorological Organization (WMO) released** two reports titled **"Global Annual to Decadal Climate Update 2023-2027" and "State of Global Climate 2022."**

Key Highlights

- The decadal predictions of the WMO said that the annual mean global surface temperature between 2023 and 2027 will be 1.1¬1.8 degree Celsius higher than the baseline temperature of 1850¬1900 or preindustrial levels.
- In 2022, it was 1.15 degrees above the baseline, and by 2027, the average will exceed 1.5 degrees, a critical point beyond which there may be no return.

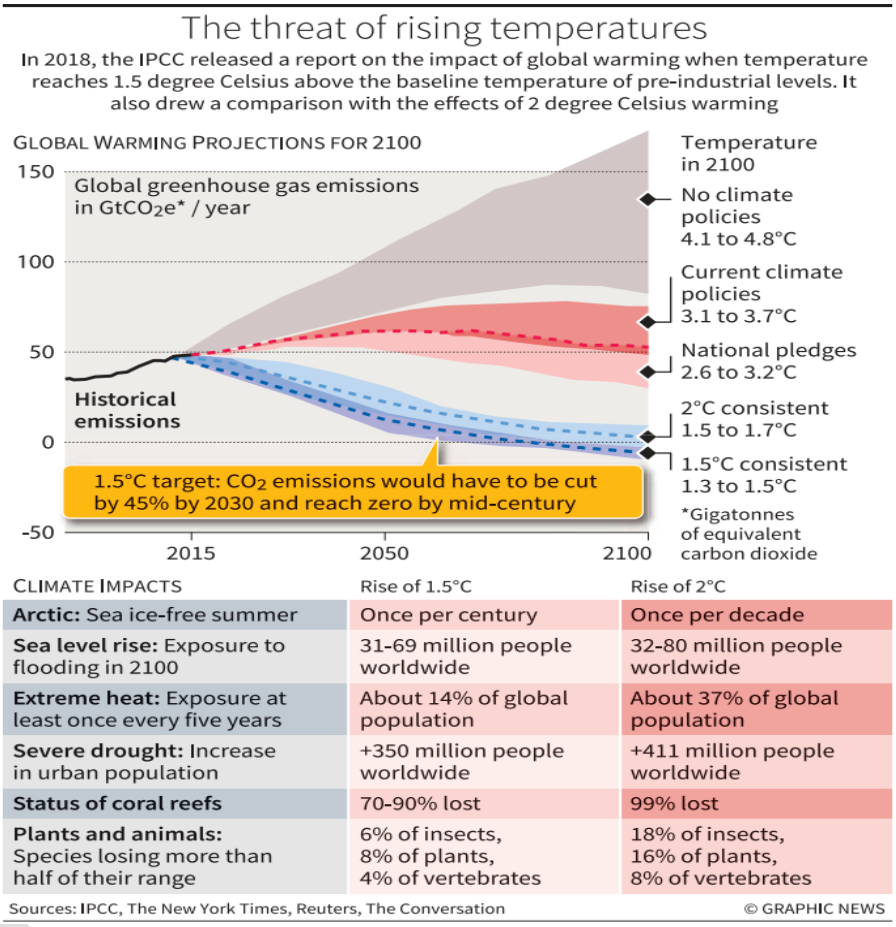
What is the 1.5-degree Celsius target?

- The 1.5-degree Celsius target is the global climate target that aims to limit warming to said level by 2100, in order to prevent the planet from slipping into further climate crises.
- For decades, 2 degrees was an acceptable level of warming. The idea of 1.5 degree was perceived as unrealistic and unachievable.
- However, the 2-degree target was unacceptable to small island countries as it implied that their survival was compromised.
- In 2010, at the Cancun COP16, countries agreed to limit the global average warming to below 2 degrees Celsius.

- In 2015, the parties to the Paris Agreement pledged to limit the average temperature rise to below 2 degrees, while actively aiming for 1.5 degree above pre-industrial levels.
- This was endorsed as a global target by the Intergovernmental Panel on Climate Change (IPCC) in 2018 and since then has been pursued in all climate dialogues.

Impact on India

- February 2023 was recorded as the hottest month since record-keeping began in 1901.
- In 2022, India witnessed extreme weather events for 80% of the days. Indian monsoons were wetter than usual last year after recording extreme heat during the pre-monsoon period, resulting in wildfires in Uttarakhand and acute food shortages.
- According to the Climate Change Performance Index 2023, India ranked eighth with a high-performance after Denmark, Sweden, Chile, and Morocco.
- Being an emerging economy with development needs, it is attempting to balance its development needs with ongoing climate action both at the domestic and international levels.
- With domestic measures like the Green Hydrogen Mission and the introduction of green bonds, India is performing fairly well despite contributing only a miniscule to cumulative GHG emissions.
- At the international level, through the International Solar Alliance and Coalition for Disaster Resilient Infrastructure, India can prove to be a responsible climate player keeping in mind that it has a long way to go in very little time.



Impact on World

- Climate change has been affecting crop yield negatively and the risks posed by agricultural pests and diseases have also increased in the past few years.
- Countries like Ethiopia, Nigeria, South Sudan, Somalia, Yemen, and Afghanistan are facing acute food shortages resulting in malnutrition and hunger, demanding urgent humanitarian assistance.
- The heatwaves in Pakistan and India in 2022 also resulted in a decline in crop yields. The floods in Pakistan affected croplands in southern and central parts of the country and displaced eight million people within the country.
- The Horn of Africa (Ethiopia, Somalia, and Kenya) has been witnessing extreme drought conditions since 2020, while at the same time, western African countries are seeing floods and heavy rainfall which has pushed millions into acute food insecurity. Such shortage of food has also led to mass displacement within and across borders.
- In Syria and Yemen, thousands have been displaced owing to the floods, storms, and heavy snowfall.
- Aquatic and terrestrial ecosystems have also not been immune to such changes in climate patterns.
- Phenological shifts and mismatches have been recorded due to climate change.
- The population of migratory species has declined in Sub-Saharan Africa.

- Additionally, the warming above 1.5 degree Celsius can prove lethal for coral reefs which are already prone to bleaching.
- According to the WMO, extreme weather anomalies have caused the deaths of two million people and incurred $4.3 trillion in economic damages over the past fifty years. In 2020-2021, 22,608 disaster deaths were recorded globally.

Report on Performance Grading Index for Districts (PGI-D)

Context: The report assesses the performance of the school education system at the district level, highlighting areas for improvement.

Important Highlights

- Ministry of Education releases combined report on Performance Grading Index for Districts (PGI-D) for 2020-21 & 2021-22.
- PGI-D assesses the performance of the school education system at the district level.
- The report grades 742 districts in 2020-21 and 748 districts in 2021-22 across states and Union Territories.
- Indian education system comprises 14.9 lakh schools, 95 lakh teachers, and 26.5 crore students.

What is PGI-D?

The PGI-D evaluates the effectiveness of the district-level school education system by constructing an index that allows for a comprehensive analysis. The PGI-D evaluates the performance of districts in school education using data gathered from diverse sources such as the Unified District Information System for Education Plus (UDISE+), the National Achievement Survey (NAS) from 2017, and information provided by the districts themselves.

- PGI-D is an extension of the State PGI and evaluates districts based on 83 indicators.
- The index helps identify gaps and improve performance at the district level.
- PGI-D includes six categories and 12 domains covering various aspects of education.
- The grading system categorizes districts into ten grades, from Daksh (highest) to Akanshi-3 (lowest).
- The report assists districts in prioritizing areas for intervention and driving improvement in school education.
- PGI-D serves as a valuable tool for assessing and enhancing educational performance.

Joint Malnutrition Estimates

Context: Commensurate with global and regional trends, India continues to show a reduction in stunting and recorded 1.6 crore fewer stunted children under five years in 2022 than in 2012, according to the Joint Malnutrition Estimates released by the UNICEF, the WHO and the World Bank.

Major Highlights of the Estimate

- Stunting among children under five years in India dropped from a prevalence rate of 41.6% in 2012 to 1.7% in 2022 with the numbers dropping from 52 lakhs to 36 lakhs. This was accompanied by India's share of the global burden of stunting declining from 30% to 25% in the past decade.
- The overall prevalence of wasting in 2022 was 18.7% in India, with a share of 49% in the global burden.
- The prevalence of obesity marginally increased in a decade from 2.2% in 2012 to 2.8% in 2022 with the numbers growing to 31.8 lakh from 27.5 lakh,

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thereby contributing to 8.8% of the global share. But the overall classification for obesity is low and much lower than the global prevalence of 5.6%.

- Globally, stunting declined from a prevalence rate of 26.3% in 2012 to 22.3% in 2022.
- There was no improvement on the weight issue worldwide, as its prevalence rate grew from 5.5% to 5.6%. There was a global prevalence of 6.8% in 2022, but there is no comparison available for past years as it is based on national-level country prevalence data.
- The JME report says there is insufficient progress to reach the 2025 World Health Assembly global nutrition targets and the 2030 Sustainable Development Goal (SDG) 2 targets and only about one third of all countries are 'on track' to halve the number of children affected by stunting by 2030.
- Even fewer countries are expected to achieve the 2030 target of 3% prevalence for overweight.

Global Gender Index

Context: India was ranked 127 among 146 countries in gender parity — up eight places from last year's place — in the Gender Gap Report, 2023 of the World Economic Forum (WEF).

Key Highlights

- India was ranked 135 in 2022. The country had improved by 1.4 percentage points from then, marking a partial recovery towards its 2020 parity level.
- India had closed 64.3% of the overall gender gap, the report said. However, it underlined that India had reached only 36.7% parity in economic participation and opportunity.
- The country had attained parity in enrolment across all levels of education.
- Iceland is the most gender equal country for the 14th consecutive year and the only one to have closed more than 90% of its gender gap.
- In India, while there had been an uptick in parity in wages and income, the share of women in senior positions and technical roles had dropped slightly since the last edition.

Gender gap

India jumped eight spots to rank 127 in the Global Gender Gap Index, 2023. A look at how select countries fared

Rank	Country	Score	Rank change
1	Iceland	0.912	-
2	Norway	0.879	+1
59	Bangladesh	0.722	+12
103	Bhutan	0.682	+23
107	China	0.678	-5
115	Sri Lanka	0.663	-5
116	Nepal	0.659	-20
127	**India**	**0.643**	**+8**
142	Pakistan	0.575	+3

- On political empowerment, India has registered 25.3% parity, with women making up 15.1% of MPs.
- For India, the 1.9 percentage point improvement in sex ratio at birth had driven up parity after more than a decade.
- "Compared with top scoring countries that register a 94.4% gender parity at birth, the indicator stands at 92.7% for India," it said.
- Overall, the Southern Asian region has achieved 63.4% gender parity, the second lowest of the eight regions.

Centre Identifies 30 Critical Minerals

Context: In a strategic move, the Centre has identified **30 critical minerals,** including lithium, cobalt, nickel, graphite, tin and copper, which are essential for the country's economic development and national security.

Key Highlights

- Union Minister of Coal, Mines & Parliamentary Affairs has unveiled the first

What are Critical Minerals?

Critical minerals are those minerals that are essential for economic development and national security, the lack of availability of these minerals or concentration of extraction or processing in a few geographical locations may lead to supply chain vulnerabilities and even disruption of supplies.

ever report of the country on "Critical Minerals for India", prepared by an expert team constituted by the Ministry of Mines, in a function here today

1. Antimony	15. Nickel	iv. Neodymium	20. Rhenium
2. Beryllium	16. PGE	v. Promethium	21. Selenium
3. Bismuth	i. Platinum	vi. Samarium	22. Silicon
4. Cadmium	ii. Palladium	vii. Europium	23. Strontium
5. Cobalt	iii. Rhodium	viii. Gadolinium	24. Tantalum
6. Copper	iv. Ruthenium	ix. Terbium	25. Tellurium
7. Gallium	v. Iridium	x. Dysprosium	26. Tin
8. Germanium	vi. Osmium	xi. Holmium	27. Titanium
9. Graphite	17. Phosphorous	xii. Erbium	28. Tungsten
10. Hafnium	18. Potash	xiii. Thulium	29. Vanadium
11. Indium	19. REE	xiv. Ytterbium	30. Zirconium
12. Lithium	i. Lanthanum	xv. Lutetium	
13. Molybdenum	ii. Cerium	xvi. Scandium	
14. Niobium	iii. Praseodymium	xvii. Yttrium	

- It is for the first time India has identified the comprehensive list of critical minerals taking into account the requirements of sectors like defence, agriculture, energy, pharmaceutical, telecom etc. The effort is India's roadmap for Aatmanirbhar bharat.
- The meticulously compiled list is designed to identify and prioritize minerals that are essential for various industrial sectors such as high-tech electronics, telecommunications, transport and defence.
- The list will serve as a guiding framework for policy formulation, strategic planning and investment decisions in the mining sector.
- This initiative aligns with the larger vision of achieving 'Net Zero' target for India through Government's commitment for creating a robust and resilient mineral sector.

Key Highlights of the Critical Minerals for India Report

- The list comprises 30 minerals, including 17 rare earth elements (REEs) and six platinum-group elements (PGE), each designated as critical based on their economic importance and limited availability in India's geological reserves.
- Some of the minerals are antimony, beryllium, bismuth, cobalt, copper, gallium, germanium, graphite, hafnium, indium, lithium, molybdenum, niobium, nickel, PGE, phosphorous, potash, REE, rhenium, silicon, strontium, tantalum, tellurium, tin, titanium, tungsten, vanadium, zirconium, selenium, and cadmium.
- Ten minerals on the list are 100% import-dependent. These are lithium cobalt, nickel, vanadium, niobium, germanium, rhenium, beryllium, tantalum, and strontium.

Important Days

World Blood Donor Day

Context: World Blood Donor Day is observed annually on June 14 to express gratitude towards selfless voluntary blood donors and celebrate the essence of life and humanity.

Importance of this Day

This occasion serves as a significant platform to appreciate and acknowledge voluntary blood donors worldwide for their generous contribution of blood, while also emphasizing the importance of ensuring universal access to safe blood transfusion.

Theme for World Blood Donor Day 2023

- The slogan or theme of the World Blood Donor Day 2023 is **"Give blood, give plasma, share life, share often."**
- The theme highlights the importance of giving blood or blood plasma regularly to create a safe and sustainable supply of blood and blood products that can be always available, all over the world, so that all patients in need can receive timely lifesaving treatment.

History of World Blood Donor Day

- The World Health Organization (WHO) officially established World Blood Donor Day in 2004. During the 58th World Health Assembly in 2005, it was designated as an annual global event with the purpose of increasing awareness regarding the significance of blood donation.
- The origins of blood donation can be traced back to ancient times. In recorded history, the noteworthy contributions of Richard Lower, an English physician, stand out.

Global Wind Day

Context: Global Wind Day celebrated on 15th Jun June 2023 by the Ministry of New and Renewable Energy (MNRE) with the theme of "Pawan - Urja: Powering the Future of India".

Important Highlights

MNRE has set the target of 500 GW renewable energy capacity by 2030 and Wind Atlas at 150 meter above ground level was also launched by National Institute of Wind Energy (NIWE), estimating the onshore wind potential at 1,164 GW.

What is Global Wind Day?

- Global Wind Day is an annual event since 2007 to promote wind energy as a clean and renewable source of power.
- It was started by the European Wind Energy Association (EWEA) and later joined by the Global Wind Energy Council (GWEC).
- GWEC is a member-based organisation that represents the entire wind energy sector.

MNRE has set the target of 500 GW renewable energy capacity by 2030 and Wind Atlas at 150 meter above ground level was also launched by National Institute of Wind Energy (NIWE), estimating the onshore wind potential at 1,164 GW.

Contribution of states in wind energy sector

The states, Rajasthan, Gujarat and Tamil Nadu, were appreciate for their significant contribution to promotion of wind energy.

- Rajasthan – for achieving the highest addition of wind capacity.
- Gujarat - for achieving the highest addition of wind capacity but through open access.
- Tamilnadu – for its initiative to repower wind turbines.

Wind energy status of India

Wind power capacity	4th rank in the world
The total installed capacity of wind power	41 GW (as of May 2022)
Onshore wind energy potential at 150 meter above ground level	1,164 GW approximately
Offshore wind energy potential	194GW
Domestic wind manufacturing capacity	15 GM

National Fish Farmer's Day 2023

Context: National Fish Farmer's Day to be celebrated on July at Mahabalipuram.

Important Highlight

- The Department of Fisheries, in collaboration with Startup India hub and DPIIT, has launched the Fisheries Startup Grand Challenge to identify and reward startups that are making a significant impact in the fisheries ecosystem.
- The fisheries industry in India has been steadily growing, with fisheries startups now operating in 21 states and union territories.
- the selected startups, as part of the Pradhan Mantri Matsya Sampada Yojana, will receive a cash grant of INR 2 lakhs to support the further development of their innovative ideas.

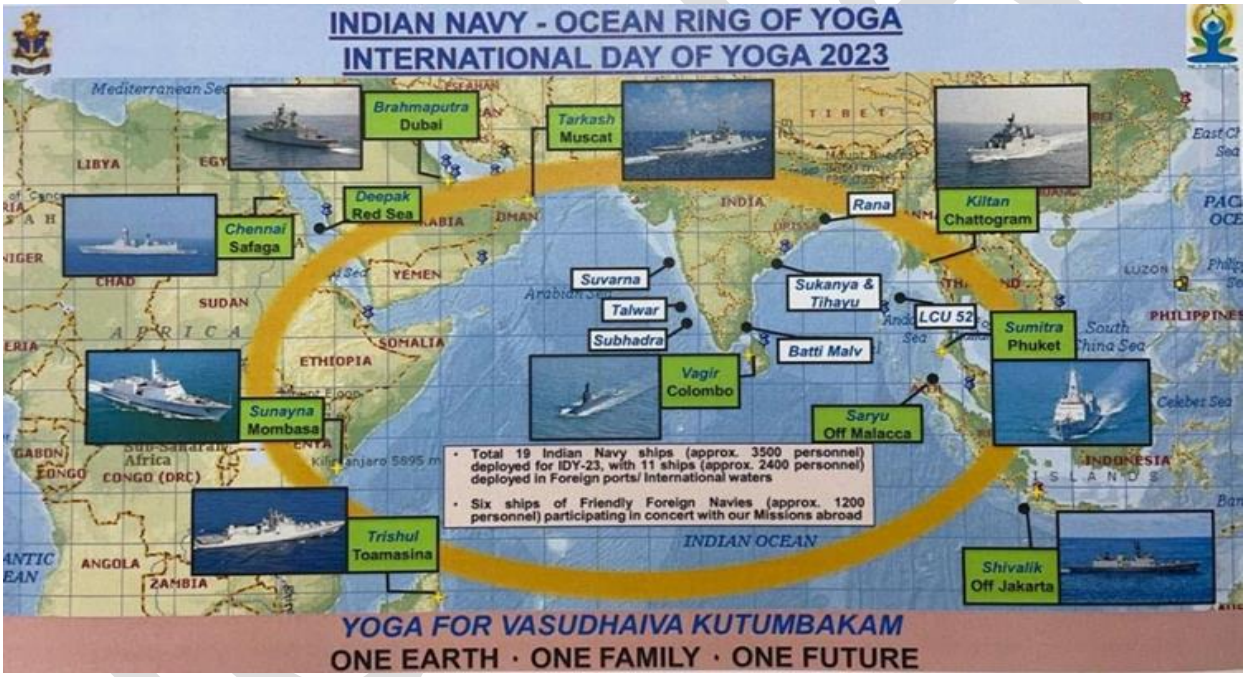
International Yoga Day & Ocean Ring of Yoga

Context: 21st June was recognised as the **International Day of Yoga (IDY)** by the United Nations General Assembly (UNGA) in December, 2014 at the initiative of Prime Minister of India Narendra Modi. Since 2015, the IDY has been observed worldwide with great enthusiasm and fervour.

- To commemorate IDY 23, the Ministry of AYUSH has planned an event 'Ocean Ring of Yoga' (symbolising unity and solidarity) in coordination with Ministry of Defence and other ministries.
- In support of the IDY-23 initiative, Indian Navy ships deployed in the Indian Ocean Region are visiting various ports of friendly foreign countries and spreading the message of 'Vasudhaiva Kutumbakam' which is also the theme for IDY 23.

Important Facts

- The Indian Navy has been an ambassador for Yoga across the seas for several years now and Yoga sessions are scheduled at most foreign ports visited by Indian Naval ships; thereby spreading the message of the benefits accrued from Yoga towards leading a healthy lifestyle.
- This year, Indian Navy is actively supporting the IDY at a global scale as port calls are planned at Chattogram, Bangladesh; Safaga, Egypt; Jakarta, Indonesia; Mombasa, Kenya; Toamasina, Madagascar; Muscat, Oman; Colombo, Sri Lanka; Phuket, Thailand; and Dubai, UAE by IN Ships Kiltan, Chennai, Shivalik, Sunayna, Trishul, Tarkash, Vagir, Sumitra and Brahmaputra respectively.



Other Important Days

Date	Event	Details and Significance
1 June	World Milk Day	Celebrates the contributions of the dairy sector to sustainability and nutrition.

Date	Event	Details and Significance
2 June	International Sex Workers' Day	Commemorates sex workers' rights and highlights the challenges they face globally.
2 June	Telangana Formation Day	Celebrates the formation of the state of Telangana and its rich cultural heritage.
3 June	World Bicycle Day	Promotes the benefits of cycling as a sustainable and healthy means of transportation.
4 June	International Day of Innocent Children Victims of Aggression	Raises awareness about children who have suffered physical, mental, and emotional abuse.
5 June	World Environment Day	Focuses on environmental issues, sustainability, and ecosystem restoration.
7 June	World Food Safety Day	Raises awareness about safe food practices, reducing the risk of foodborne illnesses.
8 June	World Brain Tumour Day	Raises awareness about brain tumors, supports patients, and advocates for more research.
8 June	World Oceans Day	Promotes the importance of ocean conservation and sustainable use of marine resources.
12 June	World Day Against Child Labour	Raises awareness about the global issue of child labor and advocates for its eradication.
14 June	World Blood Donor Day	Recognizes the importance of blood donation and appreciates blood donors worldwide.
14 June	Mithuna Sankranti	Celebrated in Odisha, India, it marks the onset of monsoon season and celebrates womanhood.

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Date	Event	Details and Significance
15 June	World Wind Day	Promotes the use of wind energy and its role in sustainable development and climate change mitigation.
15 June	World Elder Abuse Awareness Day	Raises awareness about the abuse and neglect faced by older persons globally.
17 June	World Day to Combat Desertification and Drought	Raises awareness about desertification, drought, and the need for international cooperation to combat these challenges.
18 June	Autistic Pride Day	Celebrates neurodiversity, raises awareness about autism, and promotes acceptance and autonomy for individuals on the spectrum.
19 June	World Sickle Cell Awareness Day	Raises awareness about sickle cell disease (SCD) and advocates for support and better understanding of the condition.
20 June	World Refugee Day	Raises awareness about the plight of refugees and shows support for their resilience and rights.
21 June	World Music Day	Celebrates the universal language of music and promotes its role in cultural diversity and communication.
21 June	World Hydrography Day	Raises awareness about hydrography science and the importance of accurate maritime charts and maps.
21 June	International Yoga Day	Promotes the practice of yoga for physical and mental well-being, recognized by the United Nations.
21 June	Summer Solstice	Marks the longest day of the year and the official start of summer in the Northern Hemisphere.
22 June	World Rainforest Day	Raises awareness about the importance of rainforests and the need for their conservation.

Date	Event	Details and Significance
23 June	International Olympic Day	Celebrates the Olympic Games and promotes participation in sports and physical activities.

Important Editorials of the Month

Artificial Intelligence

Why in News?

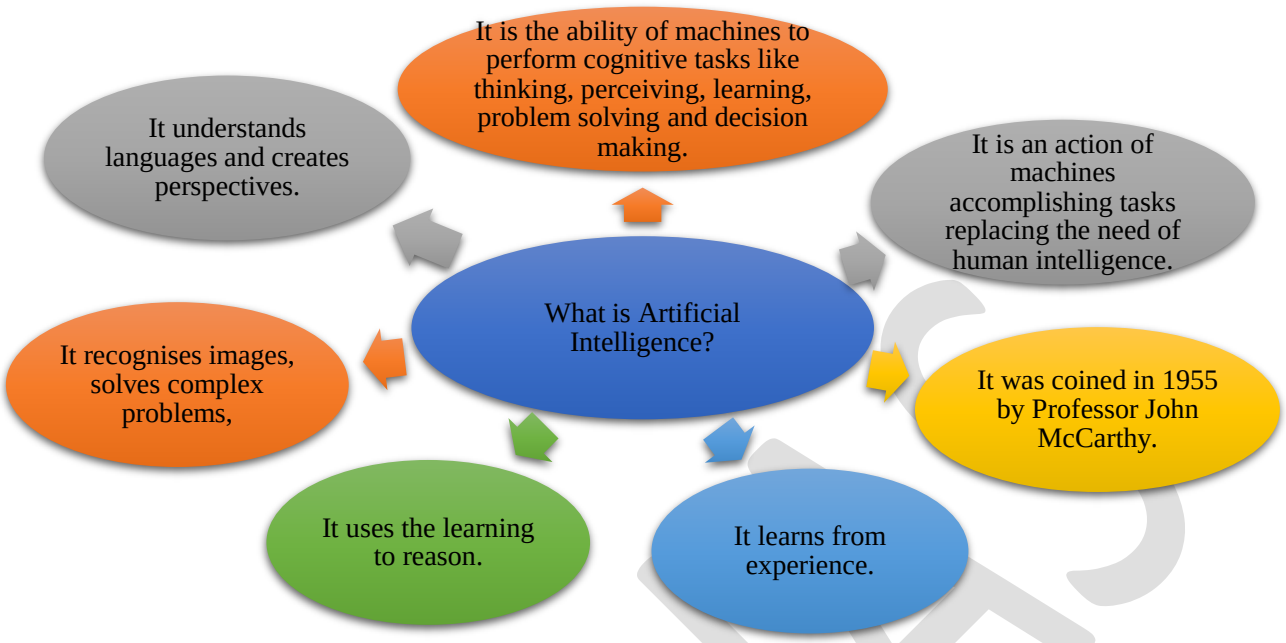
Recently it was seen in news to regulate Artificial Intelligence in India. There are many different viewpoints on AI regulation, some advocate comprehensive regulation or control while others argue that just partial regulation is presently necessary. While some people agree on control, they still differ on how much control should be imposed.

Key Highlights

- The Centre for AI Safety (CAIS) recently came up with a brief statement aimed at sparking conversation about potential existential threats posed by artificial intelligence (AI).
- More than 350 AI CEOs, academics, and engineers signed on to the statement. Top leaders from three of the largest AI start-ups – Sam Altman, CEO of OpenAI, Demis Hassabis, CEO of Google DeepMind, and Dario Amodei, CEO of Anthropic – were present.
- The announcement comes at a time when there is rising worry about the possible dangers of artificial intelligence.
- Any regulation of artificial intelligence (AI) in India would be done through the "prism of user harm".
- Recently, Minister of State for Electronics and Information Technology expressed doubts about AI applications in their current form replacing jobs at a significant level.
- He further said that the government will not let platforms that cause harm to digital nagriks (citizens) to operate in India. If these companies operate, they will have to mitigate those harms.
- The minister said the growth of toxicity, illegality, criminality, and user harm has been unfettered. He also adding that the government would soon pass a new data protection Bill.
- The Minister said the government was working on the Digital India Bill. It will be recommended as a modern replacement of the Information Technology Act, 2000. He also said the draft Bill was on track to be released in June.

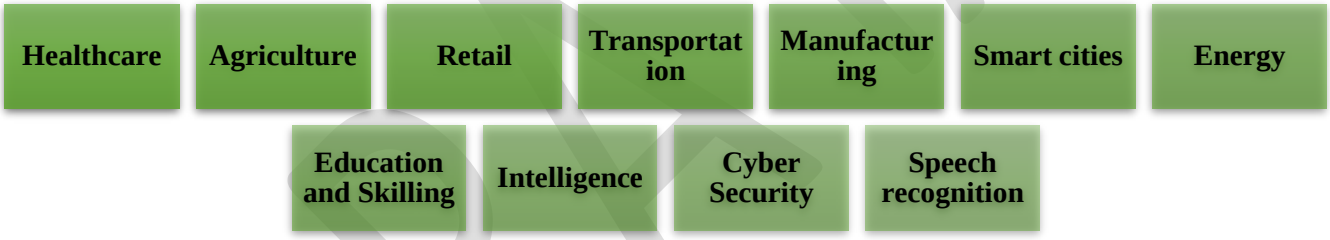
Centre for AI Safety (CAIS)

The Centre for AI Safety (CAIS), a not-for-profit based out of San Francisco, has issued a statement aimed at opening the discussion around possible risks arising out of artificial intelligence (AI).
According to CAIS, mitigating the risk of extinction from AI should be a global priority alongside other societal-scale risks such as pandemics and nuclear war.



Application of Artificial Intelligence

Artificial Intelligence can be applied in various fields. Some of the fields where AI have been applied are:



- **Health:** It can be used for diagnostic purposes for various diseases, including COVID-19, and could prove very effective in remote areas where adequate health facilities are not available.
- **Agriculture:** AI applications in agriculture have developed applications and tools which help farmers with inaccurate and controlled farming by providing them proper guidance to farmers about water management, crop rotation, timely harvesting, type of crop to be grown, optimum planting, pest control etc. use of a drone to analyze the captured images and provide a detailed report containing the current health of the farm. It helps the farmer identify pests and bacteria, helping farmers use pest control and other methods to take the required action.
- **Transport:** AI could improve the safety, speed and efficiency of rail traffic by minimising wheel friction, maximising speed and enabling autonomous driving. Tesla Cars use AI.
- **Cybersecurity**: AI systems can help recognise and fight cyberattacks and other cyber threats based on the continuous input of data, recognising patterns and backtracking the attacks.

AI Bias

Artificial Intelligence bias refers to the tendency of algorithms to reflect human biases. It is a phenomenon that arises when an algorithm delivers systematically biased results as a consequence of erroneous assumptions of the Machine Learning process. In today's climate of increasing representation and diversity, this becomes even more problematic because algorithms could be reinforcing biases.

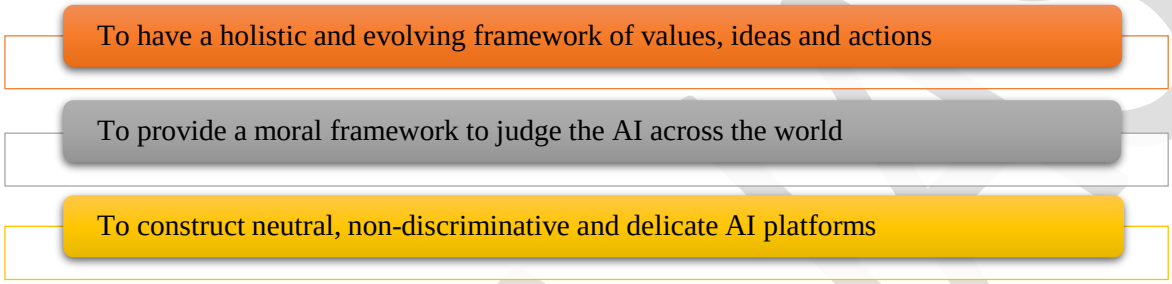
What are the types of AI Bias?

- **Cognitive bias** - These are unconscious errors in thinking that affects individuals' judgements and decisions. These biases could seep into machine learning algorithms via either designers unknowingly introducing them to the model or a training data set which includes those biases.
- **Lack of complete data** - If data is not complete, it may not be representative and therefore it may include bias. It is also difficult to find out the factor that causes the biased output due to the 'black box effect' in AI.

UNESCO's Framework for Moral AI to Counter AI Bias

It is an evolving framework encompassing all stakeholders and tries to address challenges faced by users due to systematic flaws.

Aim of this Framework



UNESCO's framework for moral AI can have a far-reaching influence within the area of AI like:

- Sensitivity to privateness and inclusion;
- Transparency, equity and non-discriminant;
- Accountability by way of participation;
- Mind-set change that helps a sustainable AI setting and a correct steadiness between enterprise development and promotion of human values.

Need of a Universal Framework for AI Ethics

The major problem is that the data and historic information are studded with biases and discrimination. It may be catastrophic as humans have certain limited capability but an ill-trained AI can leave a significant impact on worldwide infrastructure.

Chances of Racial Discrimination: Further, a bias against people of colour was found in AI of a criminal tracking network, which led to multiple misjudgments and false arrests.

Gender Bias: Different studies have been found to inherently promote gender bias. So, the AI too may pick up these lines of thinking creating a broken unreliable system.

Mode of Consent/ Right to Privacy: With extra data about individuals and sharper algorithms, better suggestions, therapies and services are possible. But it can also create a moral hazard.

- Too much data can be used by notorious elements to harm a person or his integrity and dignity.
- It is against the much debated right to privacy.
- Further, shall the pop up on Windows be considered as true consent as most users without understanding the consequences, choose to give consent through pop ups.
- The best example is the Cambridge Analytica Case where the choice of US Citizens were manipulated using data collected by Facebook.

Lack of enough Knowledge and Sensitiveness among Developers: It is a major bottleneck as the developers, themselves, know very less about their products and ethical concerns associated with it.

- The need is to involve different stakeholders on the development side of AI rather than only focusing on users.
- Effect on the users of AI:

- The newer algorithms of Google and Facebook are promoting polarisation by showing people only what they want to see.
- It is creating a less tolerant society which lives in its own bubble.

Advantages of AI	Disadvantages of AI
• **Enhanced Accuracy:** AI algorithms can analyze vast amounts of data with precision, reducing errors and improving accuracy in various applications, such as diagnostics, predictions, and decision-making. • **Improved Decision-Making**: AI provides data-driven insights and analysis, assisting in informed decision-making by identifying patterns, trends, and potential risks that may not be easily identifiable to humans. • **Innovation and Discovery:** AI fosters innovation by enabling new discoveries, uncovering hidden insights, and pushing the boundaries of what is possible in various fields, including healthcare, science, and technology. • **Increased Productivity:** AI tools and systems can augment human capabilities, leading to increased productivity and output across various industries and sectors. • **Continuous Learning and Adaptability:** AI systems can learn from new data and experiences, continually improving performance, adapting to changes, and staying up-to-date with evolving trends and patterns. • **Exploration and Space Research:** AI plays a crucial role in space exploration, enabling autonomous spacecraft, robotic exploration, and data analysis in remote and hazardous environments.	• **Job Displacement:** AI automation may lead to the displacement of certain jobs as machines and algorithms can perform tasks that were previously done by humans. This can result in unemployment and require re-skilling or retraining of the workforce. • **Ethical Concerns:** AI raises ethical concerns such as the potential for bias in algorithms, invasion of privacy, and the ethical implications of autonomous decision-making systems. • **Reliance on Data Availability and Quality:** AI systems heavily rely on data availability and quality. Biased or incomplete data can lead to inaccurate results or reinforce existing biases in decision-making. • **Security Risks:** AI systems can be vulnerable to cyber-attacks and exploitation. Malicious actors can manipulate AI algorithms or use AI-powered tools for nefarious purposes, posing security risks. • **Overreliance:** Blindly relying on AI without proper human oversight or critical evaluation can lead to errors or incorrect decisions, particularly if the AI system encounters unfamiliar or unexpected situations. • **Lack of Transparency:** Some AI models, such as deep learning neural networks, can be difficult to interpret, making it challenging to understand the reasoning behind their decisions or predictions (referred to as the "black box" problem). • **Initial Investment and Maintenance Costs:** Implementing AI systems often requires significant upfront investment in infrastructure, data collection, and model development. Additionally, maintaining and updating AI systems can be costly.

Examples of Artificial Intelligent Technologies?

- **Robotics and Automation:** Robots can be programmed to perform high-volume, repeatable tasks normally performed by humans.
- **Natural Language Processing (NLP)** is the processing of human language by a computer program. For example, spam detectors look at the subject line and text of an email in order to decide whether it is junk.
- **Pattern recognition** is a subset of machine learning that seeks to identify patterns in data. For example, a machine learning program can differentiate cats from dogs among 1000 images of cats and dogs through pattern recognition like face, whiskers, etc.
- **Machine vision** is the science of giving computers a vision by capturing and analyzing visual information using a camera, analog-to-digital conversion, and digital signal processing. It is mostly compared to human eyesight, however, machine vision is not constrained by biology = it can even be programmed to see through walls.

India and AI

During the G20 Osaka Summit, the Prime Minister of India laid importance on Digital Economy & Artificial Intelligence. He emphasised the government's reliance on the 5 'I's which are:

- Inclusiveness
- Indigenization
- Innovation
- Investment in infrastructure
- International cooperation in developing these two areas.
- According to Global AI Report 2019, India is 9th in terms of the number of AI specialists working in the field. US, China and UK topped.

Various Initiatives

- CBSE has AI as an elective subject for its 9th Class.
- IIT Hyderabad is the 1st Indian Educational Institute starting B Tech in AI. It is 3rd in the World after Carnegie University and MIT.
- IIIT Hyderabad has also introduced popular executive programmes on AI, Machine Learning and Blockchain.
- Defence, IBM's Blue Project, many startups are now foraying into AI.
- It is estimated that AI will add 957 billion $ to India's GDP by 2035 boosting India's annual growth by 1.3% points.

Steps Were Taken By The Government To Promote Artificial Intelligence

- In the 2018-19 Budget, Govt mandated NITI to establish National Program on AI.
- Budget 2018 announced funds for AI, machine learning, robotics and the IoT sector.
- Within the Indian context, a number of key indicators from health, education and agriculture sectors are important to highlight as AI is further adopted. India has 0.8 per thousand doctor-to-patient ratio (UK: 2.8, Australia: 5, China: approximately 4). This low ratio implies a heavy workload on Indian doctors. In India, doctors spend just 2 minutes per patient, whereas in the US it is close to 20 minutes. AI could be a valuable assistive tool for doctors in helping reduce their workload and assisting in diagnosis.
- Al-assisted diagnostics can provide access to quality healthcare for people in remote areas. The per hectare cereal productivity in India is almost half that of China and UK (3000 kg/ha vs. over 6000 kg/ha). There is a significant loss of productivity due to pests and diseases.
- The Tamil Nadu e-Governance Agency has partnered with Anna University to launch a Tamil smart assistant called `Anil". This NLP-based smart assistant provides a step-by-step guide to people in helping them apply online for scores of critical government services. The Tamil Nadu Government has been one of the pioneers in using AI for public service delivery.
- The agency has recently launched an Al-based agricultural pest and disease identification system and made it available to over half a million farmer families through a mobile app. The farmer clicks an image of diseased crop or a pest and the system processes the image through an AI algorithm to identify the pest or disease and sends a message to the farmer advising the remedial measure. This system is gaining a good field response in which nearly 400 fanners are posting identification requests and getting answers every day.
- The Tamil Nadu Government is implementing an innovative use of AI through face recognition for recording attendance. The system is saving more than 45 minutes per day and is freeing up extra time for core educational activities in schools. Within healthcare, AI solutions such as radiographic diagnostics like "detection of internal bleeding in the brain from CT scans" are being tried to assist doctors and increase their reach to serve remote areas of India.

Initiatives by NITI Aayog

✓ **NITI Aayog's National Strategy for Artificial Intelligence, 2018**

- This strategy was being recommended by the Artificial Intelligence task force headed by V. Kamakoti.
- 5 Core areas for application of AI are Agriculture, Education, Health, Smart cities/ infrastructure; Transport with AI.
- India has the potential to become an AI garage or solution provider for 40% of the World.
- Application of AI: Cancer report, Reroute traffic, Telling Farmers where to store, Dropout.
- It doesn't talk about funding. The institutional structure of CERN is like a multinational lab.
- Challenges: Only 4% of AI professionals trained in Emerging technologies; low H Index (citation) and Data sets.

✓ **2019 NITI Aayog circulated the cabinet note**

- To establish a cloud computing platform called AIRAWAT.
- AIRAWAT stands for Artificial Intelligence Research, Analytics and Knowledge Assimilation Platform.
- It is a part of the goal of making India a pioneer amongst emerging economies wrt AI and transforming sectors like education, health, agriculture, urbanization and mobility.

AIRAWAT (AI Research, Analytics and Knowledge Assimilation platform)

- In an attempt to achieve the goal of becoming a $5 Tn economy, the Indian government's think-tank NITI Aayog recently released an approach paper to set up India's first AI-specific cloud computing infrastructure called 'AIRAWAT' (AI Research, Analytics and Knowledge Assimilation platform).
- The platform aims to guide the research and development of new and emerging technologies.
- AIRAWAT will be established based on the recommendations made by the National Strategy for Artificial Intelligence (NSAI).
- Under AIRAWAT, the Indian government plans to tackle the challenges associated with lack of access to computing resources. Going ahead, the government will build AI-specific compute infrastructure to help Centres of Research Excellence (COREs), International Centers Transformational AI (ICRAIs) and Innovation Hubs.

✓ **National Strategy for Artificial Intelligence 2015-20**

- NITI Aayog has published the National Strategy for Artificial Intelligence wherein it has identified five core areas for the application of Artificial Intelligence.

✓ **Kamakoti Committee**

- Set up digital data banks, marketplaces and exchanges to ensure the availability of cross-industry information.
- Data ombudsman: to address data-related issues and grievances.
- Ensure availability of funds for R&D
- Setting up National Artificial Intelligence Mission (N-AIM)
- The Commerce and Industry Ministry has also set up task forces to explore the use of AI and Big Data technologies.

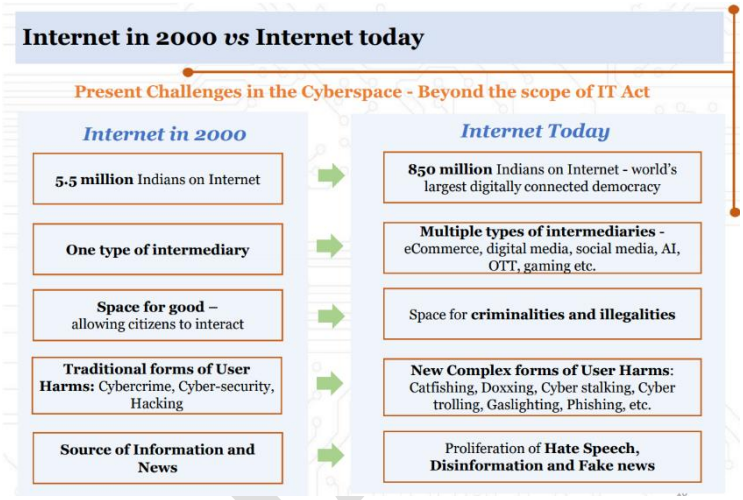
Threats with the AI

Threats which are associated with AI are discussed below:

- **Hallucinations:** These are the errors that AI models can make because they are not human and rely on data and training to provide answers. Sometimes, generative AI models can produce outputs that are nonsensical, inaccurate, or misleading.
- **Deepfakes:** These are the synthetic media that generative AI models can create by manipulating or combining existing images, videos, or audio. Deepfakes can be used for malicious purposes such as spreading disinformation, impersonating people, or blackmailing.
- **Data Privacy:** Generative AI models require large amounts of data to learn and generate outputs. However, this data may contain sensitive or personal information that can be compromised or misused by third parties. Generative AI models may also collect user data without their consent or knowledge.

- **Cybersecurity:** Generative AI models can be used by hackers to create new and complex types of malwares, phishing schemes, or other cyberattacks that can evade conventional security measures. Such attacks can have serious consequences such as data breaches, financial losses, or reputational damage.
- **Copyright issues:** Generative AI models can create content that resembles or copies existing human-made content, such as text, music, or art. This can raise ethical and legal questions about the ownership, attribution, and rights of the original and generated content.

Challenges to India's Artificial Intelligence Development?

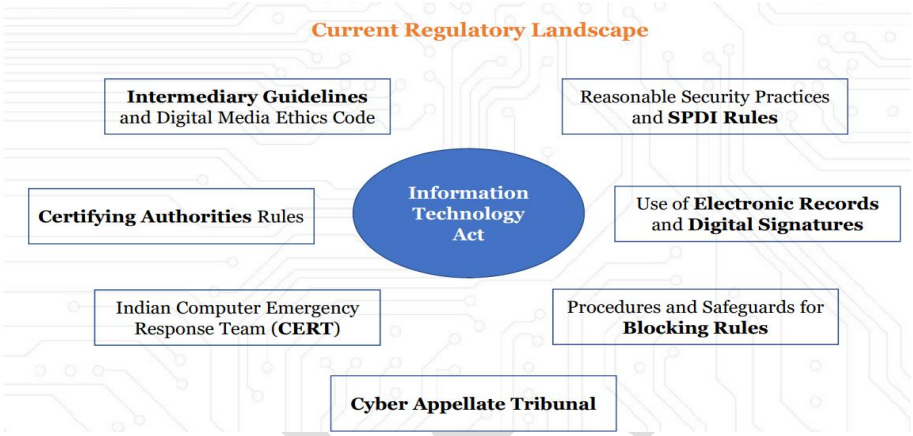


- ✓ There is a lack of communication and collaboration between many stakeholders which hinders a natural developmental progression.
- ✓ Concerns about data privacy and security, as well as a lack of formal regulation regarding data anonymization.
- ✓ Lack of awareness about AI. The vast majority of Indians have no idea what Artificial Intelligence (AI) is or how it operates, and the benefits it may provide for businesses, governments, and individuals. This is mainly because AI is only just beginning to enter mainstream consciousness in other countries too.
- ✓ Difficulty with adoption is a reality. Indian businesses generally lack the resources required to implement AI systems and complex machines. For example, many companies don't have enough data scientists on their teams to analyze customer data and build algorithms that can predict future events based on historical data sets.
- ✓ Another setback is the lack of resources and resource costs. There is a shortage of trained professionals who are proficient in Artificial Intelligence techniques like machine learning and deep learning(a subset of machine learning). As a result, organizations are unable to hire people with relevant skill sets or develop in-house talent quickly enough to keep up with the competition.
- ✓ Computing infrastructure is scarce and generates huge costs, making it difficult to build, train, and deploy AI-based services. Despite its rapid growth, cloud infrastructure has limited capabilities.

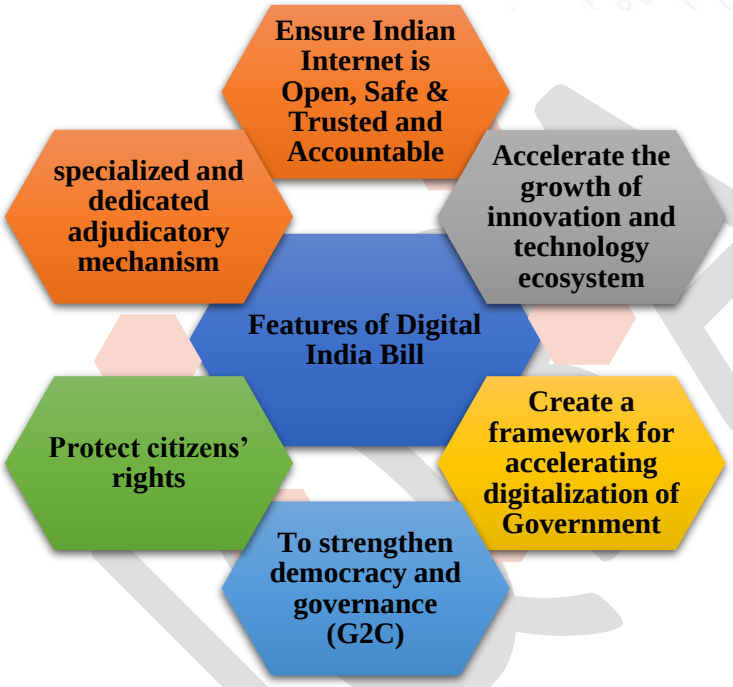
Regulations related to AI?

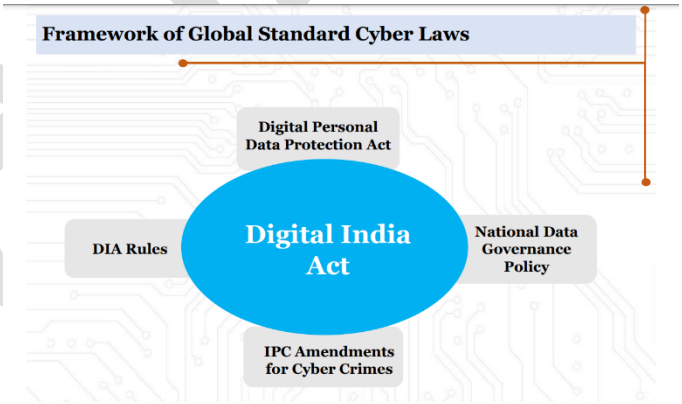
- Currently, India has no codified laws, statutory rules or regulations, or even government-issued guidelines, that regulate AI.
- The obligations on this subject are set out in the Information Technology Act 2000 under Sections 43A and 72A which protects personal data.
- The NITI Aayog has come up with a list of seven principles for responsible AI that includes principles of:
  - safety and reliability,
  - equality,
  - inclusivity and non-discrimination,
  - privacy and security,
  - transparency,
  - accountability and
  - protection and reinforcement of positive human values.
- These principles are expected to safeguard the public interest and promote innovation through increased trust and adoption.

- Of late, the, Ministry of Electronics and Information Technology (MEITY) has constituted a few committees and has also released a strategy for the introduction, implementation and integration of AI into the mainstream.
- Similar to GDPR, Sections 43A and 72A of the Information Technology Act 2000 provides a right to compensation for unauthorized disclosure of personal information.
- The right to privacy was deemed a fundamental right protected by the Indian Constitution in 2017 by the Honorable Supreme Court.
- New Education Policy places a strong emphasis on starting to teach coding to pupils as early as Class VI.
- In the coming years, India will serve as a center for cutting-edge AI technologies.



Proposed Digital India Act, 2023





Reasons for Regualting AI?

- Current regulatory system not well equipped: The current regulatory system may not be equipped to deal with the risks posed by AI, especially in areas such as privacy and competition.
- Develop regulations in collaboration: Governments need to work with tech companies to develop regulations that ensure the responsible development and deployment of AI systems.
- Balanced regulations: The regulation needs to be adaptive, flexible and balance between the benefits and risks of AI technology. This way, AI technology can be developed while taking into account societal concerns.
- Privacy Concerns and responsible usage: AI-based systems, such as facial recognition technology, raise concerns related to privacy and surveillance. Governments need to develop regulations that protect citizen privacy and ensure that data is collected and used in a responsible way.

- Risk assessment: Risk assessment could help in determining the risks of AI-based systems and developing regulations that address those risks.
- For instance: Europe's risk assessment approach may serve as a useful model for India to develop such regulations.
- AI powered checks and balance: The dominance of Big Tech in the tech landscape raises concerns of monopolization and the potential for deepening their control over the market. However, the presence of multiple players in the AI field generates checks and balances of its own.
- Healthy market for AI technology: The development of new players and competitors can promote innovation and ensure a healthy market for AI technology.

Way Forward

- A **"whole of society" approach** to AI governance will enable us to develop broad-based ethical principles, cultures and codes of conduct, to ensure the needed harm-mitigating measures, reviews and audits during design, development and deployment phases, and to inculcate the transparency, accountability, inclusion and societal trust for AI to flourish and bring about the extraordinary breakthroughs it promises.
- **The UN Secretary-General's Roadmap on Digital Cooperation:** It could become a good starting point as it lays out the need for multi-stakeholder efforts on global cooperation so AI is used in a manner that is "trustworthy, human rights-based, safe and sustainable, and promotes peace.
    - UNESCO has also developed a global, comprehensive standard-setting draft Recommendation on the Ethics of Artificial Intelligence to Member States for deliberation and adoption.
- **NITI Aayog's Report** recognises that our digital future cannot be optimised for good without multi-stakeholder governance structures that ensure the dividends are fair, inclusive, and just.
    - NITI Aayog has decided to focus on five sectors that are envisioned to benefit the most from AI in solving societal needs:
        - Healthcare
        - Agriculture
        - Education
        - Smart cities and infrastructure
        - Smart mobility and transportation

Cyclone Biparjoy

Why in News?

- As Cyclone Biparjoy barrels towards Gujarat, the State government has shifted nearly 21,000 people from coastal areas to safer places.
- According to the India Meteorological Department, Cyclone Biparjoy weakened from an extremely severe cyclone to a very severe cyclone on Tuesday.
- It is expected to cross Saurashtra and Kutch in Gujarat and the adjoining Pakistan coast between Mandvi in Gujarat and Karachi in Pakistan near the Jakhau port (Gujarat) in the evening of June 15 with a maximum sustained wind speed of 125-150 kmph.
- The Gujarat government has deployed teams from the National Disaster Response Force (NDRF) and the State Disaster Response Force and created over 500 temporary shelters in eight coastal districts.
- Nearly 6,500 were evacuated in Kutch district, followed by 5,000 in Devbhumi Dwarka, 4,000 in Rajkot, 2,000 in Morbi, more than 1,500 in Jamnagar, 550 in Porbandar and 500 in Junagadh district, according to information.

What is Cyclone Biporjoy?

- Cyclonic storm named Biparjoy has developed in the Arabian Sea. It is a **tropical cyclone**.
- Cyclone Biparjoy, which is expected to generate **wind speeds of 125-135 kmph** with gusts reaching up to 150 kmph by the time it reaches land.
- It was stationed about 850 km west of Goa and 900 km southwest of Mumbai.

- The cyclone is predicted to gain in strength over the next three days and develop into a very severe cyclonic storm by June 13.
- A deep depression over the southeast Arabian Sea intensified into a cyclonic storm 'Biparjoy', said the India Meteorological Department (IMD).
- It would result in squally weather with wind speeds reaching 35-45 kmph along the coastline of Karnataka, Goa, and Maharashtra.

Why Was It Named Biparjoy?

Origin of Cyclone Biparjoy's Name	•'Biparjoy' was suggested by Bangladesh and the word means 'disaster' or 'calamity' in Bengali. The next cyclone after Biparjoy will be named 'Tej' based on India's suggestion.
Rotational Basis for Naming	•The naming of cyclones is done by countries on a rotational basis, following certain existing guidelines.
Next Cyclone Name	•After Bangladesh, the next cyclone will be named 'Tej' based on India's suggestion.

Naming A Cyclone

- Worldwide there are six Regional Specialised Meteorological Centres (RSMCs) and five regional Tropical Cyclone Warning Centres (TCWCs) mandated for issuing advisories and naming of tropical cyclones. The tropical cyclones forming over different Ocean basins are named by the concerned RSMCs & TCWCs.
- India Meteorological Department is one of the six RSMCs to provide tropical cyclone and storm surge advisories to 13 member countries under WMO/ESCAP Panel including Bangladesh, India, Iran, Maldives, Myanmar, Oman, Pakistan, Qatar, Saudi Arabia, Sri Lanka, Thailand, United Arab Emirates and Yemen.
- RSMC, New Delhi is also mandated to name the Tropical Cyclones developing over the north Indian Ocean (NIO) including the Bay of Bengal (BoB) and the Arabian Sea (AS).

Criteria for Name Selection

The proposed name should be neutral to

(a) Politics and political figures
(b) Religious believes,
(c) Cultures and
(d) Gender

Name should be chosen in such a way that it does not hurt the sentiments of any group of population over the globe.

- It should not be very rude and cruel in nature.
- It should be short, easy to pronounce and should not be offensive to any member.
- The maximum length of the name will be eight letters.
- The proposed name should be provided alongwith its pronunciation and voice over.

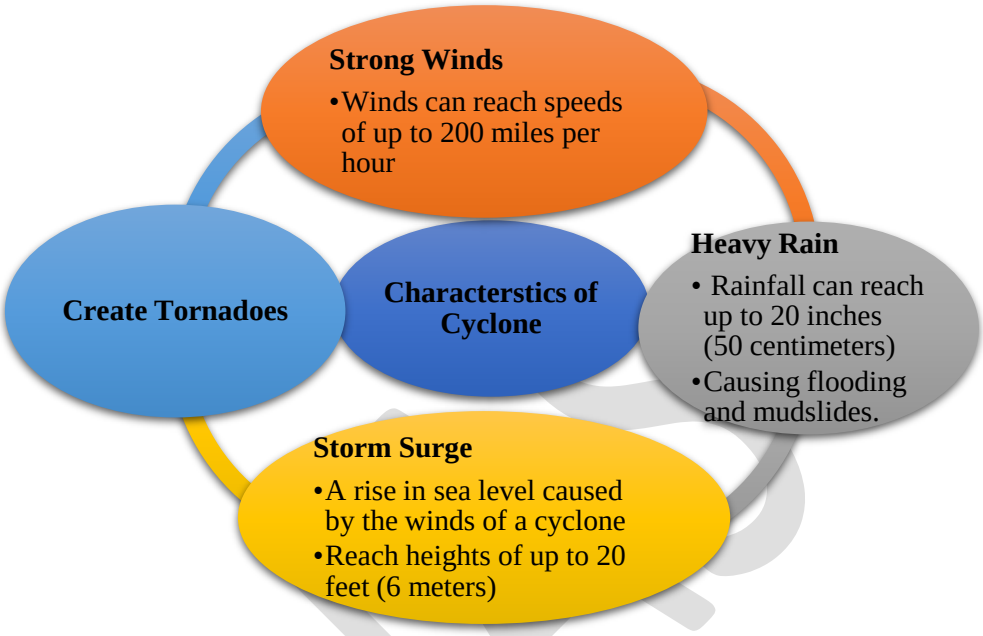
If a cyclone is particularly strong or destructive, it may be given a special name, such as "Super Cyclone" or "Cyclone Nargis." These names are not included in the regular list of names.

The naming of cyclones is an important part of disaster preparedness. It helps to raise awareness of the cyclone and its potential impact, and it can also help to coordinate relief efforts.

What Is a Cyclone?

- A cyclone is a large-scale system of air that rotates around the centre of a low-pressure area.
- It is usually accompanied by violent storms and bad weather.

- As per NDMA, a cyclone is characterised by inward spiralling winds that rotate anticlockwise in the Northern Hemisphere and clockwise in the Southern Hemisphere.
- In meteorology, a cyclone is a large air mass that rotates around a strong center of low atmospheric pressure.
- Cyclones are characterized by inward-spiraling winds that rotate about a zone of low pressure.
- The largest low-pressure systems are polar vortices and extratropical cyclones of the largest scale (the synoptic scale).



- Some of the most recent cyclones that have hit India other than Biporjoy are:

Cyclone Asani: This cyclone hit India in May 2022. It caused widespread damage in the states of Andhra Pradesh and Odisha.

Cyclone Gulab: This cyclone hit India in September 2021. It caused widespread damage in the states of Gujarat and Rajasthan.

Cyclone Tauktae: This cyclone hit India in May 2021. It caused widespread damage in the states of Gujarat, Maharashtra, and Goa.

Type of Cyclone

There are many different types of cyclones, but they can be broadly classified into two categories:

- Tropical
- Extra tropical.

Table below summarizes the main differences between tropical and extra tropical cyclones:

Feature	Tropical cyclone	Extratropical cyclone
Location	Warm tropical waters	Temperate or polar regions
Intensity	Strong winds, heavy rain, storm surge	Strong winds, heavy rain, snow
Size	Small	Large

Season	Tropical cyclone season: June-November	Extratropical cyclone season: all year round

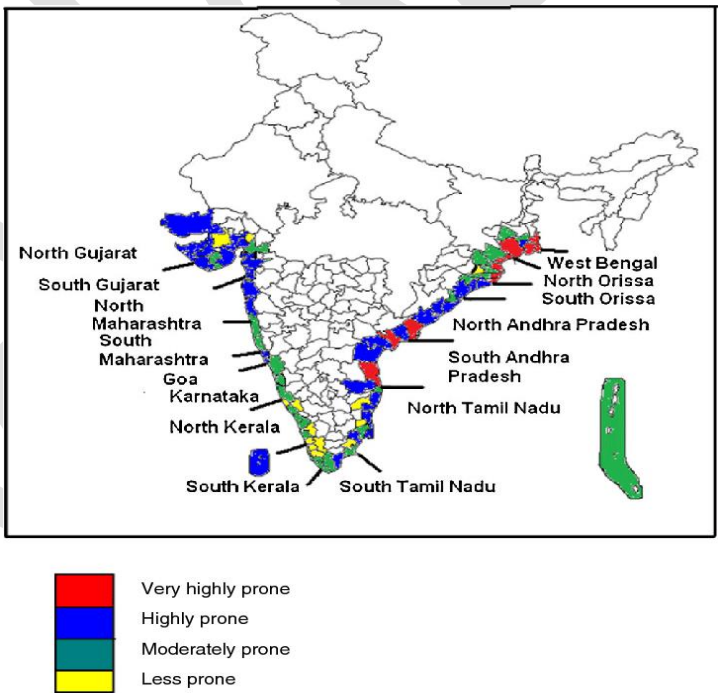
What are Tropical Cyclones?

The Tropical Cyclones are violent storms that originate over oceans in tropical areas and move over to coastal areas bringing about large-scale destruction caused by violent winds, very heavy rainfall and storm surges.

- These are low pressure weather systems in which winds equal or exceed speeds of 62kmph.
- Winds circulate around in anti-clockwise direction in the Northern Hemisphere and in clockwise direction in the Southern Hemisphere.
- "Tropical" refers to the geographical origin of these systems, which form almost exclusively over tropical seas.
- "Cyclone" refers to their winds moving in a circle, whirling round their central clear eye, with their winds blowing counter clockwise in the Northern Hemisphere and clockwise in the Southern Hemisphere.
- The opposite direction of circulation is due to the Coriolis Effect.

Tropical Cyclones in India

- Tropical cyclones striking India generally originate in the eastern side of India.
- Bay of Bengal is more prone to cyclone than Arabian Sea because it gets high sea surface temperature, low vertical shear winds and has enough moisture in middle layers of its atmosphere.
- The frequency of cyclones in this region is bi-modal, i.e., Cyclones occur in the months of May–June and October–November.



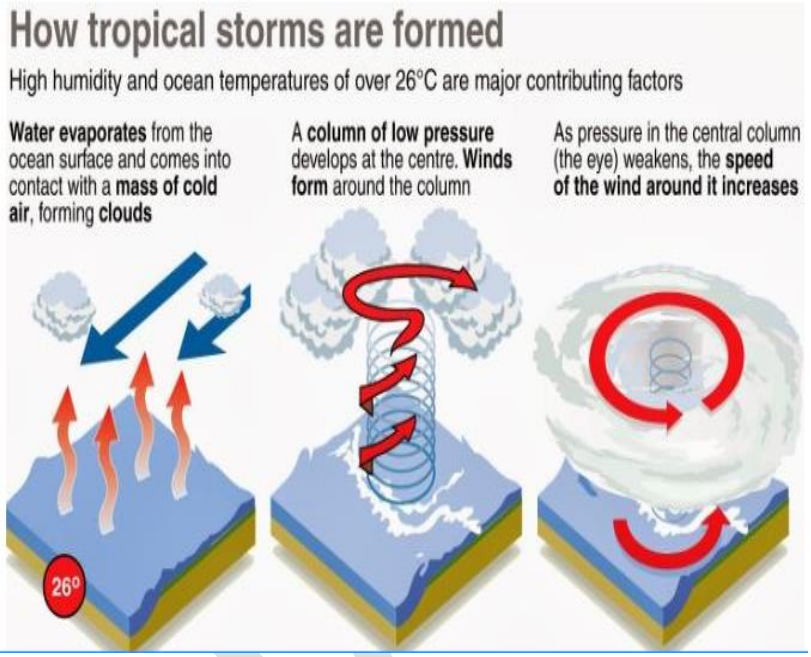
Conditions for Cyclone Formation

- A warm sea surface (temperature in excess of 26 – 27 degree Celsius) and associated warming extending up to a depth of 60m with abundant water vapour.
- High relative humidity in the atmosphere up to a height of about 5,000 metres.
- Atmospheric instability that encourages the formation of cumulus clouds.
- Low vertical wind between the lower and higher levels of the atmosphere that do not allow the heat generated and released by the clouds to get transported from the area.
- The presence of cyclonic vorticity (rate of rotation of air) that initiates and favours rotation of the air cyclonically.
- Location over the ocean, at least 4–5-degree latitude away from the equator.

How are Tropical Cyclones Formed?

- Tropical cyclones typically form over large bodies of relatively warm water. Warm water > Evaporation > Rising up of air > Low Pressure area.

- They derive their energy through the evaporation of water from the ocean surface, which ultimately re-condenses into clouds and rain when moist air rises and cools to saturation.
- Water takes up heat from the atmosphere to change into vapour.
- When water vapour changes back to liquid form as raindrops, this heat is released to the atmosphere.
- The heat released to the atmosphere warms the air around.
- The air tends to rise and causes a drop in the pressure.
- More air rushes to the centre of the storm.
- This cycle is repeated.



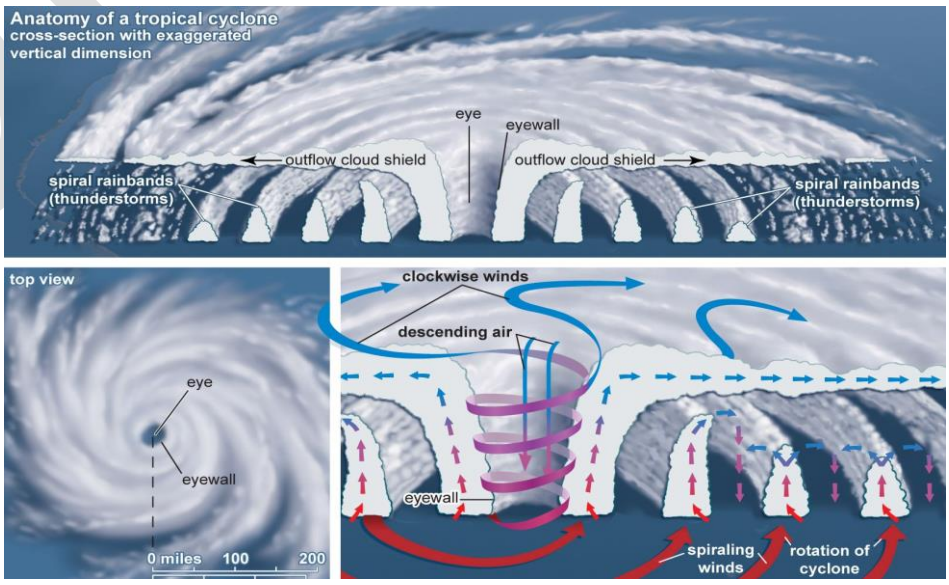
Why Tropical Cyclones Don't Form In The Eastern Tropical Oceans?

- The depth of warm water (26-27°C) should extend for 60-70 m from surface of the ocean/sea, so that deep convection currents within the water do not churn and mix the cooler water below with the warmer water near the surface.
- The above condition occurs only in western tropical oceans because of warm ocean currents (easterly trade winds pushes ocean waters towards west) that flow from east towards west forming a thick layer of water with temperatures greater than 27°C. This supplies enough moisture to the storm.
- The cold currents lower the surface temperatures of the eastern parts of the tropical oceans making them unfit for the breeding of cyclonic storms.

EXCEPTION: During strong El-Nino years, strong hurricanes occur in the eastern Pacific. This is due to the accumulation of warm waters in the eastern Pacific due to weak Walker Cell.

Structure of Cyclone

Tropical cyclones are compact, circular storms, generally some 320 km (200 miles) in diameter, whose winds swirl around a central region of low atmospheric pressure. The winds are driven by this low-pressure core and by the rotation of Earth, which deflects the path of the wind through a phenomenon known as the Coriolis force. As a result, tropical cyclones rotate in a counter clockwise (or cyclonic) direction in the Northern Hemisphere and in a clockwise (or anticyclonic) direction in the Southern Hemisphere.



- **The Eye:** A characteristic feature of tropical cyclones is the eye, a central region of clear skies, warm temperatures, and low atmospheric pressure. Typically, atmospheric pressure at the surface of Earth is about 1,000 millibars.
- **The Eyewall:** The most dangerous and destructive part of a tropical cyclone is the eyewall. Here winds are strongest, rainfall is heaviest, and deep convective clouds rise from close to Earth's surface to a height of 15,000 metres.
- **Rainbands:** These bands, commonly called rainbands, spiral into the centre of the storm. In some cases, the rainbands are stationary relative to the centre of the moving storm, and in other cases they seem to rotate around the centre.
- **Updraft:** The updraft is a column of rising air that extends from the surface of the ocean to the top of the storm. The updraft is what powers the storm.
- **Outflow:** The outflow is a stream of air that flows away from the top of the storm. The outflow helps to keep the storm from getting too large.

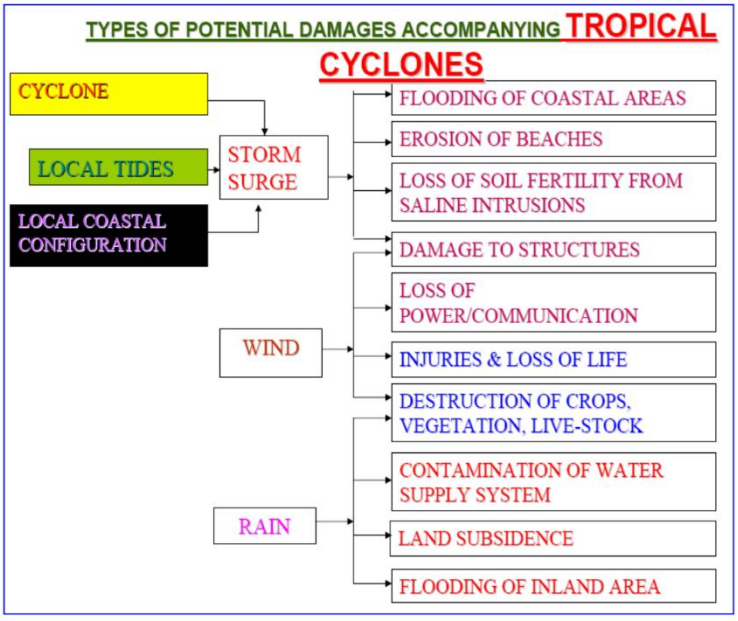
  The structure of a tropical cyclone can change over time. For example, the eye can grow or shrink, and the eyewall can become weaker or stronger. These changes can affect the intensity of the storm.

  Tropical cyclones are classified by their maximum sustained surface winds. The Saffir-Simpson Hurricane Wind Scale is used to classify tropical cyclones in the Atlantic Ocean and the Eastern Pacific Ocean. The scale has five categories, with Category 1 being the weakest and Category 5 being the strongest.

Damage Caused by Tropical Cyclone

IMD has issued a "red" alert for the Saurashtra and Kutch coasts in Gujarat, anticipating "extensive" damage. However, the concern extends beyond the immediate impact, raising questions about the need to enhance infrastructure development and economic policymaking in the Asian country in response to the rising frequency of cyclones, a visible consequence of global warming.

As per the previous events the following highlight the impact of a cyclone:



- **Loss of life:** Cyclones can cause widespread loss of life, especially in coastal areas where people live in low-lying areas that are vulnerable to flooding.
- **Damage to property and infrastructure:** Cyclones can cause extensive damage to property and infrastructure, including homes, businesses, schools, hospitals, and roads.
- **Disruption of transportation and communication:** Cyclones can disrupt transportation and communication, making it difficult for people to get to safety or receive assistance.
- **Floods and landslides:** Cyclones can cause flooding and landslides, which can further damage property and infrastructure and endanger people's lives.
- **Water contamination and spread of disease:** Cyclones can contaminate water supplies, which can lead to the spread of diseases such as cholera and typhoid.
- **Agriculture:** An important aspect of India's economy, bears the most due to cyclonic destruction. Crops are ravaged and fertile lands are transformed into wastelands overnight.
- **Other Losses:** Healthcare services struggle to cope with the influx of injured and displaced individuals. Power outages plunge communities into darkness, while disrupted water supply systems leave residents parched.

Challenges Of Evacuating People From Coastal Areas And The Importance Of Early Warning Systems

Evacuating people from coastal areas can be a challenging task, due to a number of factors, including:

- **Population density:** Coastal areas are often densely populated, which can make it difficult to evacuate everyone in a timely manner.
- **Limited transportation options:** Coastal areas may not have adequate transportation options to evacuate everyone quickly.
- **Special needs populations:** Some people, such as the elderly, disabled, and those with young children, may need special assistance to evacuate.
- **Communication challenges:** Communication challenges can arise during an evacuation, such as power outages or cell phone service disruptions.
- **Disaster fatigue:** People who have lived through multiple disasters may become desensitized to the risk and may be less likely to evacuate.

India has a well-developed early warning system for cyclones. The system is operated by the India Meteorological Department (IMD) and includes a network of weather stations, satellites, and radars. The IMD issues warnings for cyclones in three stages:

- **Pre-cyclone watch (Yellow):** This is issued 72 hours in advance of the expected landfall of a cyclone.
- **Cyclone alert (Orange):** This is issued 48 hours in advance of the expected landfall of a cyclone.
- **Cyclone warning (Red):** This is issued 24 hours in advance of the expected landfall of a cyclone.

The IMD also issues warnings for other types of severe weather, such as thunderstorms, floods, and landslides. The early warning system has been effective in saving lives and property.

- For example, the IMD's warnings were credited with saving thousands of lives during the 2004 Indian Ocean tsunami.
- Early warning systems can help to mitigate the challenges of evacuating people from coastal areas.
- Early warning systems can provide advance notice of an impending disaster, giving people time to evacuate safely.
- Early warning systems can also help to identify areas that are at risk, so that people can take steps to protect themselves and their property.

Cyclone Management in India

India is highly vulnerable to natural disasters especially cyclones, earthquakes, floods, landslides, and drought. Natural disasters cause a loss of 2% of GDP every year in India. According to the Home ministry, 8% of total area in India is prone to cyclones. India has a coastline of 7,516 km, of which 5,700 km are prone to cyclones of various degrees.
Loss of lives, livelihood opportunities, damage to public and private property and severe damage to infrastructure are the resultant consequences, which can disrupt the process of development.

- **Indian Meteorological Department (IMD)** is the nodal agency for early warning of cyclones and floods.
- **Natural Disaster Management Authority** is mandated to deal with the disaster management in India. It has prepared National Guidelines on Management of Cyclone.
- **National Cyclone Risk Mitigation Project (NCRMP)** was launched by Home ministry to upgrade the forecasting, tracking and warning about cyclones in states.
- **National Disaster Response Force (NDRF)** has done a commendable performance in rescuing and managing relief work.
- **National Disaster Response Reserve (NDRR)** a fund of 250 crores operated by NDRF for maintaining inventory for an emergency situation.

In 2016, a blueprint of **National Disaster Management Plan** was unveiled to tackle disaster. It provides a framework to deal with prevention, mitigation, response and recovery during a disaster. According to the plan, Ministry of earth

science will be responsible for disaster management of cyclone. By this plan, India joined the list of countries which follow the Sendai Framework for Disaster Risk Reduction 2015-2030.

- Due to increased awareness and tracking of Cyclone, the death toll has been reduced substantially. For example, very severe cyclone Hudhud and Phailin claimed lives of around 138 and 45 people respectively, which might have been more.
- It was reduced due to the early warning and relocation of the population from the cyclone-hit areas. Very severe cyclone Ockhi claimed many lives of people in Tamil Nadu and Kerala. This was due to the unprecedented change in the direction of the cyclone.

But the destruction of infrastructure due to cyclonic hit is not been reduced which leads to increase in poverty due to the economic weakening of the affected population.

National Disaster Response Force (NDRF)

India before Biporjoy has faced some of its most severe natural calamities like the Orissa Super Cyclone (1999), the Gujarat Earthquake (2001), and the Indian Ocean Tsunami (2004).

This succession of events and the international environment brought to the fore, the need for a comprehensive disaster management plan. This led to the enactment of the Disaster Management Act on December 26th, 2005.

- The National Disaster Management Authority (NDMA) was constituted to lay down the **policies, plans, and guidelines** for disaster management.
- The **Disaster Management Act** has statutory provisions for the constitution of the National Disaster Response Force (NDRF) for the purpose of **specialized response to natural and man-made disasters**.
- The **Apex Body for Disaster Management** in India is the National Disaster Management Authority (NDMA).
- The **Chairman** of the NDMA is the **Prime Minister**.
- NDRF functions under the purview of the **Ministry of Home Affairs (MHA)**.
- The **head** of the NDRF is designated as **Director General**. The Director Generals of NDRF are IPS officers on deputation from Indian police organizations.
- At present, National Disaster Response Force consists of **15 battalions** from the BSF, CISF, CRPF, ITBP, SSB, and Assam Rifles.
- All 15 battalions have been equipped and trained to respond to natural as well as man-made disasters.

Battalions are also trained and equipped for a response during chemical, biological, radiological, and nuclear (CBRN) emergencies.

Role of National Disaster Response Force (NDRF)

- The strategies of pre-emptive availability and pre-positioning of teams anticipating emergency situations, facilitated by the nationwide presence of its battalions, has made sure that damages are contained.
- The NDRF is equipped and trained to handle a range of difficulties, from bore well accidents to chemical, biological and radioactive emergencies.
- NDRF has conducted relief, rescue, evacuation operations during all the major natural or man-made disasters in the country, including floods, cyclones, earthquakes, landslides, structure collapses, and even some cases of retrieval or radiological materials.
- NDRF teams have also responded to road and train accidents, and also boat capsizes.

National Disaster Management Act, 2005

The law laid down a legal framework for disaster response at the national, state, and district levels. The Act paved the way for establishing Disaster Management Authorities at the national, state, and district levels. It also provided for setting up the National Disaster Response and Mitigation Funds, and the formation of the National Disaster Response Force (NDRF).

Deadliest Railway Disaster

Why in News?

The triple train collision in Odisha's Balasore, one of the deadliest in India. The tragic train accident that occurred on June 2, 2023, at Bahanaga Bazar railway station in Odisha's Balasore district, has highlighted the urgent need for effective safety measures to prevent such devastating incidents.

Key Highlights

- The recent incident has brought attention to the Kavach initiative, which aims to enhance railway safety in India. However, the Kavach system has not been implemented on the Odisha route.
- The Indian Railways saw an average of about 1,390 accidents per year in the 1960s. The number has dramatically dropped to 80 per year in the past decade.
- More than 280 people and over 900 injured when the Shalimar-Chennai Coromandel Express, the Yesvantpur-Howrah Express and a freight train collided in the worst rail accident in two decades.
- The accident in Balasore is a disastrous sequence of mechanical failures and human errors.
- Comptroller and Auditor General of India (CAG)'s 2022 report on 'Derailments in Indian Railways' flagged multiple shortcomings on the causes of train accidents in the country.

What is an Interlocking System?

- Interlocking is an integral part of railway signalling.
- It refers to a mechanism that controls the movement of trains to ensure trains move safely through a controlled area.
- This system is an arrangement of signals and points.
- It may be inter-connected mechanically or electrically or both.
- It operates in such a way that a train can move from one track or junction to another safely, without coming in the way of another train.

Reason for Trains Collision?

- The preliminary reports suggest the crash was the result of a signal fault and a "change in electronic interlocking".
- In railway signalling the electronic interlocking system sets routes for each train in a set area, ensuring the safe movement of trains along the track.

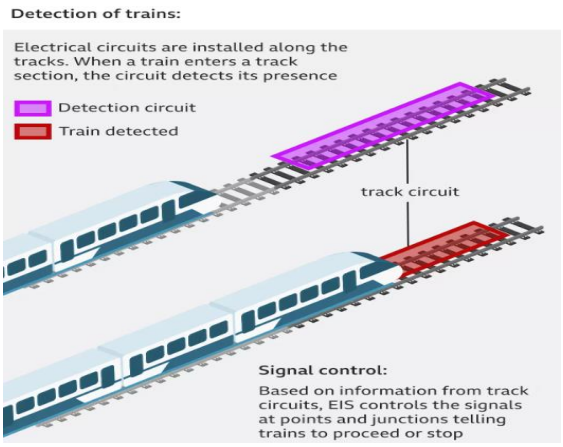
The EI Signal System Comprises Three Crucial Elements

Signal:

Based on the status of the track ahead, signals are used to tell a train to stop (red light), proceed (green), or exercise caution (yellow).

Point Control:

- A train can change its track using a point.
- These are movable sections of a track which guide the wheels towards either the straight or diverging track.
- Points are operated using switches to lead trains in the desired direction.
- For example, if a train has to change lines, the switch point is activated ahead of time and the point is locked. A point machine is a device used for locking point switches and plays an important role in the safe running of trains.



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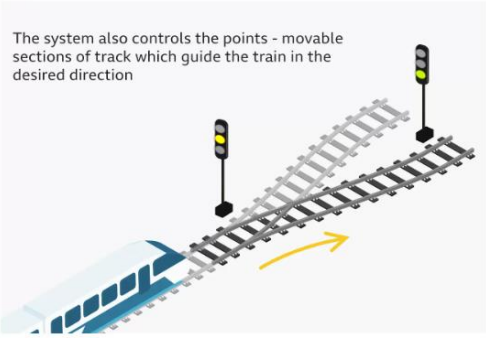
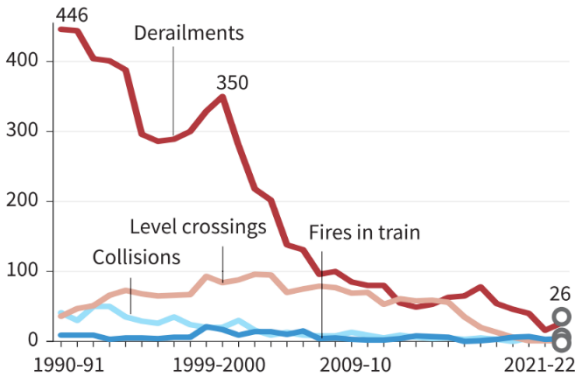
Point control:



The Balasore accident is an exception in recent years, but it also reflects the declining focus on safety measures by the Indian Railways.
CAG report reveals that the consequential train accidents between 2017-18 and 2020-21 were caused by derailments.

Chart 1 | The chart shows the year-wise number of accidents under various categories



Highlights of Chart 1

- The chart 1 shows the year wise number of accidents under various categories.
- According to the chart 1 Derailments formed close to 70% of all accidents since 1990-91, followed by level crossing accidents, collisions and fires in trains.

Various Categories of Train Accidents

Train accidents can be classified into two categories:

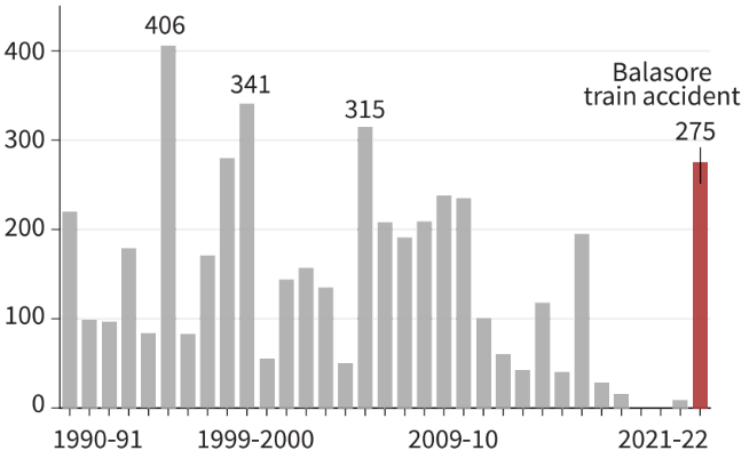
1. Consequential Train Accidents: It include accidents with significant consequences, such as loss of life, human injury, property damage, and interruption to railway traffic.
2. Other Train Accidents: It includes all accidents that do not fall under the consequential category.

Highlights of Chart 2

Chart 2 shows the number of passengers killed in consequential accidents since 1990-91.

- The tragedy in Odisha claimed more than 275 lives.
- The number of deaths in this single incident is higher than the annual fatalities of the last 16 years.
- The Railways recorded zero fatalities in 2019-20 and 2020-21 due to consequential accidents.
- In 2020, when questioned by the NITI Aayog chief about the fact that 30,000 people had died over three years due to trespassing and other untoward incidents around railway premises, the Railways said it had no control over casualties due to trespassing or negligence or carelessness on the part of passengers and that efforts were being made to sensitise the public.

Chart 2 | The chart shows the number of passengers killed in consequential accidents since 1990-91



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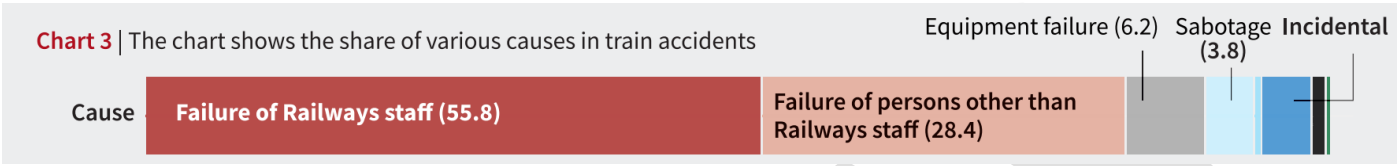
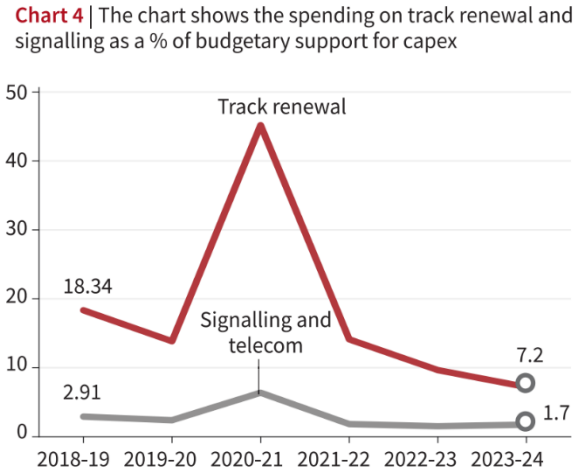
Highlights of Chart 3

- Chart 3 shows the share of various causes in train accidents.
- Notably, among the consequential train accidents, 55% had occurred due to negligence or failure of the Railways staff.
- About 28% of accidents were attributed to the failure of persons other than the Railways staff, and 6% had occurred due to equipment failure.
- A preliminary investigation has suggested a possible failure of the signalling system in the Balasore tragedy.



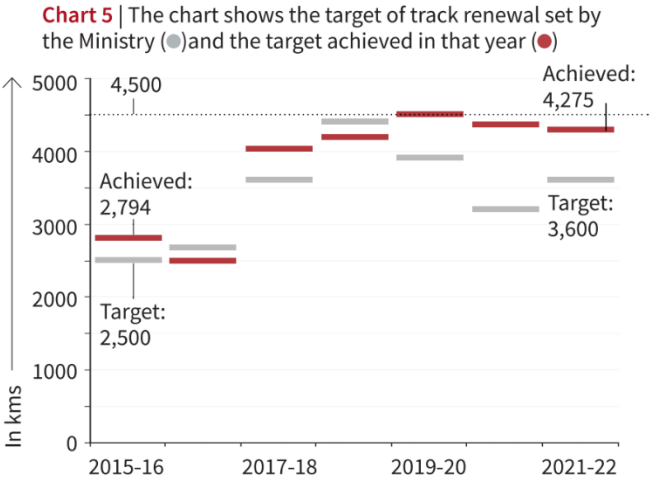
Highlights of Chart 4

- Chart 4 shows the spending on track renewal and signalling as a % of budgetary support of capex
- In the 2023-24 Union Budget, the Railways received a record allocation of ₹2.40 lakh crore.
- However, when capital expenditure on crucial activities related to safety such as track renewal and signalling and telecom are considered, their shares dwindled or stagnated over the last few years.
- Allocation for track renewal dipped to 7.2% and expenditure proposed for signalling remained at 1.7% in FY24 when considered as a share of budgetary support for capital expenditure.
- The Rashtriya Rail Sanraksha Kosh (RRSK) fund was created in 2017-18 with a corpus of ₹ 1 lakh crore to provide financial support for critical safety-related works and to curb accidents, including those at unmanned level crossings.
- A Parliamentary Standing Committee report in March 2023 observed that "appropriations to the RRSK has been falling short ever since it was introduced." The Committee also noted that the Railways did not meet the target of earmarked allocations for the previous five years.



Highlights of Chart 5

- Chart 5 shows the target of track renewal set by the Ministry and the target achieved in that year.
- The major causes of derailments are rail fractures, weld failures, track defects and rolling stock defects.
- As per a Ministry of Railways document on safety performance, the track forms the backbone of the Railways transportation system and needs to be safe.
- According to the Ministry, 4,500 km of track should be renewed annually. However, data show that the target set by the Railways is much lower than the level suggested by the white paper.
- In the past seven years, the Railways could not achieve this level barring one year.



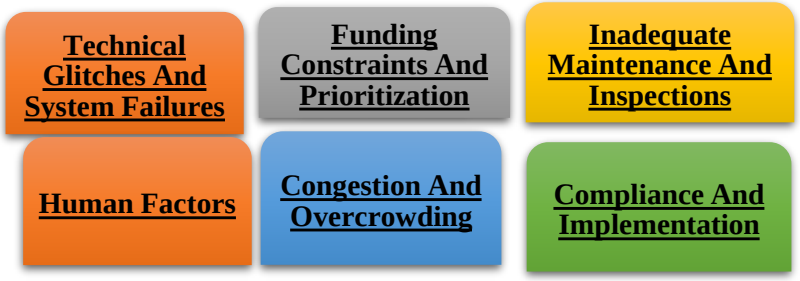
Why is the Safety of Indian Railways Important?

- **High volume of passengers:** India is the fourth-largest rail network in the world at 68,043 km and almost 3.5 billion people travel on this network annually.
  - With a massive population and millions of people relying on the railways for their daily commute, ensuring the safety of Indian Railways becomes crucial.
  - The railways carry a significant volume of passengers, and any safety lapse can have catastrophic effects, as witnessed in past accidents.
- **Economic impact:** Indian Railways is a crucial component of the country's transportation infrastructure and plays a vital role in the economy.
  - Any disruption or safety-related issues can lead to economic setbacks, affecting industries, businesses, and overall development.
- **Lifeline for economic migrants:** Trains are the lifeline for a bulk of India's poorer economic migrants.
  - Their ability to move and improve their economic prospects has a positive impact on their home states through remittances.
  - The economic survey used unreserved railway travel as a proxy for economic migration between 2011 and 2016 and concluded that the annual average inter-state migration was close to nine million.
- **Reputation and public trust:** The safety of Indian Railways is essential to maintain the public's trust and confidence in the system.
  - Instances of accidents and safety lapses can erode the reputation of the railways and result in passengers losing faith in the reliability and security of train travel.
- **International comparison:** Safety standards in Indian Railways are often compared with those of developed countries.
  - Countries like Japan, China, and several European nations have demonstrated that high safety standards are achievable.
  - The focus on safety is not only crucial for passenger well-being but also to align with global best practices and enhance India's image on the international stage.
- **Connectivity:** Indian Railways is a lifeline for connectivity, ensuring people from various regions can travel and access opportunities for economic growth.
  - Safety is crucial for fostering economic development, enabling the seamless movement of goods, and attracting investments.
- **Regulatory compliance:** Safety is a regulatory requirement and a legal obligation for Indian Railways.
  - Adhering to safety protocols and regulations is not only necessary to prevent accidents but also to comply with national and international standards, ensuring the railways operate within a framework that safeguards the well-being of passengers.

Challenges to the Safety of Indian Railways

Technical Glitches And System Failures

- The occurrence of technical glitches and system failures, such as the electronic interlocking error in the Balasore train crash, poses a significant challenge to ensuring the safety of Indian Railways.
- These issues can lead to signalling errors, track misalignment, and other critical safety hazards.



Funding Constraints and Prioritization

- The allocation and utilization of funds for safety-related works face challenges.
- The decline in funding for track renewal, diversion of funds to non-priority tasks, and constraints in the Rashtriya Rail Sanraksha Kosh pose obstacles to effectively addressing safety concerns.

Inadequate Maintenance and Inspections

- The CAG audit reports highlight shortcomings in maintenance activities, inspections, and track renewal processes.
- Shortfalls in inspections, failure to submit or accept inquiry reports after accidents, and declining funding for track maintenance contribute to safety concerns.

Congestion and Overcrowding

- The Indian Railways network experiences severe congestion, especially on major trunk routes, leading to overcrowded trains and increased risks.
- The high volume of passengers and inadequate capacity utilization can impact safety protocols and create challenges in managing passenger flow during emergencies.

Compliance and Implementation

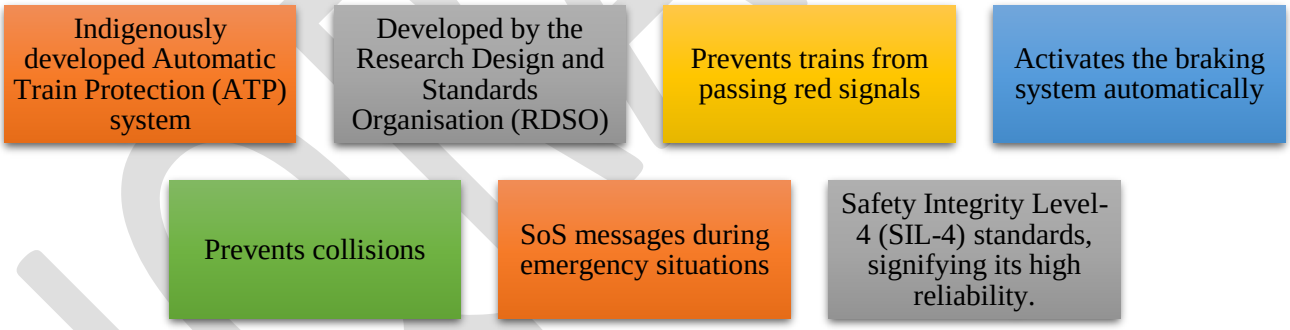
- Ensuring compliance with safety protocols and timely implementation of safety measures across the vast railway network is a complex challenge.
- The need for strict adherence to scheduled timelines for accident inquiries, acceptance of inquiry reports, and effective monitoring mechanisms are emphasized in the reports.

Human Factors

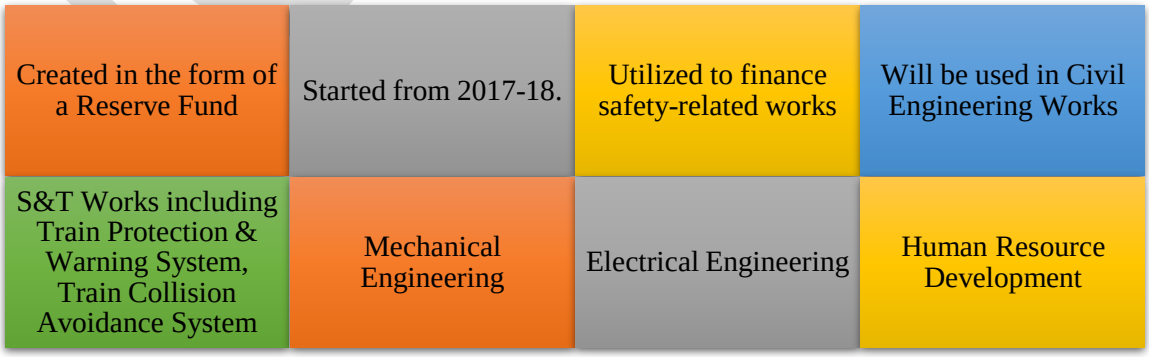
- Human error, such as the incorrect setting of points, mistakes in shunting operations, and overspeeding, has been identified as a significant factor contributing to train accidents.

Various Government Initiatives To Address The Indian Railway Safety Concerns

Kavach



Rashtriya Rail Sanraksha Kosh (RRSK)



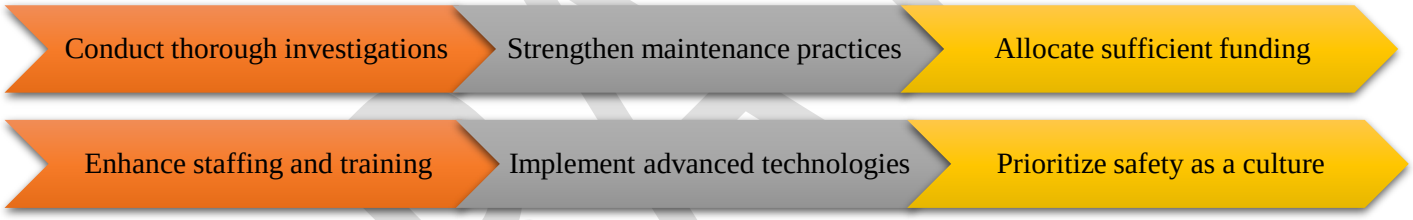
Project Mission Raftar

- It is an Indian Railway project, introduced in the Railway Budget of 2016-17 and approved by NITI Aayog in 2017.
- The goal is to double the average speed of freight trains and increase passenger train speed by 50%.
- While the focus is on improving speed, it indirectly contributes to safety by reducing travel time and potentially minimizing the risks associated with prolonged journeys.

Other Measures

- **Upgradation of infrastructure:** The government has been investing significant funds in the modernization and upgradation of railway infrastructure. This includes the electrification of railway lines, the expansion of rail networks, and the introduction of high-speed and ultra-high-speed lines, such as the Vande Bharat Express.
- **Implementation of safety measures:** Efforts have been made to implement safety measures across the railway network. These include the installation of fire and smoke detection systems in coaches, the provision of fire extinguishers, and the development of technologies like the Kavach application that aids locomotive pilots in triggering the brake system automatically.
- **Elimination of manned level crossings:** The government has been working towards the elimination of manned level crossings, which are prone to accidents. Efforts are being made to replace them with underpasses, overpasses, and other safety measures to enhance railway safety.
- **Audit reports and recommendations:** The Comptroller and Auditor General of India (CAG) periodically conducts audits of Indian Railways, identifying shortcomings and making recommendations to address safety concerns. These reports serve as a basis for corrective actions and improvements in safety protocols.

Way Forward



- ✓ **Conduct thorough investigations:** It is essential to conduct comprehensive and timely investigations into train accidents to identify the root causes and determine accountability.
  - This includes submitting and accepting inquiry reports within prescribed timelines and ensuring that the findings are made public for analysis and discussion.
- ✓ **Strengthen maintenance practices:** Prioritize track maintenance, inspections, and infrastructure upgrades to prevent derailments and ensure safe operations.
  - Implement mechanized methods of track maintenance and leverage improved technologies to enhance the efficiency and effectiveness of maintenance activities.
- ✓ **Allocate sufficient funding:** Ensure adequate funding for safety-related works, including track renewal, signalling systems, and infrastructure upgrades.
  - Proper utilization of funds from initiatives like the Rashtriya Rail Sanraksha Kosh (RRSK) should be ensured to address safety priorities effectively.
- ✓ **Enhance staffing and training:** Address staffing shortages in safety-related positions and provide comprehensive training programs for staff members involved in train operations.
  - Focus on improving skills, knowledge, and adherence to safety protocols to minimize human errors.
- ✓ **Implement advanced technologies:** Embrace advanced technologies, to enhance safety monitoring, early detection of faults, and real-time decision-making.
- ✓ **Prioritize safety as a culture:** Foster a safety culture across the Indian railways by emphasizing the importance of safety at all levels.

- Encourage reporting of safety concerns, promote safety awareness and education among staff and passengers, and instil a sense of responsibility for safety in every aspect of railway operations.

Heat Wave

Why in News?

Context: Poor living conditions have exacerbated the effects of heat waves. In the brutal heatwave beating down on Uttar Pradesh and Bihar, one district in U.P., Ballia, reported the most deaths.

Key Highlights

- A statements in newspapers revealed that a heatwave is only half heat, the other being bad public infrastructure and social security. Ballia's toll could be high because of, as the team suspects, contaminated water, or because the local people could not cool themselves.
- Heat's deadliness depends on an individual's general well-being, acclimatisation, physical exertion, comorbidities, location, relative humidity, and extent of heat exposure.
- But for all the complexity the interplay of these factors augurs, the fight against this mode of the climate crisis, which India is expected to suffer more often, can benefit considerably from some literacy and access to resources.
- Heat is deadly when our bodies are unable to shed it as quickly as it accumulates. This can happen due to poor living conditions, adherence to caste- and gender-based strictures, or even in overcrowded hospitals.
- Amenities that can help include access to drinking water, indoor ventilation, health care, regular work breaks, and protections against wage loss. If a person dies in a heatwave, it is only fair to ask whether he/she was able to access these amenities.
- If U.P. and Bihar are to forge a better way forward vis-à-vis their heat response, they need to register all heat-related deaths, assign the cause, ensure the medical certificates of the cause of death (MCCDs) follow the proper codes of the most recent revision of the International Statistical Classification of Diseases and Related Health Problems, and issue them.
- The Office of the Registrar General should compile and release MCCD data annually to facilitate independent research and policy input and prevent time-wasting disputes over official versus actual figures. However, the office has not released the corresponding reports for 2021 and 2022.
- In the 2020 report, which was uploaded only last year, Bihar assigned causes to just 3.4% of registered deaths — the worst among States. Not everyone who dies during a heatwave has died due to the heat, but only if good living conditions have been the norm. If they have not, the state is as much to blame as the heat.

What is Heat Wave?

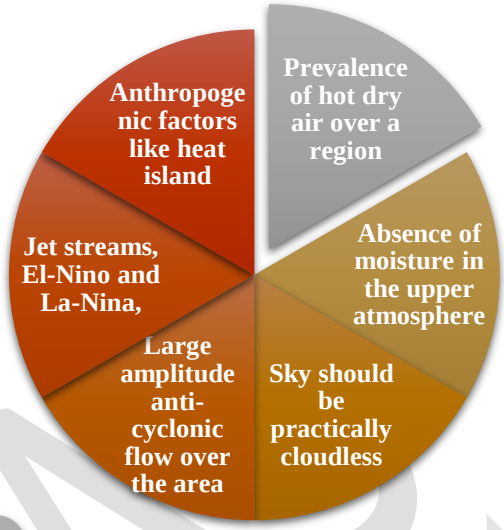
- A heatwave is a prolonged period of abnormally hot weather.
- Heatwaves usually last for several days or weeks and can occur in both dry and humid climates.
- They are characterized by temperatures that are significantly higher than the average for a particular region during that time of year. This is because climate change is causing a rise in global temperatures.
- When the planet heats up, it leads to more extreme weather events, such as heat waves. Its geography makes India particularly vulnerable to these events.

Factors Responsible for Heat Wave

The possible factors responsible for Heat Waves include:

- **Prevalence of hot dry air over a region:** For the purpose of distributing hot air over the area, there should be a region of warm, dry air and a suitable flow pattern.

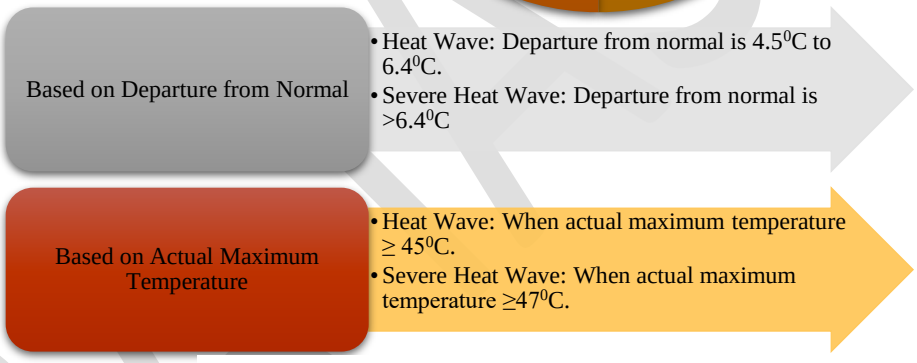
- **Absence of moisture in the upper atmosphere:** Moisture prevents temperatures from rising.
- **The sky should be practically cloudless:** To allow the area to be as well-insulated as possible.
- **Large amplitude anti-cyclonic flow over the area:** Heat waves typically originate over Northwest India and move progressively south and east, but not west (since the prevailing winds during the season are westerly to north-westerly).
- **Other factors** which can contribute in Heat waves include shifting of jet streams, El-Nino and La-Nina, anthropogenic factors like heat islands etc.

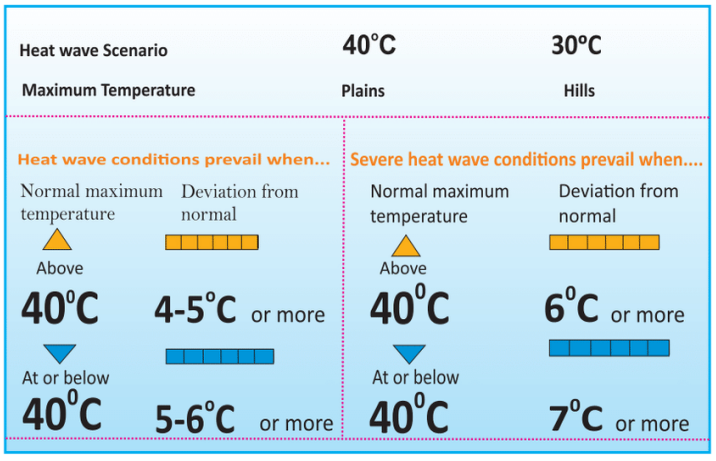


Indian Meteorological Department (IMD) Criteria

The heat wave is considered if the maximum temperature of a station reaches at least 40^0C or more for Plains and at least 30^0C or more for Hilly regions.

- If the above criteria are met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it is declared a heat wave on the second day.
- If the normal maximum temperature of a station is less than or equal to 40°C, then an increase of 5°C to 6°C from the normal temperature is considered to be a heat wave condition.
- Further, an increase of 7°C or more from the normal temperature is considered a severe heat wave condition.
- Additionally, if the actual maximum temperature remains 45°C or more irrespective of the normal maximum temperature, a heat wave is declared.





How does IMD Monitor Heat Waves?

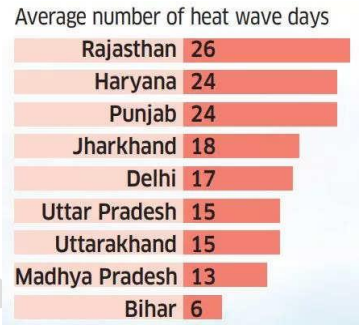
- IMD has a big network of surface observatories covering entire country to measure various metrological parameters like Temperature, Relative humidity, pressure, wind speed & direction etc.
- Based on daily maximum temperature station data, climatology of maximum temperature is prepared 0 to find out the normal maximum temperature of the day for a particular station. Thereafter, IMD declared a heat wave over the region as per its definition.

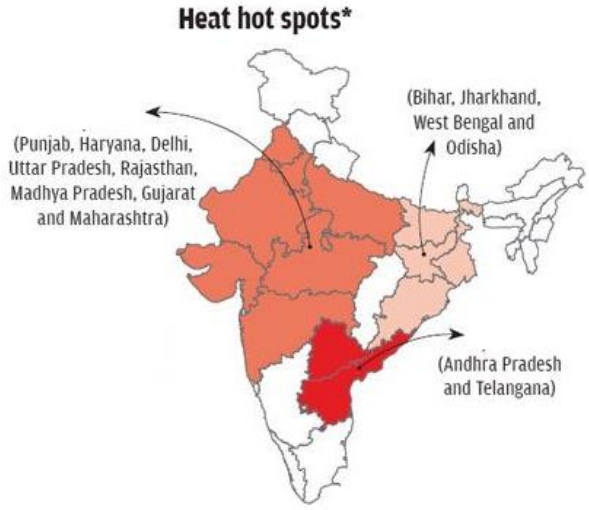
Period of Heat Wave Over India

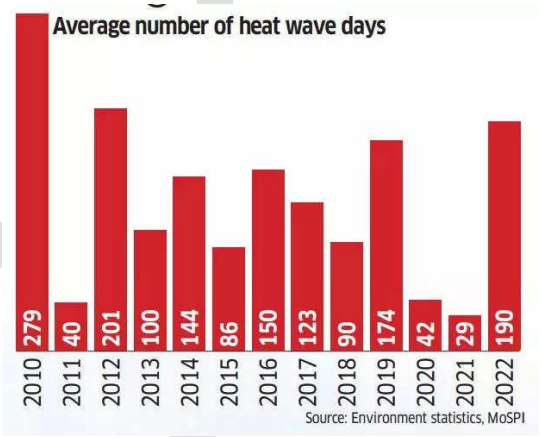
Heat waves occur mainly during March to June and in some rare cases even in July. The peak month of the heat wave over India is May.

Heat Wave Prone States Over India

Heatwave generally occurs over plains of northwest India, Central, East & north Peninsular India from March to June. It covers Punjab, Haryana, Delhi, Uttar Pradesh, Bihar, Jharkhand, West Bengal, Odisha, Madhya Pradesh, Rajasthan, Gujarat, parts of Maharashtra & Karnataka, Andhra Pradesh and Telangana. Sometimes it occurs over Tamilnadu & Kerala also. Heat waves adversely affect human and animal lives.



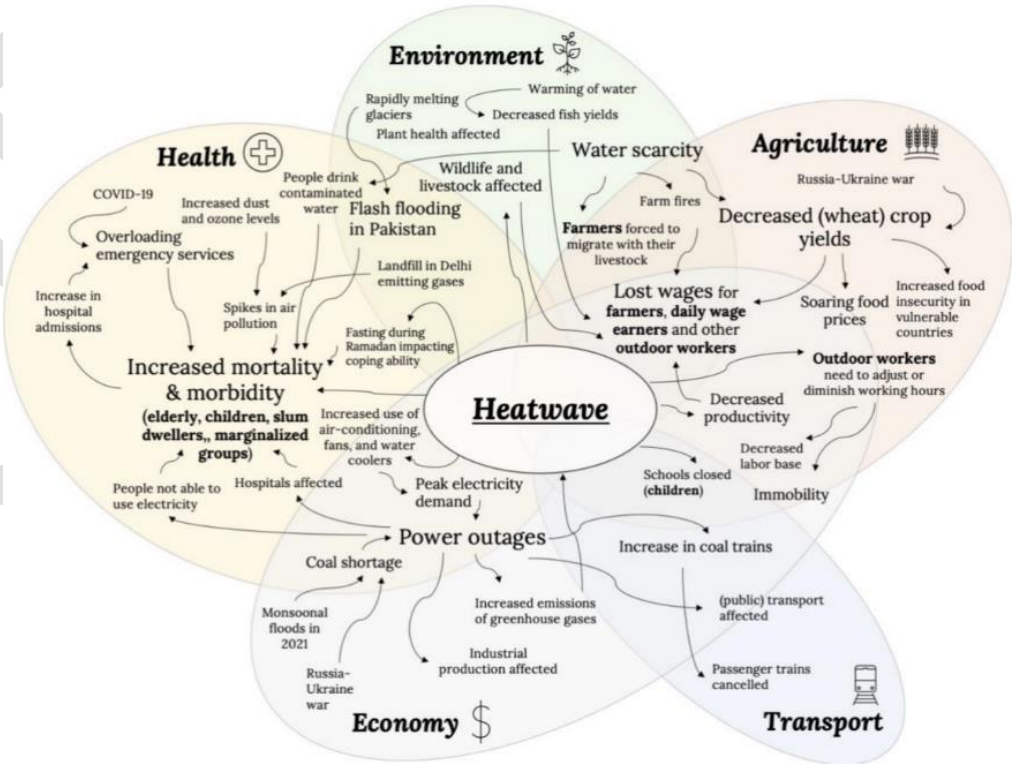




Impact of Heatwave

Heatwaves impact all aspects including the environment, health, economy, etc.

- **Environmental and Societal Impact**
- **Impact on Health**
- **Cost of Living**
- **Energy**
- **Labor productivity**
- **Agriculture**
- **Migration**



Conceptual map of impact pathways during the heatwave

- **Environmental and Societal Impact:** According to studies conducted throughout the years, India is seeing more heatwave days on average every decade. The average length of heat waves has increased over the past 30 years by around three days, and by 2060, a further increase of 12 to 18 days is anticipated.
    - It is expected that with time, heat waves will eventually expand to other regions, including the southern regions of India.
    - A condition known as "wet bulb" temperature, which at its mildest can cause considerable discomfort and at its worst can result in dehydration and death, is on the rise in some parts of eastern India, including Andhra Pradesh, Telangana, and Odisha.
    - According to a study by researchers at IMD, In India, heat waves have claimed the lives of more than 17,000 people over the past 50 years.
- **Impact on Health:** The health impacts of Heat Waves majorly involve dehydration, heat cramps, heat exhaustion, heat stroke, etc.
    - There is a significant increase in stress, anxiety, and sadness during a heatwave, which could cause or aggravate mental, behavioural, and cognitive disorders.
- **Cost of Living:** Extreme temperature-related health effects and diseases could result in high medical expenditure. These make a household's monthly spending plan even worse.
- **Energy:** During heatwaves, the demand for electricity and other forms of cooling increases, leading to power outages and blackouts. This can affect businesses, hospitals, and other critical infrastructure. On average, electricity costs for a household in an urban area climb by 15% to 20% during heat waves.
- **Labour productivity:** High temperatures reduce work capacity and productivity, especially for outdoor workers. This can lead to income loss and lower economic growth.
    - For Example: For labourers doing heavy work, heat exposure leads to a loss of 162 hours per year, as per one study. A rise in temperatures directly impacts labour productivity. About 50% of India's workforce is estimated to be exposed to heat during their working hours. This includes marginal farmers, labourers at construction sites and street vendors parlaying their produce on the streets; increasingly, even gig economy workers are affected.
- **Agriculture:** Heatwaves can damage crops and livestock, leading to reduced yields and income loss for farmers. High temperatures and low soil moisture can also lead to drought and water scarcity, which can further exacerbate the agricultural impact.
    - For Example: 90% of India's cumin production is from Gujarat and Rajasthan. The recent weather variability has destroyed the majority of the cumin crop in Rajasthan. From agricultural crop losses, it is a short step towards drought and higher mortality.
- **Migration:** Heatwaves can lead to migration as people seek cooler areas or better living conditions. This can strain resources in the destination areas and lead to social tensions.

What is a Heat Index?

The heat index is the combination of air temperature and relative humidity; it is a measure of how hot it really feels when relative humidity is factored in with the actual air temperature. The aim of the Heat index is to quantify the impact of heat on its population and generate impact-based heatwave alerts for specific locations. It can be understood by an illustration given below:

- When the body gets too hot, it begins to perspire or sweat to cool itself off.
- If perspiration is not able to evaporate, the body cannot regulate its temperature.
- Evaporation is a cooling process. When perspiration is evaporated off the body, it effectively reduces the body's temperature.
- When the atmospheric moisture content (i.e. relative humidity) is high, the rate of evaporation from the body decreases.
- In other words, the human body feels warmer in humid conditions.

- The opposite is true when the relative humidity decreases because the rate of perspiration increases.
- The body feels cooler in arid conditions.
- There is a direct relationship between the air temperature and relative humidity and the heat index, meaning as the air temperature and relative humidity increase, the heat index increases.

Significance of Heat Index Calculation

- Heat waves are not easily photographed, like the destruction of tornadoes, hurricanes, and floods, and therefore tend not to have the same visual impact as these other disasters.
- Heat waves form when high pressure aloft, from 10,000 to 25,000 feet (3,000 to 7,600 meters), strengthens and remains over a region for several days up to several weeks.
- This is common in summer (in both the Northern and Southern Hemispheres) as the jet stream follows the sun.
- On the equator side of the jet stream, in the middle layers of the atmosphere, is the high-pressure area.
- Hence, to protect life and property, measure how the hot weather "feels" to the body.

Limitations of Heat Index Calculation

- When there are severe situations, such as supersaturation of the air, when the air is more than 100% saturated with water, the heat index does not perform effectively.
- Additional difficulties with the heat index include the assumption that the individual is healthy and has easy access to water and shade.
- The lack of exact humidity data in many geographic areas also hinders with the outcome.

Heat Index in India

- Recently IMD has said India will launch its own composite index next year to quantify the impact of heat on its population and generate impact-based heat wave alerts for specific locations.
- The India Meteorological Department (IMD) has already launched an experimental heat index for various regions of the country, which calculates how hot it feels by taking into account air temperature and relative humidity.
- The IMD is now developing a new multi-parameter product called the "heat hazard score," which will integrate other parameters such as wind and duration of exposure, making it an effective indicator of heat stress for people. The heat hazard score will be operational next summer season and will be used to issue impact-based heat wave alerts for specific locations.
- According to IMD, there will be an increase in the maximum temperature and heatwave days in May for the eastern and central-eastern regions of India. IMD data demonstrates that there has been a 24% rise in the number of heatwaves from 2010 to 2019 when compared to 2000 to 2009. The Fifth Assessment Report of the Intergovernmental Panel on Climate Change also indicates that the major climate risk for south Asian countries will be the rising mortality rate due to heat waves.
- The difference between the heat index of the US and India's heat hazard score is that the latter will consider other parameters that aggravate heat situations such as minimum temperature, wind, and exposure duration.

Impact-Based Heat Wave Warning Issued By IMD

India Meteorological Department issues following colour code impact-based heat warning jointly with National Disaster Management Authority. The different colour codes are discussed in the image.

Colour Code	Alert	Warning	Impact	Suggested Actions
Green (No action)	Normal Day	Maximum temperatures are near normal	Comfortable temperature. No cautionary action required.	Nil
Yellow Alert (Be updated)	Heat Alert	Heat wave conditions at isolated pockets persists on 2 days	Moderate temperature. Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases	(a) Avoid heat exposure. (b) Wear lightweight, light-coloured, loose, cotton clothes. (c) Cover your head: Use a cloth, hat or umbrella
Orange Alert (Be prepared)	Severe Heat Alert for the day	(i) Severe heat wave conditions persists for 2 days (ii) Through not severe, but heat wave persists for 4 days or more	High temperature. Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	(b) Avoid heat exposure– keep cool. Avoid dehydration. (b) Drink sufficient water- even if not thirsty. (c) Use ORS, homemade drinks like lassi, torani (rice water), lemon water, buttermilk, etc. to keep yourself hydrated
Red Alert (Take Action)	Extreme Heat Alert for the day	(i) Severe heat wave persists for more than 2 days. (ii) Total number of heat/severe heat wave days exceeding 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.

Rise in Heatwaves in India

- India reported the warmest February this year since way back in 1877, according to the India Meteorological Department (IMD). This was not a random event. There is a pattern in the unusual rise in temperature. The average number of heat wave days rose to the highest in a decade in 2022, data released recently by the Ministry of Statistics and Programme Implementation showed.
- India reported 190 heat wave days in 2022 — over six times higher than the previous year. The IMD said 2022 was the fifth warmest year since 1901,
- 2023 too will be unusually hot. The IMD says most parts of India are likely to see above-normal maximum temperatures from April to June.
- Various parts of India, including those in peninsular India and the coasts will see an increase in duration of heatwave by 12-18 days by 2060, a new report from the India Meteorological Department (IMD).
    - The recommendations of the report titled "Heat and Cold Waves in India Processes and Predictability" include: improving India's buildings through ventilation and insulation; raising awareness about heat stress; changing work schedules; providing early warning; and creating cool shelters.
    - The report has used data from 1961-2020 to decipher heat wave climatology and occurrence.
    - Studies referred by the report suggest the frequency of severe heat waves will increase by 30 times the current climate by the end of the 21st century if the global average temperature is limited to 2 degree Celsius above pre-industrial conditions.

Reason Why India Is Facing Heat Wave?

Reasons, why India is experiencing more heat waves, are:

- Magnified effect of paved and concrete surfaces in urban areas and a lack of tree cover.
- Urban heat island effects can make ambient temperatures feel 3 to 4 degrees more than they are.
- More heat waves were expected as global temperatures had risen by an average of 0.8 degrees in the past 100 years. Night-time temperatures are rising too.
- Higher daily peak temperatures and longer, more intense heat waves are becoming increasingly frequent globally due to climate change.
- High intensity of UV rays in medium-high heat wave zone.

Heat Wave Impact Mitigation Strategy in India

- Heat Wave as extreme weather event has recently become a concern for disaster management in India due to their widespread and severe impact on health and the environment.
- For the last few years, heat waves during the summer season is increasingly affecting morbidity and mortality in the country. Looking at the current scenario, effective response is important for saving peoples life and health, besides evolving strategies for future risk mitigation and management of heat waves conditions. Extreme weather conditions have become so obvious and impacted lives all across the world, particularly over the last decade and more.
- Before 2015, no national-level heatwave action plan was available to fight against such calamities.
- At the regional level, Ahmedabad Municipal Corporation (AMC) prepared the first Heat Action Plan in 2013, followed by the devastating heatwave-related deaths in 2010.
- Odisha State Disaster Management Authority has taken steps such as early warning, public outreach, Medical up-gradation, etc.
- In 2016, the National Disaster Management Authority (NDMA) issued comprehensive guidelines to prepare national-level key strategies for mitigating the impact of heatwaves.
- Although some preventive measures have been undertaken to mitigate and adapt to extreme weather-related shocks, such initiatives are insufficient to prevent human fatalities from heatwaves as implementing preventive measures, mitigation, and preparedness actions remains difficult.

Government Initiatives to Mitigate Heat Wave

National Action Plan for Climate Change (NAPCC)

There are 8 national missions forming the core of the NAPCC which represent multi-pronged, long term and integrated strategies for achieving key goals in climate change. These are-

- National Solar Mission
- National Mission for Enhanced Energy Efficiency
- National Mission on Sustainable Habitat
- National Water Mission
- National Mission for Sustaining the Himalayan Ecosystem
- National Mission for A Green India
- National Mission for Sustainable Agriculture
- National Mission on Strategic Knowledge for Climate Change

India Cooling Action Plan (ICAP)

ICAP is a long-term vision to address the cooling requirement across sectors. Reducing cooling demand by 20-25% and refrigeration demand by 25-30% by the year 2037 are the goals of this plan.

NDMA Guidelines

In 2016, the National Disaster Management Authority (NDMA) issued comprehensive guidelines to prepare national-level key strategies for mitigating the impact of heatwaves.

Government Agencies responsible for managing Heat Wave

Various Government agencies which are responsible for Managing heat wave in India are:

Sl. No.	Tasks/ Activities	Central/ State Agencies & Their Responsibilities			
		Centre	Responsibility	State	Responsibility
1	Preparation of Heat Wave Action Plan	NDMA	Guideline on preparing a Heat Wave Action Plan	SDMA / DDMA/Municipal Corporation and Local Bodies	Preparing a Heat Wave Action Plan and implementing
2	Early Warning	IMD	Issue Heat wave alerts and weather forecasts on Short / Medium / Long range duration	State Governments/ District Administration	To disseminate the information received from IMD to the public at large
3	Mitigating Heat Wave	Ministry of Urban /Rural Development, Department of Drinking Water and Sanitation, Ministry of Surface Transport	To construct shelters/ sheds, bus stands and provide drinking water points at worksites.	Public Health and Engineering Department	To construct shelters/ sheds, bus stands and provide drinking water points in cities, worksites.
		Ministry of Health and Family Welfare	Stockpiling of ORS, Training of Human Resources, creating Medical posts at places of mass gathering,	Department of Health	Stockpiling of ORS, creating Medical posts at places of mass gathering
4.	Monitoring and Response	Ministry of Health and Family Welfare	• Surveillance • Deployment of Rapid Response Teams • Specific care for vulnerable groups	Health Department	• Surveillance • Deployment of Rapid Response Teams • Specific care for vulnerable groups
5.	Occupational Support and advisories	All Ministries/ Departments	Take necessary measures as indicated in the guidelines, wherever applicable	All Departments	Take necessary measures as indicated in the guidelines, wherever applicable
6.	Media campaign and IEC activities	Ministry of Information and Broadcasting	Extensive IEC campaigns to create awareness through print, electronic and social media	Department of Information and Broadcasting/ SDMAs/ Commissioners of Relief/ State Govt/ Health Department	Extensive IEC campaigns to create awareness through print, electronic and social media
7.	Documentation	Ministry of Health & Family Welfare through IDSP	Collecting Data from States as per guidelines and maintaining national level data base.	Revenue Departments/ SDMAs/ DDMAs/ Health Deptt.	Collecting Data and Information as per guidelines.
8.	Long Term Measures	Ministry of Urban Development, Ministry of Environment Forests and Climate Change	Collecting Data from States as per guidelines and maintaining national level data base.	Revenue Departments/ SDMAs/ DDMAs/ Health Deptt.	Improving the forest coverage and green areas Forest Department/ SDMAs and other concerned Department Improving the forest coverage and green area.

Issues Related To Mitigation Of Heatwave

- The heatwave though takes many lives every year, it is not included as a disaster under the Disaster Management act, 2005.
- Increasing land encroachment in cities and degradation of surrounding hilly regions create heat island like situation which exacerbates the condition of heatwaves.
- Rural administration is mostly apathetic towards the issue of heatwaves.
- The action on global warming is very meagre.
- According to IPCC, if average world temperatures exceed by between 1.5˚C and 2°C, deadly heatwaves are likely to increase in frequency.
- Deforestation is not slowing down. Rather, newer forest areas are being encroached for developmental purposes.

What Should India Do to Mitigate Heat Waves Impact?

Some of the steps that India should adopt are:

A Heat Waves Action Plan

- The adverse impacts of heat waves indicate that effective disaster adaptation strategies and more robust disaster management policies are required in heatwave zones to lessen the impact of heatwaves.
- As deaths due to heatwaves are preventable, the government must prioritise preparing a long-term action plan to safeguard human lives, livestock, and wildlife.
- Effective implementation of the Sendai Framework for Disaster Risk Reduction 2015-30 with the State playing a leading role and sharing responsibility with other stakeholders is now the need of the hour.

Early Warning Systems

- Death from heat waves can be prevented by installing improved early warning systems that communicate heatwave threats, recommend different preventative measures, and constrain disaster impacts.
- Spreading public awareness through print, electronic and social media, providing heat-proof shelter facilities during summer, easing access to public drinking water, and huge afforestation in urban and rural areas would help mitigate heatwave fatalities.

Declaration of Heat Waves as a Natural Disaster

- Recognising heat waves as a major disaster is long due. India still has a long way to go in building public awareness, particularly on how individuals and local communities can take care of themselves.
- Also, there needs to be clear guidelines regarding when to shut schools or about the optimal ranges of temperatures that a household AC should be kept at or how long one should stay outdoors if that's unavoidable.

Local Level Preparedness

- Heatwave is India's second most lethal disaster after the flood. Declaring heat waves as a natural disaster would help the state and district administration prepare a heatwave action plan at the regional level.
- This will help build resilience infrastructure, develop early warning infrastructure, and create public awareness. It is also crucial to prepare a database at the district level involving the age, gender, and occupation of people who have died due to heatwaves.

India-U.S. Relations

Why in News?

Context: U.S.-India bilateral ties have grown for the past 25 years due to America's unprecedented exceptions for India — from the nuclear waiver in the 2000s to the transfer of technology in 2023.

Key Highlights

- The growth of the relationship between India and the United States is often traced from its nadir 25 years ago, when the U.S. imposed sanctions against India (and Pakistan) after they tested their nuclear weapons in May 1998.
- The arc of the relationship between India and America has grown year-on-year, some years more than others, built by five American Presidents (Bill Clinton, George W. Bush, Barack Obama, Donald Trump, Joe Biden) and three Indian Prime Ministers (Atal Bihari Vajpayee, Manmohan Singh, Narendra Modi) over the first two decades of the 21st century.
- The Clinton-Vajpayee-era gave impetus to summit-level diplomacy in the relationship, the Manmohan-Bush and Manmohan-Obama relationship highlighted nuclear diplomacy and Modi-Obama and Modi-Trump worked on trade and military diplomacy.
- After his visit to Washington in earlier this June, Mr. Modi's meetings with Mr. Biden during his state visit have led to the two nations forging ahead with technology diplomacy, including the unprecedented new promise of **Transfer of Technology (ToT)** from the U.S. as a result of the Memorandum of Understanding between **General Electric (GE) Aerospace and Hindustan Aeronautics Limited (HAL)** "to **produce fighter jet engines for the Indian Air Force**".
- For India, the rapidly rising arc of ties has been seen in terms of shrugging off what Mr. Modi in 2016 called the "hesitations of history" and renouncing the government's Cold War muscle memory in Indian foreign policy towards the U.S.

- The more important arc, however, is the shift in the U.S.'s belief in "American exceptionalism", to a more pragmatic era of "American exception-ism for India". In other words, it is the U.S.'s decision to make a series of exceptions specifically for India in the first quarter of this century that has been responsible for the big surges in a relationship billed as the most "defining partnership of the century" by Mr. Obama (2009), and Mr. Biden (2023).

India-US Relation Timeline

The Civil Nuclear Deal

- In 1998, just six months after the U.S. imposed sanctions on India mandated by the Arms Export Control Act, in November, Mr. Clinton signed a waiver to the sanctions on both India and Pakistan.
- The Bush administration's push for civil nuclear exemptions resulted in the India-U.S. Joint Statement in 2005, a waiver under the Non-Proliferation Act, the Henry Hyde Act and the 123 Agreement with India, which also led to an India-specific exemption at the Nuclear Suppliers Group in 2008.
- The Obama visit to Delhi in 2010 saw a breakthrough in implementing all the waivers of the previous decade to make another set of exceptions for India on export controls and high technology trade and transfers under the U.S. Export Administration Regulations (EAR) and International Traffic in Arms Regulations (ITAR).
- The significance of all these exceptions was that they were made despite the fact that India never joined the Nuclear Non-Proliferation (NPT) Treaty regime; nor did it sign the Comprehensive Nuclear-Test-Ban Treaty.

- More importantly, these were "India-specific" waivers not available to other non-NPT countries such as Pakistan, and were crucial indicators of the shift in U.S. alignment in South Asia.

Non-Proliferation Treaty

The NPT is an international treaty whose objective is to prevent the spread of nuclear weapons and weapons technology, to foster the peaceful uses of nuclear energy, and to further the goal of disarmament. The treaty was signed in 1968 and entered into force in 1970. Presently, it has 191 member states. India is not a member.

The Russian Angle

- Over the past decade, the U.S.'s waivers have been on regulations dealing with Russia, such as the Countering America's Adversaries Through Sanctions Act (CAATSA) of 2017. The Trump administration avoided sanctioning India for the (Russian S-400 missile system, but sanctioned Turkey and China for the same purchases. In 2022, the U.S. House of Representatives passed the "[Ro] Khanna amendment", which if made law, would exempt India entirely from CAATSA sanctions.
- In the wake of the Russian war in Ukraine, the U.S. has ruled out secondary sanctions against India for its considerable oil imports or defence engagement from Russia. This is indeed an exception, given that Mr. Biden ordered sanctions in 2022 on even German entities for the Nord Stream 2 pipeline.
- It is pertinent to note all these exceptions have been made for India, despite its disavowal of ever becoming an ally, or alliance partner, and in spite of its strong ties with U.S. adversaries such as Russia and Iran.
- The exceptions have come without India accepting conditionalities on cutting ties with these adversaries, withdrawing from groupings such as the Shanghai Cooperation Organisation or BRICS (Brazil, Russia, India, China and South Africa) that pose a challenge to the U.S.-Europe world order, or of any commitments to join U.S. military operations against them.
- They have been granted even though very few commercial contracts have fructified for U.S. companies (nuclear power plants, fighter jets, weapons systems) thus far.

CAATSA

CAATSA is a law that came into effect in the US in 2017, and was meant to punish countries having deep engagements with Russia, North Korea, and Iran using economic sanctions.

Title II of the Act primarily deals with sanctions on Russian interests such as its oil and gas industry, defence and security sector, and financial institutions, in the backdrop of its military intervention in Ukraine and its alleged meddling in the 2016 US Presidential elections.

The Countering America's Adversaries through Sanctions Act (CAATSA) poses a challenge to India-US defence cooperation as it prohibits defence purchases from Russia, Iran and North Korea, all of which are considered adversaries by the US.

The US views expanding defence ties between India and Russia as a complicating factor that could limit its own defence cooperation with India.

Bilateral Trade

The bilateral trade relationship between India and the United States has experienced a remarkable expansion over the years.

- The success of trading partnership between India and the US can be gauged from the fact that the bilateral trade between the two countries has risen by 72 per cent between 2017-18 and 2022-23 is at 7 per cent.
- During 2022-23, the **USA was top destination of Indian exports** to the world and **third source of India's imports** from the world.
- Further, India's exports to the USA stood at $ 78.5 billion in 2022-23 and its imports from the USA were $ 50.2 billion.

- The United States is the **third largest source of Foreign Direct Investment (FDI) in India** with equity investment of $ 59.1 billion (April 2000 to December 2022), which represents 9.45 per cent of the cumulative inflows received by India.
- The US accounted for 18 per cent of the gross FDI inflows into India during 2021-22, ranking second behind Singapore that stood at 27 per cent.
    - Computer software and hardware; services sector and automobile industry attracted the maximum FDI equity inflow and Gujarat; Karnataka and Delhi are the top FDI receiving states from the USA.

Additionally, to enhance economic and trade cooperation between India and the United States, multiple dialogue mechanisms have been established.

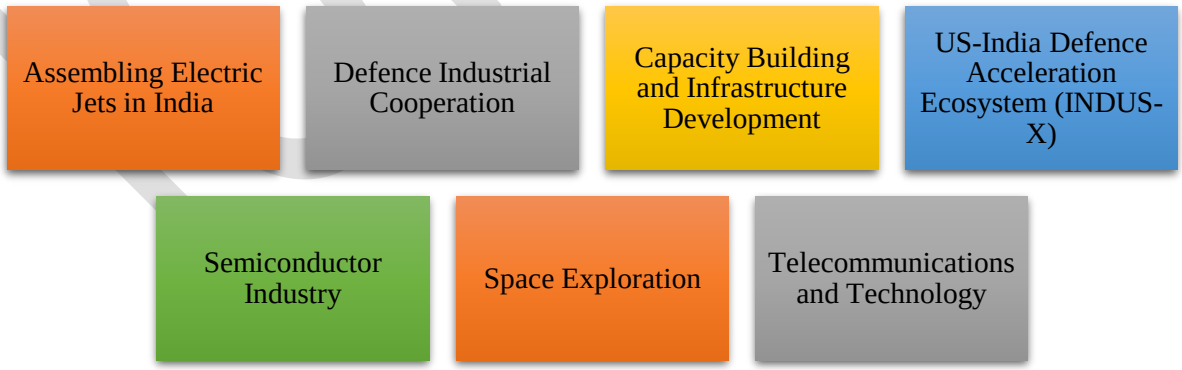
- These include the **Ministerial-level Economic and Financial Partnership**, the **Ministerial Trade Policy Forum** established in 2005, the bilateral **India-US CEO's Forum** (2005) which encourages private sector involvement in discussions on trade and investment issues, and the **Indo-Pacific Economic Framework** that India joined in May 2022.
- In 2014, the two countries also initiated the **bilateral Investment Initiative**, aimed at facilitating foreign direct investment, portfolio investment, capital market development, and infrastructure financing.
- The **US-India Infrastructure Collaboration Platform** in 2014 has also been established, with a focus on deploying advanced US technologies to meet India's infrastructure requirements. These initiatives reflect the commitment of both the nations to strengthen bilateral trade ties and foster economic collaboration.

Initiatives To Improve India-US Relation

- India and the United States have agreed to initiate negotiations for a **'Security of Supply' (SoS) arrangement** and a **'Reciprocal Defence Procurement' (RDP) agreement**, aiming to promote long-term supply chain stability and enhance security and defense cooperation between both countries.
- A SoS agreement is a bilateral or multilateral agreement between countries aimed at ensuring the availability and stability of critical supplies, particularly in the field of defense and security.
- An **RDP agreement** is a bilateral agreement between countries in the field of defense procurement. It is designed to facilitate reciprocal procurement of defense items and promote cooperation in research, development, and production of defense equipment.

During the Hon'ble Prime Minister's recent visit to the United States, several significant announcements were made, reflecting the deepening collaboration between the two nations.

Highlights of the Recent Initiatives



Assembling Electric Jets in India

- Both sides discussed the deal for assembling General Electric GE-414 jets in India, which is yet to be finalized.

Defence Industrial Cooperation

- The roadmap for 'Defence Industrial Cooperation' has been concluded between India and the US, guiding their policy direction for the next few years.

- Both countries will identify opportunities for co-development of new technologies and co-production of existing and new systems, promoting collaboration between defense start-up ecosystems.

Capacity Building and Infrastructure Development

- Capacity building, including Maritime Domain Awareness (MDA) and strategic infrastructure development.
- Increase sourcing by US companies from India, particularly Boeing under the mega-civil aircraft deal with Air India.
- The establishment of Maintenance, Repair and Overhaul (MRO) facilities by US companies in India to cater to the equipment used by the Indian armed forces and the region.

US-India Defence Acceleration Ecosystem (INDUS-X)

- The US-India Business Council will launch the INDUS-X initiative to advance cutting-edge technology cooperation between US and Indian companies, investors, start-up accelerators, and academic research institutions.

Semiconductor Industry

- Micron Technology, a U.S. company, revealed plans to invest $ 2.75 billion in the next five years to establish a semiconductor assembly and test facility in India, along with a collaborative engineering centre and the training of 60,000 Indian engineers.

Space Exploration

- India joined the Artemis Accords, a multinational agreement comprising 25 countries dedicated to space exploration and cooperation. Additionally, the two nations established a framework for human spaceflight in the current year, signalling their shared ambitions for advancements in space exploration. Furthermore, plans were announced for a joint mission to the International Space Station in 2024, showcasing the commitment of both countries to space research and exploration.

Telecommunications and Technology

Recognizing the importance of secure telecommunications, resilient supply chains, and global digital inclusion, the United States and India launched two Joint Task Forces. These task forces will focus on advanced telecommunications, particularly Open RAN, and research and development in 5G/6G technologies. This collaboration aims to strengthen digital infrastructure and pave the way for innovative advancements in the telecommunications sector.

Current Status of India-US Relation

- ✓ India-U.S. bilateral relations have developed into a "global strategic partnership", based on shared democratic values and increasing convergence of interests on bilateral, regional and global issues.
- ✓ Regular exchange of high-level political visits has provided sustained momentum to bilateral cooperation, while the wide-ranging and ever-expanding dialogue architecture has established a long-term framework for India-U.S. engagement.
- ✓ The India-U.S. bilateral cooperation is broad-based and multi-sectoral, covering trade and investment, defence and security, education, science and technology, cyber security, high-technology, civil nuclear energy, space technology and applications, clean energy, environment, agriculture and health.
- ✓ Vibrant people-to-people interaction and support across the political spectrum in both countries nurture our bilateral relationship.

Strategic Consultation

India and the United States share a strategic partnership based on shared democratic values, common interests, and converging visions for regional and global stability. The two countries have engaged in regular high-level dialogues and exchanges to enhance cooperation on a wide range of issues.

Civil Nuclear Cooperation

- The bilateral civil nuclear cooperation agreement was finalized in July 2007 and signed in October 2008.
- During Prime Minister Modi's visit to the U.S. in September 2014, the two sides set up a Contact Group for advancing the full and timely implementation of the India-U.S. Civil Nuclear Cooperation Agreement, and to resolve pending issues.
- Culminating a decade of partnership on civil nuclear issues, the two sides have started the preparatory work on-site in India for six AP 1000 reactors to be built by Westinghouse.

Defence

- Defence relationship has emerged as a **major pillar** of India-U.S. strategic partnership with intensification in defence trade, joint exercises, personnel exchanges, and cooperation in maritime security and counter-piracy.
- India conducts more **bilateral exercises** with the U.S. than with any other country.

Name of the Exercise	Participating Units
Tiger Triumph	• Indian Army and Navy • US Navy
Vajra Prahar	• United States Army Special Forces • Para SF
Yudh Abhyas	• It is the largest running joint military training and defence cooperation endeavour between India and the US.
Cope India	• Between Air Force units
Malabar Exercise	• Quadrilateral naval exercise of India, USA, Japan and Australia

- Aggregate worth of defence-related acquisitions from the U.S is worth more than US$ 15 billion.
- The **India-U.S. Defence Technology and Trade Initiative (DTTI)** is aimed at promoting co-development and coproduction efforts.
- In 2016, the U.S. recognised India as a "**Major Defence Partner**", which commits the U.S. to facilitate technology sharing with India to a level commensurate with that of its closest allies and partners.
- The announcement of India's elevation to Tier I of the **Strategic Trade Authorization (STA)** license exception IN 2018, will further contribute towards facilitating interaction in advanced and sensitive technologies.
- The two countries now have **four agreements** that cover areas of Military Information, Logistics exchange, compatibility, and security between them.
    - **GSOMIA** (a military information agreement) was the first of the foundational agreements to be signed in 2002
        - It essentially guaranteed that the two countries would protect any classified information or technology that they shared
        - It was aimed at promoting interoperability and laid the foundation for future US arms sales to the country
    - **LEMOA (logistics exchange agreement)** signed in 2016
        - It provides the framework for sharing military logistics, for example for refuelling and replenishment of stores for ships or aircraft transiting through an Indian/US facility
    - **COMCASA (communications security agreement)** was signed in 2018
        - This enables the US to supply India with its proprietary encrypted communications equipment and systems, allowing secure peacetime and wartime communications between high-level military leaders on both sides
    - **Basic Exchange Cooperation Agreement (BECA)** signed in 2020
        - BECA will help India get real-time access to American geospatial intelligence that will enhance the accuracy of automated systems and weapons like missiles and armed drones.

- Through the sharing of information on maps and satellite images, it will help India access topographical and aeronautical data, and advanced products that will aid in navigation and targeting

- **The Defence Cooperation happens on the following cooperation mechanisms as well:**
  - Defence Policy Group
  - Military Cooperation Group
  - Defence Technology and Trade Initiative and its Joint Working Groups
  - Executive Steering Groups for Army and Navy;
  - and Airforce, Defence Procurement and Production Group, Senior Technology Security Group, and the Joint Technical Group

Counter-terrorism and Internal Security

- Cooperation in counterterrorism has seen considerable progress with enhanced intelligence sharing, information exchange and operational cooperation
- The bilateral Joint Working Group on Counter-Terrorism is an important mechanism in this regard
- Both sides have also initiated a Designations Dialogue to discuss designations of terrorists and entities.
- Apart from the above, both sides also cooperate with each other on counter-terrorism and security issues in various multilateral bodies
- In 2021, both countries held consultation on counter terrorism cooperation under the India-US Comprehensive Global Strategic Partnership; where both sides pledged to further expand cooperation on law enforcement, information sharing, exchanging best practices and increasing strategic convergence.

Trade and Economic relations

- The US was India's largest export destination and the second largest trading partner in 2020-21.
- India's exports to the US in 2020-21 were valued at $51.62 billion and imports at $28.88 billion, resulting in a trade deficit of about $23 billion for the US.
- The top traded goods include pearls and precious stones, pharmaceuticals, machinery, electronics, clothing, vehicles, chemicals and fish products, optical, photo, medical apparatus and aluminium.
- There are several dialogue mechanisms to strengthen bilateral engagement on economic and trade issues, which include:
  - Ministerial level Economic and Financial Partnership
  - Ministerial Trade Policy Forum
  - For greater involvement of private sector in discussion on issues involving trade and investment, there is a bilateral India-U.S. CEO's Forum
  - Further, India and the US have set up a bilateral Investment Initiative in 2014, with a special focus on facilitating FDI, portfolio investment, capital market development and financing of infrastructure.
  - S.-India Infrastructure Collaboration Platform has also been set up to deploy cutting edge U.S technologies to meet India's infrastructure needs

Energy and Climate Change

- The U.S. has emerged as a key partner for India in the field of energy.
- The bilateral Strategic Energy Partnership launched in 2018 between the two countries is robust and witnessing increasing diversification across both conventional and renewable energy sources.
  - As a priority initiative under the PACE (Partnership to Advance Clean Energy), the U.S. Department of Energy (DOE) and the Government of India have established the Joint Clean Energy Research and Development Center (JCERDC) designed to promote clean energy innovations by teams of scientists from India and the United States, with a total joint committed funding from both Governments of US$ 50 million.
- An India-U.S. Natural Gas Task Force was also created in 2018, to build on the scope of work on cooperation in biofuels sector.
- In 2019, the Indian Oil Corporation finalised term contracts for import of crude oil of U.S. origin.
  - These are the first term contracts finalised by any Indian PSU for import of U.S. origin crude oil grades.

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- India and the U.S. are advancing cooperation and dialogue on climate change through a highlevel Climate Change Working Group and a Joint Working Group on Hydroflurocarbon.
    - An MoU between U.S. EXIM Bank and Indian Renewable Energy Development Agency (IREDA) was concluded to provide US$ 1 billion in financing for India's transition to a low-carbon economy IN 2014.

Education

- India and the U.S. have very strong linkages and collaboration in the field of higher education S. is one of the most favoured destinations by Indian students for higher education.
- More than 200,000 Indian students are currently pursuing various courses in the U.S.

Science and Technology/Space

- The multi-faceted cooperation between India and the U.S. in the field of Science and Technology has been growing steadily under the framework of the India-U.S. Science and Technology Cooperation Agreement signed in 2005, which was renewed for a period of ten years in 2019.
- The Indo-U.S. Science & Technology Forum (IUSSTF) which was established by India and the U.S. as an autonomous, bi-national organization in the year 2000 to promote cooperation in Science, Technology and Innovation is playing an important role in strengthening cooperation in this field.
- Both countries also have a long history of cooperation in civil space arena that includes cooperation in earth observation, satellite navigation, and space science and exploration.
- The India-U.S Joint Working Group on Civil Space Cooperation regularly reviews the status of cooperation and identifies new areas for furthering space cooperation.
- ISRO and NASA are also working towards intensifying cooperation in Mars exploration, heliophysics, and human spaceflight through relevant working groups between both sides.

Cultural Cooperation

- The number of Indians and Indian Americans in the U.S. is estimated at around 4 million, which accounts for almost 1% of the total U.S. population.
- It includes a large number of professionals, entrepreneurs and educationists with considerable and increasing influence in U.S. polity, economy and the society.
- They are a big stakeholder in India-U.S. relations having significantly contributed to the growth and development of the U.S. economy.
- Cultural cooperation manifests in form of India-focused educational programs at the Universities and educational institutions.
- Further, the website 'www.indianembassy.org' and social media channels, the Embassy provides updated information on various aspects of India that are relevant to the United States, through its various publications, including "India: Partner in Growth", a weekly newsletter focusing on business and strategic matters, and "India Live", a monthly newsletter providing information on initiatives of the Embassy and the Consulates, major developments in India, and culture and tourism.

Major Challenges Between India And The US

US Criticism of India's Foreign Policy

- If the Indian elite has long seen the world through the lens of non-alignment, alliance relationships have been at the heart of US' foreign policy since the Second World War.
- India's policy of nonalignment especially during the Cold War has always been a point of concern for the West, especially the US.

- After the 9/11 attacks, the US asked India to dispatch troops to Afghanistan; the Indian military vetoed the request.
- When the US invaded Iraq in 2003, even then India's erstwhile PM withheld military support.
- Even today, India refuses to toe the American line on the Russian-Ukraine war and its import of cheap Russian oil continues to break records.
- Pro-US voices have often been raised demanding India to get "on the right side of history".

India's Engagement with US Adversaries

- India has criticised the US decision to block Iranian and Venezuelan oil from the open market.
- India has actively worked to bring Iran into the SCO (Shanghai Cooperation Organization).
- India has also held 18 rounds of talks with China to resolve the border dispute besides remaining a key participant in the China-backed Asian Infrastructure Investment Bank.

US' Criticism of India's Democracy

- Various US organisations and foundations, from time to time, with the tacit support of some Congressmen and Senators, come out with reports questioning the present state of democratic discourse, press and religious freedom and condition of the minorities in India.
- Some of them include the International Religious Freedom Report 2023 and the Human Rights Report on India 2021 by the US State Department.

Economic Tensions

- The Atmanirbhar Bharat Campaign has exacerbated the view in US that India is increasingly becoming a protectionist closed market economy.
- Effective since June 2019, the USA decided to withdraw duty-free benefits to Indian exporters under the GSP programme affecting India's export-oriented sectors such as pharma, textiles, agri products and automotive parts.
- In the economic sphere, there are several differences between India and the US, including pharma patents, data flows, e-commerce, and regulatory precision.
- Specifically, the US prioritizes long-term protection for investments in pharma, while India prioritizes low cost and greater access.
- The US takes a light approach to data privacy with basic consumer protections, which differs from India's approach.
- The US 2021 "Special 301" report listed India on the Priority Watch List, citing concerns about India's patent treatment, high rates of intellectual property theft, and weak trade secret protection.
- The US and India are currently in a "low-intensity trade war," which involves imposing tariffs that restrict trade.
- The US has concerns about India's tariff regime, especially in agriculture, while India opposes the US steel and aluminium tariffs that have been in place since 2018.
- Additionally, in 2019, the US cancelled India's developing country status under the Generalized System of Preferences (GSP).

Indian Space Policy – 2023

Why in News?

Recently, the government approved the **Indian Space Policy – 2023**. The policy states that the **Indian Space Research Organisation (ISRO),** as the national space agency, will focus **primarily on the research and development of new space technologies** and applications and on **expanding the human understanding of outer space.**

Until the early 1990s, India's space industry and space economy were defined by ISRO. Private sector involvement was limited to building to ISRO designs and specifications. **The Indian Space Policy 2023** unveils the government's plan to let private enterprises carry out end-to-end activities - from launching satellites and rockets into space to operating Earth stations.

Policy Vision

- ✓ To augment space capabilities;
- ✓ Enable, encourage and develop a flourishing commercial presence in space;
- ✓ Use space as a driver of technology development and derived benefits in allied areas;

✓ Pursue international relations, and create an ecosystem for effective implementation of space applications among all stakeholders;

The purpose of the policy is to achieve the nation's socio-economic development and security, protection of environment and lives, pursue the peaceful exploration of outer space, and stimulation of public awareness and scientific quest.

Key Highlights

- ✓ The policy **creates four distinct, but related entities, that will facilitate greater private sector participation** in activities that have usually been the traditional domain of the ISRO.
- ✓ **InSPACe (Indian National Space Promotion and Authorisation Centre)**: It will be a single window clearance and authorisation agency for:
  - Space launches,
  - Establishing launch pads,
  - Buying and selling satellites, and
  - Disseminating high-resolution data among other things.
  - It will also **share technologies, products, processes and best practices with NGEs** (non-government entities including private companies) and government companies.
  - IN-SPACe will create a **"stable and predictable regulatory framework"** that will ensure a level playing field for the NGEs.
  - It will act as a promoter by setting up industry clusters and as the regulator, issue guidelines on liability issues.
- ✓ **New Space India Limited (NSIL):** It will be responsible for commercialising space technologies and platforms created through public expenditure, as well as, manufacturing, leasing, or procuring space components, technologies, platforms and other assets from the private or public sector.
- ✓ **Department of Space:** It will provide overall policy guidelines and be the nodal department for implementing space technologies and, co-ordinate international cooperation and coordination in the area of global space governance and programmes in consultation with the Ministry of External Affairs.
  - It will also create **an appropriate mechanism to resolve disputes arising out of space activity.**
- ✓ **Rationalising the role of ISRO:** It states that ISRO will "transition out of the existing practice of being present in the manufacturing of operational space systems.
  - Hereafter, mature systems shall be transferred to industries for commercial usage.
  - ISRO shall focus on R&D in advanced technology, proving newer systems and realisation of space objects for meeting national prerogatives".
  - **ISRO will share technologies, products, processes and best practices** with other government and non-government companies.
  - This will **make ISRO use its all its strength on cutting-edge research and development and long-term projects** such as **Chandrayaan** and **Gaganyaan**.

Private Sector's Role

- ✓ The NGEs(non-government entities including private companies) are "allowed to undertake end-to-end activities in the space sector through establishment and operation of space objects, ground-based assets and related services, such as communication, remote sensing, navigation, etc.".
- ✓ Satellites could be self-owned, procured or leased; communication services could be over India or outside; and remote sensing data could be disseminated in India or abroad.
- ✓ NGEs can design and operate launch vehicles for space transportation and establish their own infrastructure.
- ✓ **NGEs can now make filings with the International Telecommunication Union (ITU)** and engage in commercial recovery of asteroid resources.
- ✓ In short, the entire gamut of space activities is now open to the private sector. Security agencies can task NGEs for procuring tailor-made solutions to address specific requirements.

Importance of Private Sector Participation

- ✓ **To Increase Global Space Economy:** India's share in the global space economy is less than 2% at present and the space policy will help it increase substantially to 10% in the future.
- ✓ **Space Exploration:** Allowing private companies to perform space missions has benefited nations such as the United States by promoting private-sector investment.
    - For example, **SpaceX's reusable Falcon 9 rockets has become a popular choice for space missions** around the world.
- ✓ **International Competitiveness:** With the increasing global interest in space exploration, private companies can help countries remain competitive in the industry.
- ✓ **Flexibility**: Private companies are often more agile and adaptable than government agencies, allowing them to respond more quickly to changing market demands and technological advancements.

Gaps in the Policy

- ✓ The policy sets out an ambitious role for IN-SPACe but provides no time frame for the necessary steps ahead.
- ✓ Neither is there an indicative timeline for ISRO's transitioning out of its current practices nor is there a schedule for IN-SPACe to create the regulatory framework.
- ✓ The policy framework envisaged will need clear rules and regulations pertaining to FDI and licensing, government procurement to sustain the new space start-ups, liability in case of violations and an appellate framework for dispute settlement.
- ✓ IN-SPACe is a regulatory body but doesn't have legislative authority.
- ✓ IN-SPACe is expected to authorise space activities for all, both government and non-government entities. Currently, its position is ambiguous as it functions under the purview of the Department of Space.

What Should Be Done to Fill These Gaps?

- ✓ The Space Policy 2023 is a forward-looking document reflecting good intentions and a vision. But it is not enough. What is urgently needed is a time frame to provide the necessary legal framework to translate this vision into reality, to successfully launch India into the Second Space Age.
- ✓ The government should bring a bill that grants statutory status to IN SPACe and also sets out time limits for both ISRO and IN SPACe. The bill should also address the ambiguity related to Foreign Investment, and government support for new space start-ups.

Government Step for Inclusion of Private Players in the Space Industry

Several steps have been initiated towards opening the space sector for private entities in a phased manner.

- ✓ In the 2019 budget, the government announced the setting up of **New Space India Limited** (NSIL) with a mandate to mass-produce and manufacture small satellite launch vehicles (SSLVs) and polar satellite launch vehicles (PSLVs) in partnership with the private sector through technology transfer.
- ✓ The **Draft National Space Policy 2020** was thus unveiled with the aim to increase public-private partnerships in space research and exploration activities. Instead of only partnering on the manufacturing and logistical side of operations earlier, private players were now given access to ISRO's infrastructure, technical resources and data to grow.

ISRO: History

- ISRO was established on 15 August 1969.
- Its aim was to "harness space technology for national development while pursuing space science research and planetary exploration."
- The chief executive of ISRO is also a chairman of the Indian government's space commission and the Secretary of the Department of Space.
- India's first Prime Minister, Jawaharlal Nehru, established the Indian National Committee for Space Research, also known as INCOSPAR, in 1962.
- The INCOSPAR works for space research in India. Vikram Sarabhai led it. He was the founding father of the Indian space program.
- ISRO then replaced INCOSPAR in 1969.

- ✓ In addition, the **Union Cabinet in 2020** approved the creation of the **Indian National Space Promotion and Authorisation Centre (IN-SPACe)** to act as a single-window, independent nodal agency between ISRO and private entities to utilise India's space resources efficiently.
- ✓ Recently, India's space agency unveiled a draft **"Humans In Space Policy 2021**" that would look at facilitating the participation of non-traditional players in undertaking space activities.

Digital India Bill

Why in News?

Context: The Ministry of Electronics and IT has been actively organising consultations on the proposed "Digital India Bill" to build conceptual alignment on a new law that will replace India's 23-year-old Information Technology (IT) Act.

Key Highlights

- The goal is to upgrade the current legal regime to tackle emerging challenges such as user harm, competition and misinformation in the digital space.
- The Union Minister of State for Electronics and Technology said that the first draft of the Bill should be out by the end of June. This is a much-anticipated piece of legislation that is likely to redefine the contours of how technology is regulated, not just in India but also globally.
- Changes being proposed include a categorisation of digital intermediaries into distinct classes such as e-commerce players, social media companies, and search engines to place different responsibilities and liabilities on each kind.

Background

- The upcoming Digital India Act (or Digital India Bill) is expected to be India's newest legislation and legal framework for regulating the country's online environment and digital data protection policies.
- The Digital India Act will fully replace the current Information Technology Act (IT Act) of 2000 by early 2023, which has faced criticisms for its outdated policies and inadequacies in dealing with modern-day technological issues.
- Since IT Act of 2000 was enacted, there have been many revisions and amendments (IT Act Amendment of 2008, IT Rules 2011) in attempts to define the digital space in which it regulates while trying to put more emphasis on the data handling policies.
- The IT Act was originally designed only to protect e-commerce transactions and define cybercrime offences, it did not deal with the nuances of the current cyber security landscape adequately nor address data privacy rights.
- The Digital India Act (DIA) will replace the archaic Information Technology (IT) Act, 2000, taking into account the necessity of regulating and safeguarding users in India's thriving Internet economy

Why Is There A Need For The Digital India Bill?

- Digital India Bill aims to offer:

Open Internet | **Online Safety and Trust** | **Accountability and Quality of Service** | **Adjudicatory mechanism** | **New Technologies**

- Urgent need for a specialized and dedicated adjudicatory mechanism for online civil and criminal offences. The adjudicatory mechanism should:
  - Be Easily Accessible
  - Deliver Timely Remedies to Citizens
  - Resolve Cyber Disputes
  - Develop A Unified Cyber Jurisprudence

- Enforce The Rule of Law Online

- Data protection laws control the gathering, use, transfer, and disclosure of personal information and the security of that information.
- It gives people access to their data, establishes accountability standards for businesses that process it, and includes redressal for improper or harmful processing.
- Data protection laws also provide remedies for false profiles and fraud that can also be made using stolen information.
- When information falls into the wrong hands, it can jeopardise people's safety in various ways, including their economic security, physical safety, and personal integrity, so to protect the users from that exploitation, data protection laws are significant.
- Millions of Indians use hundreds of applications daily, creating data trails that may be misused to create profiles, target advertisements, and forecast activity and trends.
- In India, the intersection of the different laws for different fields creates ambiguity and it is one of the primary reasons behind the breach of a large amount of data. There is not yet a single codified law in India that pays close attention to all the aspects of data protection and keeps a record of the penalties that should be imposed.
- Countless examples of non-existent and malfunctioning grievance redressal mechanisms need to be quickly resurrected and reviewed. The enforcement mechanism frequently encounters a number of implementation issues while handling cases related to data breaches and cyber security.
- Since India is a nation-state, the data of the citizens is considered a national asset. Depending on India's security and geopolitical objectives, this national asset may need to be protected and stored within national borders. That would include not only the corporates but also Non-Governmental Organisations and governmental bodies.
- Despite India being a member of several international organisations that focus on data protection mechanisms like the United Nations Commission on International Trade and the provisions in Directive Principles of State Policies. Article 38 is related to the overall welfare of citizens. Privacy and data protection are essentially related to a welfare state. It also states in Article 51 that in order to create international peace and security, the State should work to promote adherence to treaty obligations and international law.

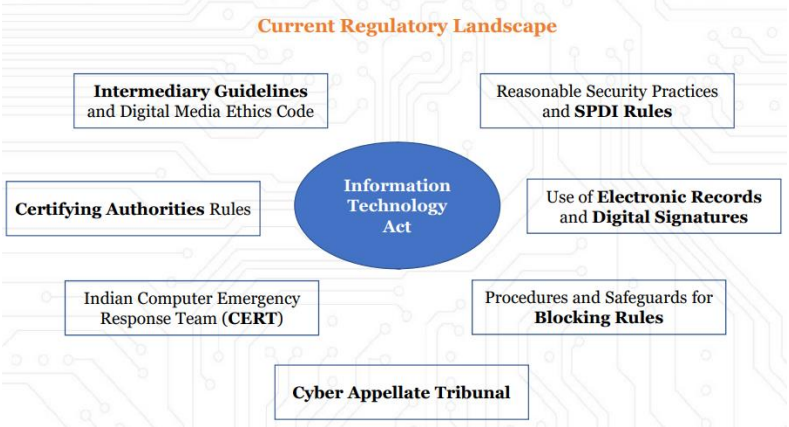
Scope of Digital Laws?

- The new Digital law should be evolvable and consistent with changing market trends, disruption in technologies, and development in international jurisprudence and global standards for qualitative service/products delivery framework.
- In order to rapidly create, modify, and enforce regulations, it will adopt a 'principles & rule-based approach' to regulation which provides a legislative framework under governing principles and effective measures for securing compliance with the ever-evolving rule of law.

Current Regulatory Landscape

What is the IT Act, 2000?

- It is the primary law in India for matters related to cybercrime and e-commerce, giving legal sanction to e-commerce and transactions, enabling e-governance, and preventing cybercrime.
- Under the law, for any crime involving a computer or network located in India, foreign nationals can also be charged.
- The act gives legal recognition to digital signatures.



- The IT Act 2000 defines an "intermediary" to include any entity between a user and the Internet.
- The IT Rules sub-classify intermediaries into 3 main categories:
    - Social Media Intermediaries (SMIs),
    - Significant Social Media Intermediaries (SSMIs)
    - Online Gaming Intermediaries.
- SMIs are platforms that facilitate communication and sharing of information between users.
- SMIs that have a very large user base (above a specified threshold) are designated as SSMIs.

Issues with The Current Regulatory Framework

- The definition of SMIs is very broad encompassing a variety of services such as video communications, matrimonial websites, etc.
- The rules lay down stringent obligations for most intermediaries, such as a 72-hour timeline for responding to law enforcement 'content take down' requests.
- Unfortunately, all intermediaries [ISPs, websites, e-commerce platforms, cloud services] are treated similarly, which:
    - Adds to their cost of doing business
    - Exposes them to greater liability without meaningfully reducing risks presented by the Internet.

The current IT Act has the following limitations, among others:

- Lack of comprehensive provisions on user rights, trust & safety;
- Limited recognition of harms and new forms of cybercrimes, without any institutional mechanism for awareness creation;
- Lack of distinct regulatory approaches for harmful and illegal content;
- Absence of adequate regulations to address the regulatory requirements of emerging technology, technology, assessments of high-risk automated automated-decision decision-making systems modern digital businesses including monopolies and duopolies;
- Lack of adequate principles for data/privacy protection;
- Lack of a converged, coordinated & harmonized institutional regulatory body; a dedicated & efficacious investigatory/ enforceability and a swift adjudicatory mechanism;
- Lack of coordinated cyber security incident response mechanism.

Likely Provisions under Digital India Act 2023

- **Freedom of Expression**:
    - Social media platforms' own moderation policies may now be reduced to constitutional protections for freedom of expression and Fundamental speech rights.
    - An October 2022 amendment to the IT Rules, 2021 says that platforms must respect users' free speech rights.
    - Three Grievance Appellate Committees have now been established to take up content complaints by social media users.
    - These are now likely to be subsumed into the Digital India Act.
- **Online Safety:**
    - The Act will cover Artificial Intelligence (AI), Deepfakes, cybercrime, competition issues among internet platforms, and data protection.
    - The government put out a draft Digital Personal Data Protection Bill in 2022, which would be one of the four prongs of the Digital India Act, with the National Data Governance Policy and amendments to the Indian Penal Code being others, along with rules formulated under the Digital India Act.
- **New Adjudicatory Mechanism:**
    - A new "Adjudicatory Mechanism" for criminal and civil offenses committed online would come into place.
- **Safe Harbour:**

- The government is reconsidering a key aspect of cyberspace — 'safe harbour', which is the principle that allows social media platforms to avoid liability for posts made by users.
- The term has been reined in recent years by regulations like the Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021, which require platforms to take down posts when ordered to do so by the government, or when required by law.

What Is Safe Harbour?

Safe harbour – As given under Section 79 of the IT Act, 2000, it is the legal immunity that online intermediaries enjoy against content posted by users on their platforms.

Due diligence – This is available as long as these platforms abide by certain due diligence requirements, such as censoring content when asked by the government or courts.

Origin – The concept originally came from Section 230 of the United States' Communications Decency Act, which has been termed one of the foundational laws behind the modern Internet.

Web 2.0 – It is one of the main reasons behind the meteoric rise of Internet giants such as Facebook that have defined the Web 2.0 era where users can post content on the internet.

Why is the Digital India Act Important?

- The Digital India Act will be the most significant piece of IT legislation to come out of India in its entire history and will potentially govern the entire country's digital laws for the next decade or two. With this new law, the country hopes to future-proof its digital laws and and enable businesses to compete on a global scale. Additionally, the Indian government has attempted to involve and consult as many stakeholders (citizens) in the drafting of the Digital India Act to ensure that the rules and framework enable a comprehensive IT ecosystem within the country for at least the next decade.
- However, the ultimate goal is not just to ensure stronger laws for citizen privacy rights and build trust in the government — the Digital India Act will be designed to stimulate the digital economy for Indian businesses and transform the nation into a worldwide digital powerhouse as the world's most populous nation. India can achieve a trillion-dollar digital economy by 2026, centered around the Digital India Act.

Key Components Of The Proposed Digital India Act

Key components of the proposed DIA are as follows:

- **Enabling an open internet**: One of the core principles of the DIA will be to promote choice, competition, online diversity, ease of doing business, and fair access to digital markets. Keeping this principle in mind, provisions around mandating interoperability of digital services such as ad-tech platforms, mobile application stores, emphasis on fair trade practices for dominant market players and ensuring non-discriminatory access to digital services are expected.

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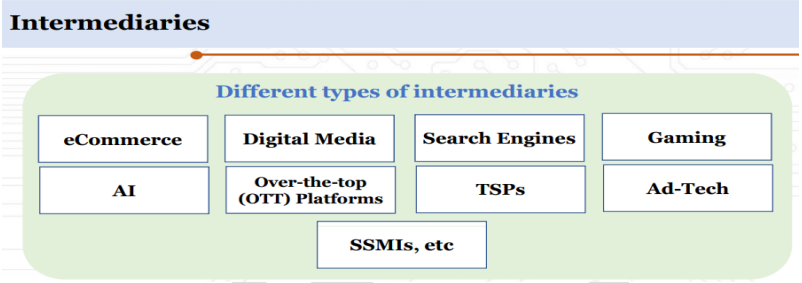
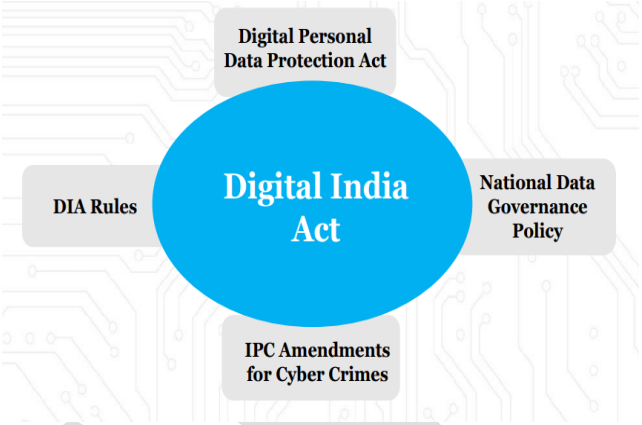
- **Enhanced obligations for intermediaries and other entities on the internet**: The focus of the DIA will be to identify different set of compliances specific to each kind of intermediary and the nature of its business. The scope of intermediaries under the DIA is expected to be wide and include search engines, advertisement technology platforms, e-commerce platforms, social media platforms, digital content platforms, gaming platforms. Further, obligations may also be expected for entities operating on the internet which may not be necessarily operating as an intermediary.
- **Safe harbour principle under the DIA:** Notably, the DIA is expected to modify the safe harbour principle enshrined under Section 79 of the IT Act for intermediaries. Any protection from liability under the DIA regime is likely to be subject to continuing compliance with specific obligations with respect to hosting third party information for different sets of intermediaries.



- **Ensuring online safety and trust:** Robust provisions for protecting users against harmful content and cyber offences are expected to find place under the DIA. In the context of children, specific provisions around age gating to regulate their access to addictive technology and harmful content are expected. DIA also proposes to introduce measures such as periodic risk assessments, algorithmic transparency, disclosures by data intermediaries, to protect open internet framework, increasing accountability and enabling informed choices for users.

- **False information:** Curbing false information / fake news on the internet, especially on social media platforms and messaging services will perhaps be one of the key aspects under the DIA. In this regard, specific compliances on moderation of such information by intermediaries, such as social media platforms, will likely be prescribed.
- **Regulating artificial intelligence**: Given the widespread use of artificial intelligence in critical fields such as healthcare, banking and aviation, development as well as deployment of artificial intelligence may be made subject to rigorous requirements under the DIA. These requirements may consequently impact regulation and safeguarding of emerging technologies such as machine learning, Web 3.0, wearable technology, autonomous systems, blockchain, virtual reality, etc.
- **Regulation for privacy invasive devices**: Provisions to regulate devices which may be invasive of privacy such as spy camera glasses and wearable technologies may be introduced under the DIA. These may include implementation of 'Know-Your-Customer' requirements, prior to being approved for sale in markets.
- **Enhanced penalties for cyber-crimes:** The DIA will aim to strengthen the penalty framework for non-compliances, especially for cyber-crimes and other offences.
- **Adjudicatory mechanism:** The DIA proposes to enable a specialised and dedicated adjudicatory mechanism for addressing online civil and criminal offences. In light of this, a dedicated adjudicatory authority constituted under the DIA seems likely.

Key Aspects of the Digital India Act/Bill



The Bill is a key pillar of an overarching framework of technology regulations the Centre is building, including:

- The draft Digital Personal Data Protection Bill, 2022;
- A policy for non-personal data governance.

Digital Personal Data Protection Bill

The Bill will apply to the processing of digital personal data within India where such data is collected online, or collected offline and is digitised. It will also apply to such processing outside India, if it is for offering goods or services or profiling individuals in India.

- Personal data may be processed only for a lawful purpose for which an individual has given consent. Consent may be deemed in certain cases.
- Data fiduciaries will be obligated to maintain the accuracy of data, keep data secure, and delete data once its purpose has been met.
- "Data Fiduciary" is defined as any person who alone or in conjunction with other persons determines the purpose and means of processing of personal data.
- The Bill grants certain rights to individuals including the right to obtain information, seek correction and erasure, and grievance redressal.
- The central government may exempt government agencies from the application of provisions of the Bill in the interest of specified grounds such as security of the state, public order, and prevention of offences.
- The central government will establish the Data Protection Board of India to adjudicate non-compliance with the provisions of the Bill.

Why is Digital Personal Data Protection Bill Significant?

The new Bill offers significant concessions on cross-border data flows, in a departure from the previous Bill's contentious requirement of local storage of data within India's geography.

- It offers a relatively soft stand on data localisation requirements and permits data transfer to select global destinations which is likely to foster country-to-country trade agreements.
- The bill recognises the data principal's right to postmortem privacy (Withdraw Consent) which was missing from the PDP Bill, 2019 but had been recommended by the Joint Parliamentary Committee (JPC).

National Data Governance Framework Policy

Data governance is managing data usage, data security, data availability, and data integrity. During the Union Budget 2023 presentation, the finance minister Smt Nirmala Sitaraman announced that GoI is to launch National Governance Policy. The policy will create an Indian Data Management Office. The IDMO will operate under the IT Ministry. The government of India is to launch a policy to increase access to anonymized data in a safe and secure way.

What is National Data Governance Policy?

The policy will increase the availability of data that are of national importance. It will increase the awareness of citizens by increasing the availability of open safe and authentic data.

- Increase the overall compliance
- Enhance the participation of the public
- Secure data sharing on the internet
- Streamline privacy standards

Objective
The main aim of the policy is to make the data secure and make it available to startups in the country. In the 2023 budget, almost every new government program and scheme are focusing on startups.

Significance
The National Data Governance Policy is the first step to towards Digital Government. With the policy, the GoI can increase its decision-making authority. Data privacy standards can be increased. Data protection standards shall be improved.

Anonymized data

The data that is sensitive and needs extra protection are called anonymized data. The data anonymization process removes personally identifiable information. Take AADHAR for example. GoI holds the name of the citizen, his date of birth, and his address in AADHAR. These data should be made available only to Infosys. Because GoI hired Infosys to create software for Aadhar implementation. If this data is anonymized, the hackers cannot identify the right information of the citizen. And the information will be made available only to the concerned party.

New Parliament

Why in News?

Prime Minister Narendra Modi on **28 May 2023** inaugurated India's new Parliament building and called it a **symbol of the "aspirations"** of 140-crore citizens and a vehicle that will drive India in the next 25 years towards its goal of becoming a "**developed country**" to coincide with the **100th anniversary of the nation's Independence**. This is the **temple of our democracy** giving the message of India's determination to the world.
The new Parliament House will be a witness to the rise of an "**Atmanirbhar Bharat**" (self-reliant India), he said, adding that the new building was an example of the coexistence of the ancient and the modern.
The new parliament building was developed as part of the **Central Vista Redevelopment project**. The prime minister inaugurated the parliament and placed '**Sengol**', the symbol of power transfer to India from the British.

Parliament

Created after 1947, the Indian Parliament is an expression of the faith that the people of India have in principles of democracy. These are participation by people in the decision-making process and government by consent. The Parliament in our system has immense powers because it is the representative of the people. Following are the important functions of the Parliament:

- ✓ To Select the National Government
- ✓ To Control, Guide and Inform the Government
- ✓ Law-Making

Sengol

- ✓ The Sengol is derived from the Tamil word "**Semmai**" which means "**Righteousness**".
- ✓ It was made of **gold** and was carried by emperors during ceremonial occasions to represent their authority in **Chola empire** and was handed over from one king to another as a mark of succession and legitimacy.
- ✓ The Cholas ruled over parts of Tamil Nadu, Kerala, Karnataka, Andhra Pradesh, Telangana, Odisha, and Sri Lanka from the 9th to 13th century CE.

Democracy

The word 'Democracy' is derived from Greek origins and means "rule by the people." "Democracy is a form of government in which the rulers are elected by the people."

- ✓ Parliament is the essence of democracy – participation by people in the decision-making process and government by consent.
- ✓ It is a place for debate/discussion/deliberation to realise the aspirations of the people.
- ✓ The Indian Parliament is the highest deliberative body and supreme representative institution of the largest working democracy in the world.
- ✓ It is in its Chambers that the destiny of a nation of a billion-plus people is shaped, and their expectations, concerns, problems and dreams are fulfilled.
- ✓ It is in this temple of democracy that the members of the two Houses of Parliament keep the Executive accountable at all times and closely monitor the policies and programmes for national welfare.

About Old Parliament

The old parliament building's construction began in 1921 and was completed in 1927. It was designed by the architects **Edwin Lutyens and Herbert Baker**.

The building was originally called the **Council House** and housed the **Imperial Legislative Council**, the legislature of British India.

The parliament building's **circular shape** was inspired by the **Colosseum, the Roman historical monument**. A few Indian elements, such as jaalis and chhatris, were added to the design.

Why New Parliament

More Space

- The old Parliament building, was built in 1927. It was not designed to accommodate a bicameral legislature (i.e having two chambers or houses) according to the government data.
- During joint sessions, the limited seating capacity becomes the problem.
- Also, the lack of space for movement poses a significant security risk. It is likely to increase substantially after 2026 as the freeze on total number of seats is only till 2026.

Outgrowing the Heritage

- The existing Parliament House, is a century-old **Heritage Grade-I building**.
    - Heritage Grade-I comprises buildings and precincts of national or historic importance, embodying excellence in architectural style, design, technology and material usage and/or aesthetics.
    - They may be associated with a great historic event, personality, movement or institution. They have been and are the prime landmarks of the region.
- With increase in parliamentary activities and users over the years, the old building's age and limited infrastructure no longer meet the current requirements. For example in terms of space, amenities, and technology.

Infrastructure Distress

- There are many Ad hoc constructions and modifications made to the old Parliament building which have strained the building's infrastructure.
- The addition of essential services like water supply, air conditioning, and CCTV cameras has led to seepage issues, impacting the building's aesthetics.
- Outdated communication structures and inadequate fire safety measures raise concerns about the safety of people working in Parliament.

Concerns about Structural Safety

- Old Parliament was built when Delhi was in Seismic Zone II, but now the region falls under Seismic Zone IV. Therefore, it must meet the new modern seismic standards.

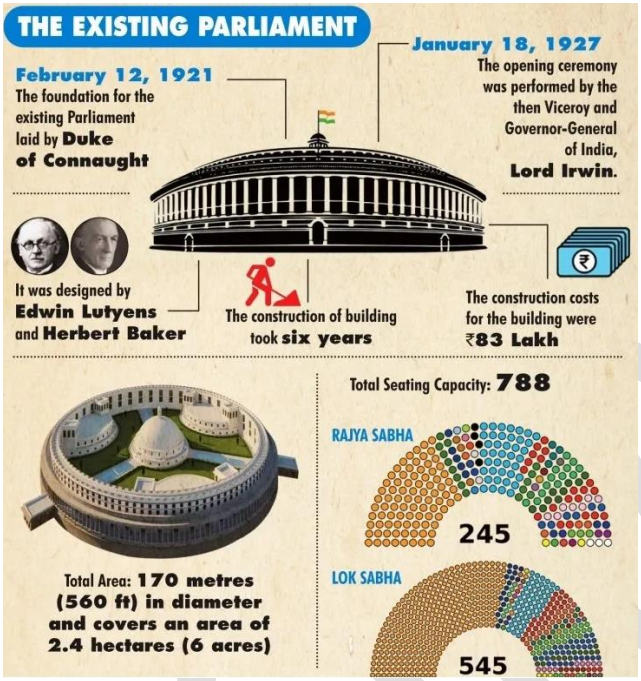
Inadequate Office Spaces

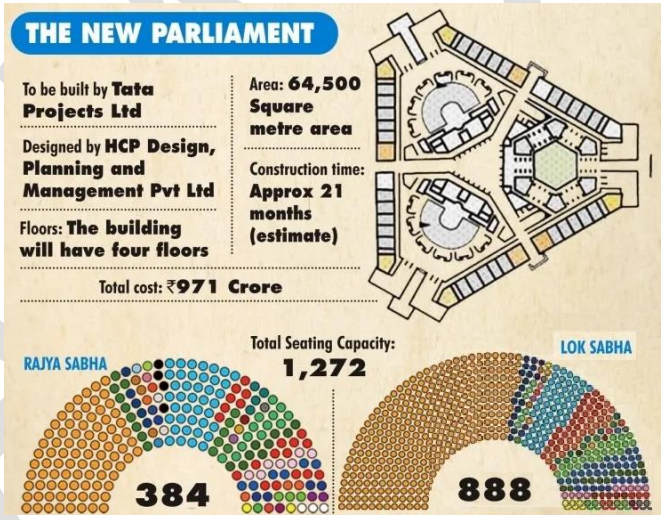
Over time, the inner service corridors have been converted into offices which have resulted in poor-quality workspaces. Sub-partitions further reduce the limited space. This adversely affects the productivity and well-being of employees.

Features of the New Parliament

Important features of the new Parliament are as follows:

- **Increased Capacity**
- **Optimum Space Utilization**
- **Modern Technological Facilities**
- **State-of-the-Art Facilities**
- **Eco Friendly and Sustainable**
- **Cultural Integration**
- **Peacock and Lotus Flower Theme**
- **Inclusivity for All**





- ✓ **Increased Capacity**
  - The new Parliament building will be able to accommodate 888 Members of Parliament (MPs) in the Lok Sabha, three times the capacity of the current Lok Sabha.
  - The new Rajya Sabha will have 384 seats, whereas the old one had only 245 seats.
  - Joint sessions of Parliament can now accommodate up to 1,272 seats, facilitating inclusive and robust democratic proceedings.
- ✓ **Optimum Space Utilization**
  - The new Parliament building's triangular shape ensures efficient utilization of space.
- ✓ **Modern Technological Facilities**
  - To enhance the technological capabilities of the House, each MP's seat in the new Parliament House will have a multimedia display in front of it.
  - The Lok Sabha and the Rajya Sabha chambers will have digitised voting system, well-engineered acoustics, and state-of-the-art audio-visual systems to ensure effective legislative proceedings.
  - The Ministers' chambers can be accessed through corridors running parallel to the triangular boundary of the building.

- ✓ **State-of-the-Art Facilities**
  - A state-of-the-art Constitutional Hall serves as the heart of Indian democracy, placing citizens at the center of governance.
  - The building also offers ultra-modern office spaces equipped with cutting-edge communication technology, promoting efficiency and security.
- ✓ **Eco Friendly and Sustainable**
  - The new Sansad Bhavan stands as a "Platinum-rated Green Building," reflecting India's dedication to environmental sustainability.
  - It uses green construction materials and incorporate devices to save 30 percent electricity consumption.
  - Rainwater harvesting and solar power generation systems will be implemented to promote renewable energy sources.
- ✓ **Cultural Integration**
  - The new Parliament building integrates the vibrance and diversity of modern India, incorporating regional arts, crafts, and cultural elements.
- ✓ **Peacock and Lotus Flower Theme**
  - The Lok Sabha and Rajya Sabha in the new Parliament House will showcase distinct themes.
  - The Lok Sabha will incorporate the national bird, the Peacock, while the Rajya Sabha will feature the national flower, the Lotus.
- ✓ **Inclusivity for All**
  - Recognizing the importance of accessibility, the new Parliament building prioritizes divyang (differently-abled) individuals.
  - It ensures that people with disabilities can move freely within the premises, fostering inclusivity and equal participation.

Parliamentary Democracy & Parliamentary System of Govt.

- ✓ The nominal executive is the head of state e.g. President while the real executive is the Prime Minister, who is the head of government.
- ✓ Eg: India, Germany, Italy, Japan, United Kingdom, Portugal etc.
- ✓ The role of President or monarch is primarily ceremonial and the Prime Minister along with the cabinet wields effective power.
- ✓ The Constitution of India provides for a parliamentary form of government, both at the Center and in the States.
- ✓ Articles 74 and 75 deal with the parliamentary system of government at the Union level and Articles 163 and 164 contain provisions with regard to the States.
- ✓ Executive is responsible to the legislature for its policies and Acts.

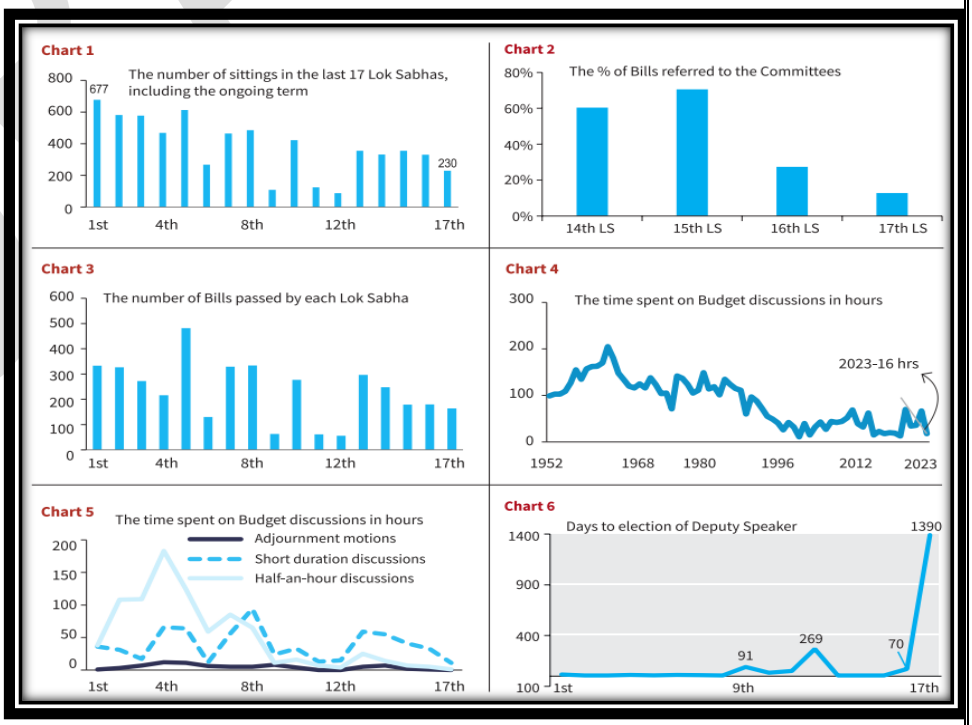


Fig: Performance of Parliament Till Now

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Executive Democracy & Executive System of Govt.

- ✓ There is only one executive. In this system, the President is both head of state and government, e.g. USA, South Korea etc.
- ✓ The executive is not responsible to the legislature for its policies and Acts, and is constitutionally independent of the legislature in respect of its term of office.

Uniform Civil Code

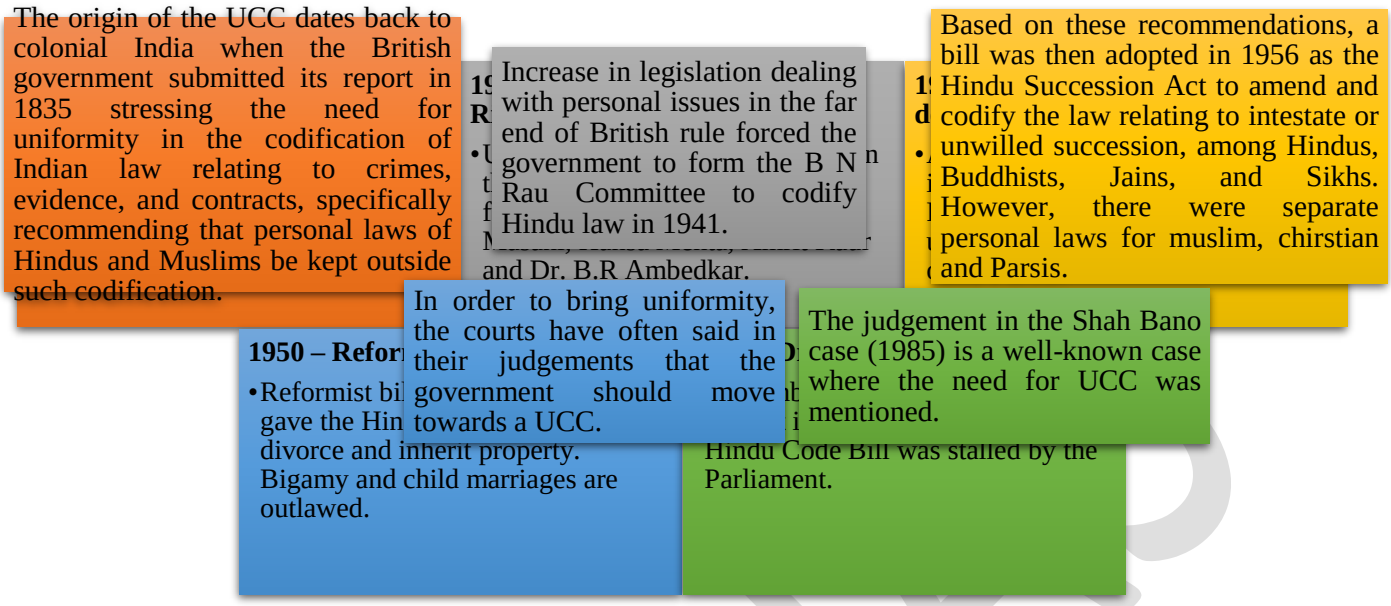
Why in News?

Context: The 22nd Law Commission said push for a Uniform Civil Code should not become a divisive tool.

Key Highlights

- The Commission, the 22nd such panel, has claimed that years have elapsed since similar views were sought by the previous panel, and that a fresh effort was needed to garner varied opinions.
- The 21st Commission had released a consultation paper in 2018 that categorically said a Uniform Civil Code was "neither necessary nor desirable" at that stage.
  - In a well-reasoned document, it had then argued that the focus of initiatives to reform the various personal laws should be the elimination of all forms of discrimination rather than an attempt to bring about uniformity in the laws governing various religions.
  - The document was progressive in nature, in as much as it emphasised non-discrimination over uniformity, and recognised that there could be diverse means of governing aspects of personal law such as marriage, divorce, inheritance and adoption instead of imposing a single set of rules on society.
  - This would entail the removal of discriminatory provisions, especially those that affect women, and adoption of some overarching norms rooted in equality.
- A Uniform Civil Code for the entire country is indeed a lofty goal, but the question whether introducing one for all aspects of personal law would impinge on the freedom of religion has been part of the debate.
- B.R. Ambedkar viewed it as desirable, but favoured its being voluntary. It is possible that a uniform code may be adopted without offending any religion, but the concept evokes fear among sections of the minorities that their religious beliefs, seen as the source of their personal laws, may be undermined.
- Basic reforms can be given priority — such as having 18 as the marriageable age for all across communities and genders. Introducing a 'no-fault' divorce procedure and allowing dissolution of marriage on the ground of irretrievable breakdown, and having common norms for post-divorce division of assets were other matters the previous Commission threw up for a debate.
- Within each community's laws, it will be desirable to first incorporate universal principles of equality and non-discrimination and eliminate practices based on taboos and stereotypes.

Background of Uniform Civil Code



Uniform Civil Code: Timeline

What is the Uniform Civil Code Bill?

Uniform Civil Code aims to provide a single set of legal rules governing personal matters like marriage, divorce, inheritance, and adoption for all citizens of India, irrespective of their religion.

- ✓ The idea of a Uniform Civil Code is to bring about a sense of cohesion and equal treatment among all Indian citizens.
- ✓ Uniform Civil Code, under Article 44, Part 4 is a common legal framework for all citizens, irrespective of their religious beliefs and practices which has motive of equal treatment amongst all Indian citizens regardless of their religious, ethnic, or caste backgrounds.
- ✓ Law Commission of India has again invited people to share their views and ideas on UCC.
  - Anyone who is interested and willing can submit their opinions before 14 July 2023, according to a notification from the Commission, and can share their suggestion in 3000 words or through the file.
- ✓ Uniform Civil Code in India Bill, 2018 is legislation proposed by the Bharatiya Janata Party in the year 2018, in Lok Sabha with the object of providing a common civil code or common law for every citizen who is residing in India irrespective of their religion, race, cast, etc. in the entire geographical territory of India.

Objective of Uniform Civil Code

The objectives of the UCC Bill, 2018 are:

- Implementing the right to equality enshrined under Article 14 and the prohibition of discrimination on the grounds of religion, race, caste, sex, or place of birth enshrined in Article 15 of the Constitution of India.
- Eliminating personal laws which are established on the foundations of religious beliefs and provide a homogenous structure of laws.
- Abolishing any type of discrimination against women may arise due to the inadequate and dissimilar laws in the Indian legal mechanism.

Indian Constitution on Uniform Civil Code

- ✓ The constitution has a provision for Uniform Civil Code in Article 44 as a Directive Principle of State Policy which states that the State shall endeavor to secure for the citizens a Uniform Civil Code throughout the territory of India.

- ✓ There are a number of cases where the Supreme Court has referred to Article 44 and the concept of uniform civil code, mainly to highlight the lacklustre attitude of the executive and the legislature in the implementation of the directive.
- ✓ Article 44 of the Constitution calls upon the State to endeavour towards securing a Uniform Civil Code throughout the territory of India. It falls within Part IV of the Constitution titled as Directive Principles of State Policy (DPSP) and understood as exhortations to the State to be kept in mind while governing the country.

A Demand for UCC

We see a rise in demand from all parts of the country for a Uniform Civil Code. But it comes with a set of its own misconceptions. People think are personal are invincible and aren't subject to judicial review. People believe that UCC is the only option left to filter out all discriminatory practices in personal laws. The truth is all laws whether personal or criminal or financial are judicially reviewable and the judiciary can declare them potentially void if they encroach upon Fundamental Rights.

- The only exception to the present rule of judicial review is that the laws aren't codified under Indian law and are derived from a different legal system.
  - Here, understanding Article 13 of the Constitution becomes essential. Article 13 of the Indian Constitution defines law and declares them void if they violate or contravenes any provision of Part III.
  - In the judgement of State of Bombay vs. Narasu Appa Mali, 1952, the HC decided that personal laws are not "laws" within the meaning of Article 13 and thus won't be included in the ambit of Fundamental Rights enshrined under Part III (Article 12-35) of the Constitution.
  - What the judgement essentially does is to keep the personal laws how-so-much arbitrary or violate of fundamental rights away from judicial scrutiny.
  - Other judgements where the Supreme Court held the same principle is Krishna Singh vs Mathura Ahir, 1980, Maharshi Avdesh case, 1994, and the Ahmedabad Women Action Group case of 1997. But, in 1996 a three-Judge SC bench in the case of Mudaliar held personal laws to be void if they are violative of fundamental rights.
  - Still, the judgement of Narasu Appa Mali has not been overruled and the ghost of Narasu Appa still looms.
- Another example is the Sharia law, this law is derived from the Islamic religious legal system and not from the Indian Constitution and thus is exempt from judicial review.
- A similar thing was also quoted by Ambedkar, "I personally do not understand why religion should be given this vast, expansive jurisdiction so as to cover the whole of life and to prevent the legislature from encroaching upon that field.
  - After all, what are we having this liberty for? We are having this liberty in order to reform our social system, which is so full of inequalities, discriminations and other things, which conflict with our fundamental rights.

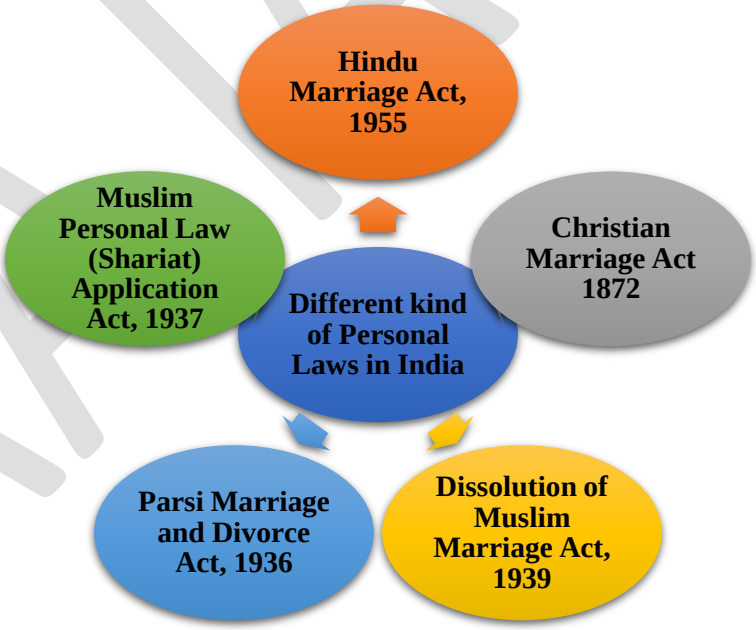
- It is, therefore, quite possible for anybody to conceive that the personal law shall be excluded from the jurisdiction of the State."

- But in landmark Judgement such as that of Shamim Ara and Daniel Latifi how the legislation protected women's rights under the Muslim Women (Protection of Rights on Divorce) Act, 1986 by interpreting the provisions of Protection of Women from Domestic Violence Act of 2005.
  - In these cases, too, however, the stand taken by the SC is that it is not required for the personal laws to be in accordance with the principles enshrined in the Fundamental Rights of the Indian Constitution, which in itself is very alarming.

What Are Personal Laws?

After the end of British rule in India, the Indian government took steps to strengthen the legislation dealing with personal issues of the two exempted communities from the UCC—Hindus and Muslims.

- ✓ The BN Rau Committee was created which codified Hindu law in 1941.
  - The committee was tasked with examining the necessity of common Hindu laws that go in accordance with the scriptures.
- ✓ It should be noted that personal laws are currently governed by their religious scriptures.
  - For the unversed, personal laws are distinguished from public law and cover marriage, divorce, inheritance, adoption and maintenance.
- ✓ Further, the committee recommended a civil code of marriage and succession for Hindus. It is necessary to understand that personal laws are applied to a certain set of people following a particular region, belief or faith—these are made only after due consideration of the religious customs and texts.
- ✓ Both Hindu and Muslim personal laws were made after verifying the source and authenticity of religious texts.
- ✓ For Muslims, personal laws were applied to inheritance, wills, successions, marriage, divorce, gifts, wakfs, dowry and guardianship—all after taking references from the Quran.



Personal laws were made to promote "freedom of religious practice", but several elements still do not stand relevant in modern scenarios.

- ✓ The recent case of Benazeer Heena, where a Muslim woman journalist approached the Supreme Court pleading to end the practice of 'Talaq-e-Hasan', a unilateral divorce practice that gives the husband power to divorce his wife by pronouncing 'talaq' three times.
- ✓ Heena approached the court pleading to make the practice unconstitutional. She called triple talaq irrational, arbitrary and in violation of Articles 14, 15, 21 and 25 of the Constitution.
- ✓ After a nationwide demand and discussion, eventually, a historic decision was decreed in 2019 by the Indian parliament that made Triple Talaq, also known as instant talaq, an offense.

What is the Status of Personal Laws in India?

Personal law subjects like marriage, divorce, inheritance come under Concurrent list.

In India every religion has different personal laws. Some of the different kind of personal Laws in India are:

The Hindu personal laws (that apply also to the Sikhs, Jains and Buddhists) have been codified by the Parliament in 1956. This Code Bill has been split into four parts:

- The Hindu Marriage Act, 1955
- The Hindu Succession Act, 1956
- The Hindu Minority and Guardianship Act, 1956
- The Hindu Adoption and Maintenance Act, 1956

On the other hand, Shariat law of 1937 governs all personal matters of Indian Muslims in India.

- ✓ It clearly states that the State shall not interfere in matters of personal disputes, and a religious authority would make a declaration based on his interpretation of the Quran and Hadith.
- ✓ There are other religions as well which are governed by different personal laws.

Advantages surrounding UCC

Due to many invasions at different points of time, India has many religions but the republic of India by the preamble of the Constitution of India grants itself a status of Secular state and therefore it respects and tends not to interfere in the personal religious practices of every religion and to attain this secularism, a UCC is an ideal approach.
The advantages of implementing UCC are:-

- Prevention of discrimination based on religion, race, caste, gender, etc.,
- UCC will also cease discrimination in subject matters of succession, inheritance, marriage, divorce, adoption, and guardianship, etc,
- Prevention of complexity in implementing and understanding of various personal laws of different religion,
- Prevention of violence against women and preserving the rights of women in India, since numerous personal laws like marriage, divorce, and succession of a certain religion are violative of fundamental rights of women,
- UCC will grant women the right to equality and protection of the law in areas of marriage, divorce, adoption of child, succession, and inheritance of property, etc.
- UCC will establish a secular Indian society that will enhance the justice delivery of the judiciary.

Issues surrounding UCC

The Issues revolving around UCC are:

Different religions having different religious faiths which are based on the basic practices of the religion causes difficulty in implementing a basic platform of practices for every religion.

By attempting to implement this policy, the parliament is only duplicating the western model of law.

The misconception of minorities that UCC will destroy their religious practices and they will be complied to follow the religious practice of majorities, i.e. Muslims, Sikhs, Christians, Buddhists, Jain, and Zoroastrians.

The most significant issue is the unawareness of people regarding the objects of UCC, and the reason for such unawareness is the lack of education, fake news, irrational religious beliefs, etc.

Why UCC is not followed?

The Indian Constitution seeks and aims to create a Uniform Civil Code for its people. Harmony, fair treatment of all before the law, fair penalty or punishment for all, secular rule in a secular country, gender equality, justice for all, etc. are definitely admirable ideals that should be achieved through the Universal Civil Code.

- ✓ These may be perfect goals for a developing nation of great diversity, heterogeneity and potential, such as India. While it is worth appreciating the spirit and purpose behind "one nation one rule," the task was never easy.
- ✓ Also, Former Law Minister M Veerappa Moily in 2011 had clearly stated that his Government (the erstwhile Congress Government) will not touch the issue of Uniform Civil Code as it would involve changes in the personal laws of all the people, especially the minority communities.
- ✓ It was Prime Minister Jawaharlal Nehru who had first put forward the need for a uniform law during his tenure but he was only successful in including it in the Directive Principles of the Indian Constitution.
- ✓ The Hindu Code Bill in the 1950s was brought forward to bring uniformity with regard to customs, practices and legal aspects of personal matters. But, this also faced severe protests and had to be scrapped in 1956.

What has the 21st Law Commission said about UCC?

In 2016, the Modi government had requested the Law Commission of India to determine how to form a code in the presence of "thousands of personal laws" in the country.

In 2018, the Law Commission submitted a 185-page consultation paper on the reform of family law.

- ✓ The paper stated that a unified nation did not necessarily need "uniformity", adding that secularism could not contradict the plurality prevalent in the country.
- ✓ The Commission noted that the term "secularism" had meaning only if it assured the expression of any form of difference.

While saying that a UCC "is neither necessary nor desirable at this stage", the Law Commission recommended that discriminatory practices, prejudices, and stereotypes within a particular religion and its personal laws should be studied and amended.

- ✓ Some of these amendments include fixing the marriageable age for boys and girls at 18 years so that they are married as equals, making adultery a ground for divorce for men and women and simplifying the divorce procedure.

What are the various arguments around the UCC?

- It has been argued that while India does have uniformity in most criminal and civil matters like the Criminal Procedure Code, Civil Procedure Code, and the Contract Act, States have made over 100 amendments to the CrPC and IPC, as well as several amendments to civil laws.
- For instance, BJP-ruled States reduced the fines prescribed and justified by the Centre under the amended Motor Vehicles Act. Another example could be that the law of anticipatory bail differs from one State to another.
- Experts had argued that if there is plurality in already codified civil and criminal laws, how can the concept of 'one nation, one law' be applied to diverse personal laws of various communities? Besides, constitutional law experts argue that perhaps the framers did not intend total uniformity, which is why personal laws were placed in entry 5 of the Concurrent List, with the power to legislate being given to Parliament and State Assemblies.
- Looking at the codified personal laws of various communities in India — all Hindus are not governed by a homogenous personal law even after the enactment of the Hindu Code Bill, neither are Muslims and Christians under their personal laws.
    - Even at the time of drafting the Hindu Code Bill, several of its provisions actually sought to locate the complex links between the importance of inheritance, succession rights and the right to divorce.
    - But facing staunch opposition from conservative quarters, it was amended, diluted, and watered down multiple times to finally be separated into four different Acts — the Hindu Marriage Act, the Hindu Succession Act, the Hindu Minority and Guardianship Act, and the Hindu Adoptions and Maintenance Act — in the 1950s.

- Constitutional law scholar Faizan Mustafa notes that while marriages amongst close relatives are prohibited by the Hindu Marriage Act of 1955, they are considered auspicious in the south of India.
    - Even the Hindu Succession Act of 1956 made several compromises and could not make the daughter a coparcener till 2005.
    - Wives are still not coparceners nor do they have an equal share in inheritance. Similarly, there is still no uniform applicability when it comes to the Muslim personal law or the Shariat Act that was passed in 1937.
    - For instance, the Shariat Act is not applicable in Jammu and Kashmir and Muslims continue to be governed by customary law which is at variance with the Muslim personal law in the rest of the country.
    - The applicability also varies for certain sects of Muslims. Besides, many tribal groups in the country, regardless of their religion, follow their own customary laws
- While the Supreme Court in 2019 hailed Goa as a "shining example" of an Indian State which has a functioning UCC, experts point out that the ground reality in Goa is more complex and that the Code has legal pluralities.
    - The Goa Civil Code was given by the Portuguese in 1867; it permits a certain form of polygamy for Hindus while the Shariat Act for Muslims has not been extended to Goa with Muslims of the State being governed by Portuguese law as well as Shastric Hindu law.
    - The Code gives certain concessions to Catholics as well. Catholics need not register their marriages and Catholic priests can dissolve marriages performed in church.

22nd Law Commission

The 22nd law panel was constituted for a period of three years on February 21, 2020 and its chairperson, Justice Rituraj Awasthi (retd), assumed office on November 9, 2022. The term of the 21st Law Commission ended on August 31, 2018.

As per the information received from the Law Commission, the matter related to Uniform Civil Code may be taken up by the 22nd Law Commission for its consideration. According to an official release, the term of the panel has been extended up to August 31, 2024.

The Commission's three-year term ended on Feb. 20. 22nd Law Commission which is mandated to identify laws which are "no longer relevant" and recommend for their repeal.

Criticisms against implementing UCC

Some of the criticism related to the UCC are:

- Seen as an interference by the majority on personal laws of the minority.
- Seen as infringing on the fundamental rights of minorities provided under Article 25(freedom of religion).
- Difficult to implement in a diverse country like India having its own diverse cultures and religions.
- Politically motivated topic to segregate communities along religious lines during election season.
- Can be a cause for social unrest and move against secularism.

Points in Favour of UCC

Some of the Arguments in favour of UCC are:

- ✓ **Equality:** India is a secular democracy. A common civil and personal law in India would ensure equality among all its citizens, irrespective of their religion, class, caste, gender etc.
- ✓ **Reduce gender discrimination:** Personal laws of almost all religions are discriminatory towards women. Men are usually granted upper status in personal laws. Uniform civil code will bring both men and women at par and would reduce discrimination against women. It will promote gender equality and welfare of women.
- ✓ **Societal reforms:** Existing personal laws are mainly based on the patriarchal notions of the society in all religions. UCC will remove such patriarchal notions by destroying their sanctity.
- ✓ **Simplify legal matters:** UCC will simplify the cumbersome legal matters governed by personal laws. It will also help in speedy disposal of cases and reduce burden on the judiciary.

- ✓ **National integration:** A Uniform Civil Code will eliminate the scope of politicisation of issues of perceived discrimination or concessions/special privileges enjoyed by communities on the basis of their religious personal laws.

Which States Have a UCC in India?

Goa is the only state in the country that has a UCC. But the Goa Civil Code was given by the Portuguese in 1867. Goa has what Constitutional framers envisaged for India - a Uniform Civil Code. It applies in marriage and succession, governing all Goans irrespective of religious affiliation."

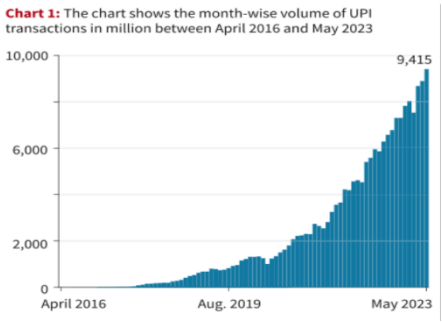
UPI payments

Why in News?

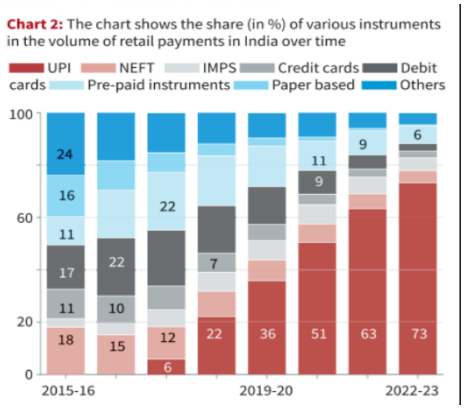
Context: UPI payments: relief for users, a headache for banks. The surge in UPI transactions has been mostly in terms of volume and not value.

- Daily limits on Unified Payments Interface (UPI) transactions set by apps and banks — both in terms of value and volume — has put the spotlight on the rapid rise in such transactions in India in recent years.
- In 2021, the national payments corporation of India (NCPI) limited the number of daily transactions users can make to 20, and the amount to ₹1 lakh per day.
- Banks and apps have come up with their own limits at various points in time in recent months. This has created a complex web of limitations both in value and volume.
- According to ICICI Bank's UPI FAQ Page, the number of transactions is limited to 10 in a 24-hour period, whereas Bank of Baroda and HDFC Bank allow 20 transactions in the same period.
- Such limits were introduced given the surge in the volume of UPI transactions in India in recent years after it was popularised as an alternative to cash in the period after demonetisation.
- **UPI payments** were **introduced** in India as a pilot programme on **April 11, 2016**.

Key Highlights



- ✓ **Chart 1:** It shows the month-wise volume of UPI transactions in million between April 2016 and May 2023.
  - In May 2018, around 190 million UPI payments were made in India.
  - This rose to 9,415 million in May 2023 — an astonishing increase of nearly 4,855%.
- ✓ **Chart 2:** It shows the share of various instruments in the volume of retail payments in India over time.
  - In 2017-18, the share of UPI in all retail payments was just 5.9%, while pre-paid payment instruments (wallets offered by Paytm and Amazon, gift vouchers, etc.) and debit cards dominated with shares of over 20% each.
  - In 2022-23, UPI edged out all instruments with its share increasing to over 73%, while pre-paid payment instruments came a distant second with a 6.5% share.
  - Also, the share of credit cards in retail payments decreased from over 11% to just 2.5% in the same period.
  - However, it should be noted that the surge in transactions was mostly in terms of volume and not value.
  - The value of UPI transactions carried out in May 2018 was ₹33,288 crore, which amounts to ₹1,756 per transaction. The corresponding figure for May 2023 was ₹14,89,145 crore, which amounts to ₹1,581 per transaction — a fall of ₹175 per transaction in five years.



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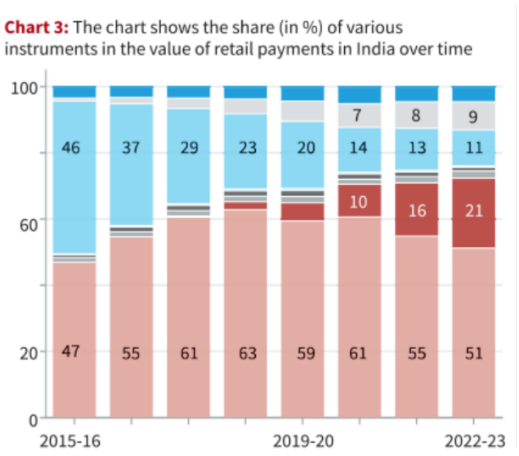
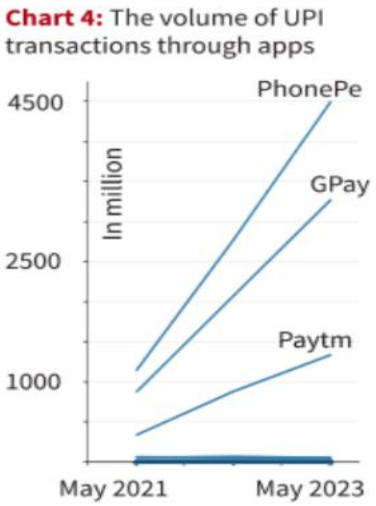
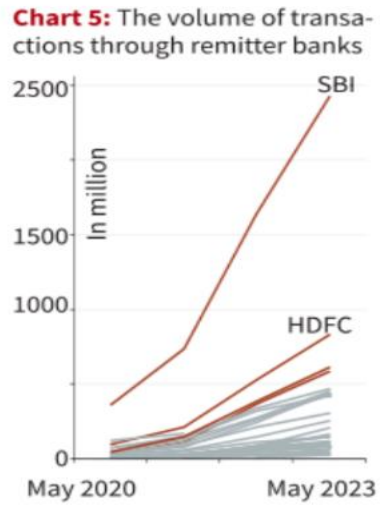
- ✓ **Chart 3:** It shows the share of various instruments in the value of retail payments in India over time.
  - In 2017-18, the share of UPI in the total value of retail payments was just 0.4%. It increased to 21.1% in 2022-23.
  - When the surge in volume and the decline in value are read together, two trends emerge.
    - First, consumers are increasingly using UPI as an alternative to petty cash, with the value associated with each transaction becoming smaller and smaller over time.
    - Second, according to PwC's Indian payments handbook, released in December 2020, banks are struggling to keep up with the surge in UPI payments by upgrading their banking infrastructure and technical systems.
  - This struggle is leading to transaction failures. This is also why smaller banks are setting UPI transaction limits which are much lower than even the ₹1 lakh allowed by the NCPI.
- ✓ **Charts 4 and 5**: It show the volume of UPI transactions through UPI apps and remitter banks, respectively.
  - PhonePe dominates the apps, closely followed by GPay, while Paytm was a distant third.
  - Among banks, State Bank of India was the remitter bank for a majority of UPI transactions, while HDFC was a distant second.







What is a UPI?

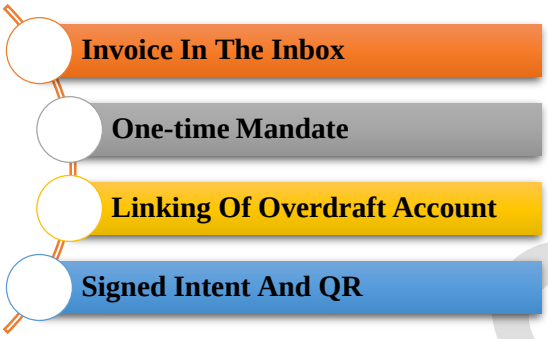
- It is an advanced version of Immediate Payment Service (IMPS)- round–the–clock funds transfer service to make cashless payments faster, easier and smoother.
- UPI is a system that powers multiple bank accounts into a single mobile application (of any participating bank), merging several banking features, seamless fund routing & merchant payments into one hood.
- UPI is currently the biggest among the National Payments Corporation of India (NPCI) operated systems including National Automated Clearing House (NACH), Immediate Payment Service (IMPS), Aadhaar enabled Payment System (AePS), Bharat Bill Payment System (BBPS), RuPay etc.
- The top UPI apps today include PhonePe, Paytm, Google Pay, Amazon Pay and BHIM, the latter being the Government offering.
- As part of an agreement, India's UPI will be linked to Singapore's PayNow.
- NPCI launched UPI with 21 member banks in 2016.
- In 2018, an upgraded version of UPI 2.0, was launched by the National Payments Corporation of India (NPCI).

National Payments Corporation of India(NPCI)

NPCI is an umbrella organisation for operating retail payments and settlement systems in India.

It is an initiative of the Reserve Bank of India (RBI) and Indian Banks' Association (IBA) under the provisions of the Payment and Settlement Systems Act, 2007 for creating a robust Payment and Settlement Infrastructure in India.

Key Features of UPI



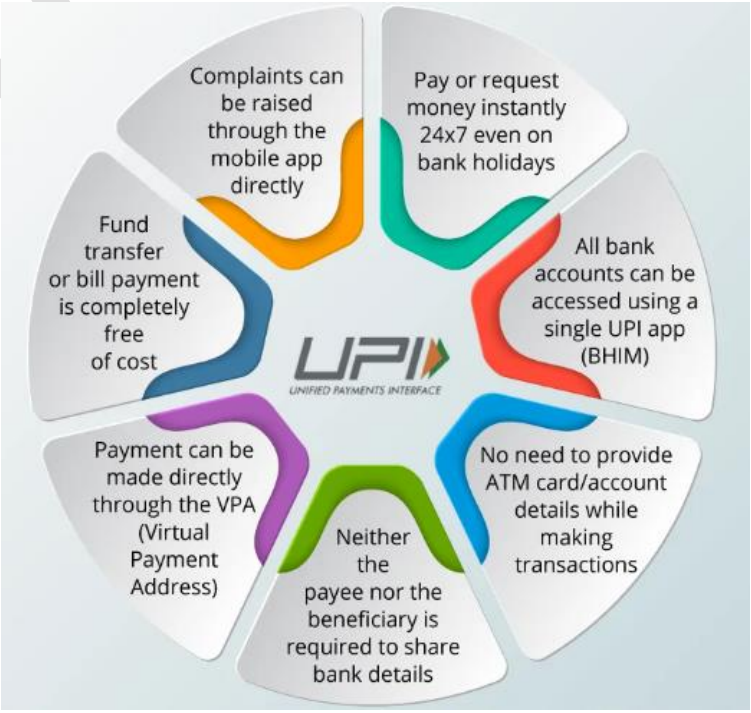
- ✓ **Invoice in the inbox:** This feature is designed for customers to check the invoice sent by the merchant prior to making payment. It will help customers to view and verify the credentials and check whether it has come from the right merchant or not.
- ✓ **One-time mandate:** UPI Mandate, which means customers including both merchants and individual users can pre-authorize a transaction and pay at a later date, can be created and executed instantly. On the date of actual purchase, the amount will be deducted and received by the merchant/individual user.
- ✓ **Linking of overdraft account:** In addition to current and savings accounts, customers can link their overdraft account to UPI.
- ✓ **Signed intent and QR:** This feature helps customers to check the authenticity of merchants while scanning QR or quick response code. It notifies the user with information to ascertain whether the merchant is a verified UPI merchant or not. This provides additional security. Customers will be informed in case the receiver is not secured by way of notifications.

QR code

- ✓ QR code (Quick Response code) is a two-dimensional (matrix) machine-readable bar code made up of black and white squares.
- ✓ This code can be read by the camera of a smartphone.
- ✓ It is used for storing URLs or other information that link directly to text, emails, websites, and phone numbers.

Benefits of Unified Payments Interface

- Customers merely share a virtual address and give no other critical information, therefore it is **secure**. Your bank account is used as an alias for the "virtual payment address."
- When a specific merchant's account is hacked, your security cannot be compromised because their database will only include a list of virtual addresses.
- Compared to other payment methods that send sensitive information like credit card numbers, it provides superior security. All of these information is concealed when utilizing UPI because just a Virtual Payment Address (VPA) is utilized.
- With digitalization, the market's black money can be diminished, increasing compliance and increasing tax revenue.
- The UPI has significantly impacted both the fintech sector and banks. It helps banks cut costs associated with merchant onboarding and offers them a low-cost alternative to cash.
- By using the collect payment option, make Person to Business (P2B) interactions easier. This would improve commerce and the Indian economy as a whole.
- UPI will reduce the amount of cash used in the economy, which is now 12% of GDP.



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- The widespread adoption of real-time payments helped Indian businesses and consumers save approximately US$ 12.6 billion in payment transaction cost. Digital payments improve the cash flow situation of the businesses as the payments are instantaneous. It helps increase the number of transactions and thus economic activity. It also unlocked US$ 16.4 billion or 0.56% of the Indian Gross Domestic Product (GDP) output.
- With digitalization, the amount of black money in the market can be reduced leading to greater compliance and more tax revenue.
- It enhanced consumer faith in digital transactions and encouraged them to shun the usage of cash.
- The UPI has had a huge impact on the banks and the fintech industry. It provides banks with a low-cost alternative to cash and helps them save on merchant onboarding costs.
- The data acquired through digital transactions also enables banks to market other services, have a better understanding of the spending pattern, and serve consumers better. The open architecture helps fintech firms to drive innovation and develop newer products and unique services.

What are the Limits that have been Imposed on UPI Transactions?

Unified Payments Interface (UPI) transactions have been on the rise since its introduction by the National Payments Corporation of India (NPCI) in 2016. UPI payments saw a record high of ₹149.5 trillion UPI, card transactions in 2022, as per report. But, now, banks like HDFC, State Bank of India (SBI) and ICICI have set a limit on UPI transactions, as per reports.

Bank transaction limit on UPI

- NPCI has set out guidelines for UPI transactions stating that a person can initiate a maximum payment of ₹1 lakh per day through UPI. The UPI limit varies from small banks like Canara Bank which allows ₹25,000 transactions, to big banks like SBI that have set a limit of ₹1 lakh.
- HDFC Bank has set a limit of ₹1 lakh on UPI transactions. For new users, the UPI limit is ₹5,000. ICICI customers can make UPI payments up to ₹10,000. Axis Bank capped the UPI payments limit at ₹1 lakh, while Bank of Baroda has set it to ₹25,000.
- In addition to the money limit levied on UPI transactions, NPCI has also set a limit on the number of transactions per day. The new regulations state that per day a person is allowed up to 20 transactions post which they are required to wait for 24 hours to renew transactions. However, the limit can vary depending on the banks.

UPI app limit

- Google Pay, Paytm, and Amazon Pay UPI have set a limit of ₹1 lakh per day along with a total of up to ten transaction limits across all UPI apps and bank account.

What is the Significance of Limits?

- The imposition of limits helps maintain the security infrastructure of UPI and ensures its seamless functioning.
- Limits assist in preventing potential fraud and risk concerns while balancing customer convenience.
- Higher limits are set for specific categories with higher average transaction values, such as capital markets or credit card bill payments.

Challenges to UPI

- Cybercrime has become a greater threat to the global banking and financial services industries amid the coronavirus pandemic. For instance, malicious software Cerberus
- Fraudulent claims, chargebacks, bogus buyer accounts, promotion/coupon abuse, account takeover, identity theft, card data theft, and triangulation fraud are all rising as challenges.
- UPI imposes transaction limits on both the number of transactions and the amount per transaction. While these limits

are put in place to ensure security and prevent misuse, they can be restrictive for businesses and individuals who require higher transaction volumes or larger amounts. As UPI continues to evolve, there is a need to reassess and potentially revise these limits to accommodate the growing needs of users. Striking a balance between security and transaction flexibility is crucial to drive wider adoption of UPI across various sectors.

- Lack of awareness and understanding about UPI remains a barrier to its widespread adoption, particularly among individuals who are less familiar with digital payment systems. It is essential to invest in awareness campaigns and educational initiatives to educate the masses about the benefits, functionalities, and security aspects of UPI. Training programs and easy-to-understand guides can empower individuals to navigate the UPI ecosystem confidently and mitigate any concerns or hesitations they may have.

Arctic Ocean

Why in News?

Context: Climate breakdown: The Arctic Ocean could be ice-free by the 2030s.

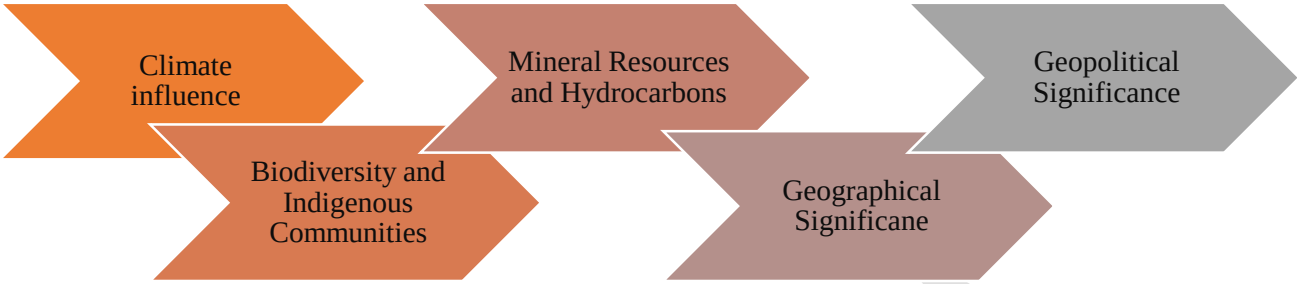
- ✓ The ice which remains at the end of summer is called multiyear sea ice and is considerably thicker than its seasonal counterpart.
- ✓ It acts as barrier to the transfer of both moisture and heat between the ocean and atmosphere.
- ✓ Over the past 40 years this multiyear sea ice has shrunk from around7 million sq. km to 4 million sq.km.
- ✓ That is a loss equivalent to roughly the size of India or 12 UKs. In other words, it's a big signal, one of the most stark and dramatic signs of fundamental change to the climate system anywhere in the world.

Key Highlights

- In the 2000s, an assessment of early generations of climate models found they generally under predicted the loss of sea ice when compared to satellite data showing what actually happened. The models predicted a loss of about 2.5% per decade, while the observations were closer to 8%.

- Scientists behind the latest study have taken a different approach by, in effect, calibrating the models with the observations and then using this calibrated solution to project sea ice decline. They call these "observationally constrained" projections and find that the Arctic could become ice-free in summer as early as 2030, even if we do a good job of reducing emissions between now and then.
- The Arctic has been experiencing climate heating faster than any other part of the planet. As it is at the frontline of climate change, the eyes of many scientists and local in digenous people have been on the sea ice that covers much of the Arctic Ocean in winter. This thin film of frozen seawater expands and contracts with the seasons, reaching a minimum area in September each year.
- Arctic sea ice is an important component of the climate system. As it dramatically reduces the amount of sunlight absorbed by the ocean, removing this ice is predicted to further accelerate warming, through a process known as positive feedback. This, in turn, will make the Greenland ice sheet melt faster, which is already a major contributor to sea level rise.
- The loss of sea ice in summer would also mean changes in atmospheric circulation and storm tracks and fundamental shifts in ocean biological activity. These are just some of the highly undesirable consequences and it is fair to say that the disadvantages will far outweigh the slender benefits.

What is the Importance of Arctic Sea Ice?



Climate Influence

- Arctic sea ice plays a crucial role in influencing global climate patterns.
- It reflects sunlight, helping to maintain the earth's energy balance and cool polar regions.
- Sea ice acts as a barrier, keeping the air cool by separating cold air above from warmer water below.

Biodiversity and Indigenous Communities

- Changes in sea ice impact biodiversity, particularly mammals like polar bears and walruses.
- Indigenous Arctic populations reliant on sea ice for hunting, breeding, and migration are affected.

Mineral Resources and Hydrocarbons

- Arctic region has rich deposits of coal, gypsum and diamonds and also substantial reserves of zinc, lead, placer gold and quartz. Greenland alone possesses about a quarter of the world's rare earth reserves.
- The Arctic also contains a wealth of unexplored hydrocarbon resources amounting to 30% of the world's undiscovered natural gas.
- India is the 3rd largest energy-consuming country in the world, the 3rd-largest oil importer. Increasing ice-melt makes these resources more accessible and feasible for extraction.
- The Arctic can therefore potentially address India's energy security needs and deficiency of strategic and rare earth minerals.

Geographical Significance

- The Arctic helps circulate the world's ocean currents, moving cold and warm water around the globe.
- Also, Arctic sea ice acts as a huge white reflector at the top of the planet, bouncing some of the sun's rays back into space, helping keep the Earth at an even temperature.

Geopolitical Significance

- Countering China from the Arctic: The melting Arctic ice is also raising the geopolitical temperatures to levels not seen since the Cold War. China referred to trans-Arctic shipping routes as the Polar Silk Road, identifying it as a third transportation corridor for the Belt and Road Initiative (BRI) and is the only country apart from Russia, to be constructing nuclear ice-breakers. nAs a result, it is crucial to counter China's soft power manoeuvres in the Arctic, in line India is also taking a keen interest in the Arctic states through its Arctic policy.

Challenges Related to the Arctic Region

Arctic region, the enormous area around the North Pole spreading over one-sixth of the earth's landmass. It is increasingly being affected by external global forces: environmental, commercial and strategic and in turn is poised to play an increasingly greater role in shaping the course of world affairs.

Rising Sea Level Concern

- Melting Arctic ice adds to rising sea levels, which in turn increases coastal erosion and elevates storm surge as warming air and ocean temperatures create more frequent and intense coastal storms.
- It can significantly impact India which has a 7,516.6 km of coastline and important port cities.

- According to the World Meteorological Organisation's report, 'State of Global Climate in 2021', sea level along the Indian coast is rising faster than the global average rate.

Emerging Race Course

- The opening of the shipping routes and possibilities in the Arctic is giving thrust to the race of resource extraction leading to the geopolitical poles: US, China and Russia, jockeying for position and influence in this region.

Tundra Degradation

- Tundra is returning to swampy state because sudden storms are ravaging coastlines, especially interior Canada and Russia, and wildfires are damaging permafrost in tundra areas.

Threat to Biodiversity

- The absence of year-long ice and higher temperatures are making the survival of Arctic animal life, plants and birds difficult.
- Polar bears need sea ice to hunt seals as well as to move across the large home ranges. Due to shrinking ice, life of polar bears along with other Arctic species are under threat.
- Also, warming seas have triggered a poleward shift in fish species reshuffling the food web.

Arctic Amplification

- In recent decades, the warming in the Arctic has been much faster than in the rest of the world.
- The permafrost in the Arctic is thawing and in turn releasing carbon and methane which are among the major greenhouse gases responsible for global warming amplifying the melting of ice, thereby driving the arctic amplification.

Blue Ocean Event (BOE)

A BOE is when the Arctic Ocean changes from being covered in ice year-round and reflecting most of the sunlight that impacts it back into space to being mostly ice-free blue water for a period of time during the warm season (May through October), which will cause it to absorb most of the sunlight that impacts it.

- Once a BOE occurs during a warm season, the Arctic Ocean water will refreeze during the following cold season.
- However, since the water will be slightly warmer each year, longer Blue Ocean Events are expected with each passing warm season, causing extensive impacts to the global climate and human habitat.
- Blue water, which is dark, absorbs more sunlight than white ice, due to the fact that darker colors naturally absorb more sunlight than lighter colors, a phenomenon known as the "albedo effect."
- One problem with predicting when this might occur is that sea ice is notoriously difficult to model because it is influenced by both atmospheric and oceanic circulation as well as the flow of heat between these two parts of the climate system.

➢ **The Consequences of BOE**

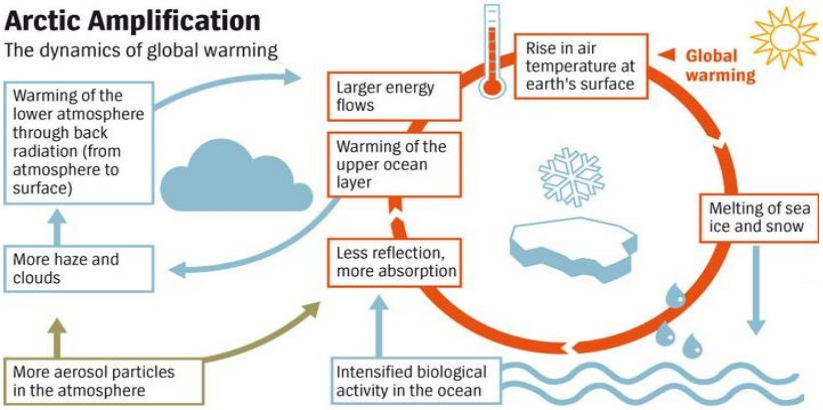
- There is still plenty of uncertainty around the exact date – about 20 years or so– because of natural chaotic fluctuations in the climate system. But compared to previous research, the new study still brings forward the most likely timing of a blue ocean event by about a decade.
- Arctic sea ice is an important component of the climate system. As it dramatically reduces the amount of sunlight absorbed by the ocean, removing this ice is predicted to further accelerate warming, through a process known as a positive feedback.
- This, in turn, will make the Greenland ice sheet melt faster, which is already a major contributor to-sea level rise.
- The loss of sea ice in summer would also mean changes in atmospheric circulation and storm tracks, and fundamental shifts in ocean biological activity.

What is Arctic Amplification?

Arctic amplification refers to the phenomenon where changes in surface air temperature and net radiation balance produce larger effects at the poles, specifically in the Arctic region.

Causes

- It is a result of global warming caused by anthropogenic forces or human activities since pre-industrial times, leading to a 1.1-degree Celsius increase in the Earth's average temperature.
- The primary causes of Arctic amplification include ice-albedo feedback, lapse rate feedback, water vapor feedback, and ocean heat transport.
- Diminishing sea ice in the Arctic due to global warming plays a significant role in amplifying the warming effect.



- Sea ice and snow have high albedo, reflecting most solar radiation, while water and land absorb more radiation, leading to increased warming.
- The reduction of sea ice allows the Arctic Ocean to absorb more solar radiation, further amplifying the warming effect.
- The lapse rate, which is the rate at which temperature decreases with elevation, decreases with warming, contributing to Arctic amplification.
- Studies suggest that the ice-albedo feedback and lapse rate feedback account for 40% and 15% of polar amplification, respectively.

Consequences

The consequences of Artic Amplification are as follows.

Weakening of Polar Jet Streams
- Diminished sea ice weakens polar jet streams, resulting in rising temperatures and heatwaves in Europe.
- Unseasonal showers in northwest India have also been linked to this weakening.

Melting of Ice
- The Greenland ice sheet's melting contributes to rising sea levels, with a complete melt potentially causing a seven-meter rise.

Changes in Composition of Sea Water
- Warming of the Arctic Ocean and seas, along with changes in salinity and acidification, affects biodiversity, including marine and dependent species.

Affects Fauna
- Increased rainfall due to Arctic amplification affects the availability and accessibility of lichens, leading to starvation and death among Arctic fauna.

Gaseous Emission
- Thawing permafrost releases carbon and methane, greenhouse gases responsible for global warming.
- It may also release long-dormant bacteria and viruses, potentially leading to disease outbreaks.

What is Impact on India?

- ✓ **Extreme Rainfall Events**
  - Studies found that the reduced sea ice in the Barents-Kara Sea region can lead to extreme rainfall events in the latter half of the monsoons — in September and October in India.
- ✓ **Warming of Arabian Sea**
  - The changes in the atmospheric circulation due to diminishing sea ice combined with the warm temperatures in the Arabian Sea contribute to enhanced moisture and drive extreme rainfall events.
  - In 2014, India deployed IndARC, India's first moored-underwater observatory in the Kongsfjorden fjord, Svalbard, to monitor the impact of the changes in the Arctic Ocean.
- ✓ **Rise in Sea Level along Indian Coast**
  - According to the 'State of Global Climate in 2021' report, sea level along the Indian coast is rising faster than the global average rate.

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