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**This Document was prepared under the supervision of Mr. Pramod Singh, Director, Edge IAS.**

**Current Affairs, June 2023**

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# 1. Polity and Governance

## 1.1 Tele-Law programme

According to recent reports the Tele-Law programme has achieved a new milestone with 40 lakh beneficiaries across the country.

**About the Tele-Law programme:-**



**The Tele-Law programme was launched in**

- Ministry/ministries: Ministry of Law and Justice and Ministry of Electronics and Information Technology (MeitY).
- Objective: the programme connects the disadvantaged section with a panel of lawyers through an e-interface platform.
- It uses video conferencing facilities and telephone services to connect lawyers to litigants who need legal advice.
- It is to facilitate the delivery of legal advice through a panel of lawyers stationed at the State Legal Services Authorities (SALSA) and CSC (Common service centres).
- The service is free for those who are eligible for free legal Aid under Section 12 of the Legal Services Authority Act, 1987. For all others, a nominal fee is charged.

## 1.2 Recusal by Judges

Recently, there have been various instances of judges recusing themselves from hearing cases.

**About Judge Recusal:**

- When there is a conflict of interest, a judge can withdraw from hearing a case to prevent creating a perception that she carried a bias while deciding the case.
- The conflict of interest can be in many ways — from holding shares in a company that is a litigant to having a prior or personal association with a party involved in the case.
- Another instance for recusal is when an appeal is filed in the Supreme Court against a judgement of a High

Court that may have been delivered by the SC judge when she was in the HC.

- The practice stems from the cardinal principle of due process of law that nobody can be a judge in her own case.

#### **Rule for Recusal:**

- There are no formal rules governing recusals, although several SC judgments have dealt with the issue.
- In *Ranjit Thakur v Union of India (1987)*, the SC held that the test of the likelihood of bias is the reasonableness of the apprehension in the mind of the party.
- The judge needs to look at the mind of the party before him, and decide that he is biased or not.

#### **Causes of Recusal:**

- The decision to recuse generally comes from the judge himself or herself as it rests on the conscience and discretion of the judge to disclose any potential conflict of interest.
- Conflict of interest could be:
  - Judge's Interest in the subject matter, or relationship with someone who is interested in it;
  - Judge's Background or experience, such as the judge's prior work as a lawyer;
  - Judge's Personal knowledge about the parties or the facts of the case;
  - Judge's Ex parte communications with lawyers or non-lawyers;
  - Judge's Rulings, comments or conduct;
- In some circumstances, lawyers or parties in the case bring it up before the judge.
- If a judge recuses, the case is listed before the Chief Justice for allotment to a fresh Bench.

#### **Process of Recusal:**

- The decision to recuse generally comes from the judge himself as it rests on the conscience and discretion of the judge to disclose any potential conflict of interest.
- Some judges orally convey to the lawyers involved in the case their reasons for recusal, many do not. Some explain the reasons in their order.
- In some circumstances, lawyers or parties in the case bring it up before the judge. Once a request is made for recusal, the decision to recuse or not rests with the judge.
- While there are some instances where judges have recused even if they do not see a conflict but only because such an apprehension was cast, there have also been several cases where judges have refused to withdraw from a case.
- If a judge recuses, the case is listed before the Chief Justice for allotment to a fresh Bench.

#### **Concerns:**

- **Undermining Judicial Independence:** It allows litigants to cherry-pick a bench of their choice, which impairs judicial fairness.
- In addition, the purpose of recusal in these cases undermines both independence and impartiality of the judges.
- **Different Interpretations:** As there are no rules to determine when the judges could recuse themselves in these cases, there are different interpretations of the same situation.
- **Delays the Process:** Some requests for recusal are made with the intent to intimidate the court or to get better of an 'inconvenient' judge or to obfuscate the issues or to cause obstruction and delay the proceedings or in any other way frustrate or obstruct the course of justice.

## Way Forward:

- Recusal is also regarded as the abdication of duty. Maintaining institutional civilities are distinct from the fiercely independent role of the judge as an adjudicator. It is the constitutional duty, as reflected in one's oath, to be transparent and accountable, and hence, a judge is required to indicate reasons for his recusal from a particular case.

## 1.3 Renewable Energy in India

The government has recently invited bids for 50 GW of renewable energy capacity annually for the next five years.

### About Renewable Energy:

- Renewable energy is energy derived from natural sources that are replenished at a higher rate than they are consumed.
- Sunlight and wind, for example, are such sources that are constantly being replenished. Renewable energy sources are plentiful and all around us.
- On the other hand, Fossil fuels – coal, oil and gas, are non-renewable resources that take hundreds of millions of years to form.
- Fossil fuels, when burned to produce energy, cause harmful greenhouse gas emissions, such as carbon dioxide.

### Renewable energy capacity in India:



- India currently has a total renewable energy capacity of 168.96 GW (as on February 28, 2023) with about 82 GW at various stages of implementation and about 41 GW at tendering stage.
- This includes 64.38 GW Solar Power, 51.79 GW Hydro Power, 42.02 GW Wind Power and 10.77 GW Bio Power.
- Today, India is the world's third largest producer of renewable energy, with 40% of its installed electricity capacity coming from non-fossil fuel sources.

### Advantages of Renewable Energy:

#### A Fuel Supply That Never Runs Out:

- Renewable energy is created from sources that naturally replenish themselves – such as sunlight, wind, water, biomass, and even geothermal (underground) heat.
- While fossil fuels are becoming harder and more expensive to source – resulting in the destruction of natural habitats and significant financial losses – renewable energy never runs out.

## **Zero Carbon Emissions**

- There are no greenhouse gasses or other pollutants created during the process.
- Coal power plants on the other hand create around 2.2 pounds of CO<sub>2</sub> for every kilowatt-hour of electricity.
- As we race to decarbonize our world and embrace energy sources that do not contribute to global warming, renewables are helping to provide us with emission-free energy.

## **Cleaner environment**

- Burning fossil fuels causes global warming and causes pollution.
- Coal power stations, for example, release high volumes of carbon dioxide (CO<sub>2</sub>) and nitrous oxide (N<sub>2</sub>O) directly into the atmosphere – two of the most potent greenhouse gasses.
- On the other hand, renewable energy creates no pollution, waste, or contamination risks to air and water.

## **A Cheaper Form of energy:**

- With the rapid growth of renewable energy over the last ten years, solar and wind power are now the cheapest sources of energy in many parts of the world.
- In the United Arab Emirates, a new sun farm recently secured the world's lowest price of solar energy at just 1.35c per kilowatt-hour.
- Whereas green energy was once a “clean-but-expensive” alternative – it is now helping to reduce energy bills for people in many parts of the world.

## **Renewable Energy Creates New Jobs:**

- With an increasing focus on global warming and many governments, setting ambitious carbon-reduction goals Renewable Energy has quickly become a major source of new job growth.

## **Challenges of Renewable Energy in India:**

- High initial cost of installation: While the development of a coal-based power plant requires around Rs 4 crore per MW, the investment required a wind-based plant, with a capacity utilization of 25%, which requires an investment of Rs 6 crore per MW.
- Reliability: By their very nature, solar and wind energy are variable in availability both spatially as well as geographically.
- Hence, they need to be supported by conventional sources of power.
- Creation of storage infrastructure: To overcome the variable nature of renewable sources of energy, it is vital to invest in affordable batteries of large capacity.
- Poor DISCOM's condition: An important challenge for further scaling up renewables in India is the poor financial condition of power distribution companies (discoms), most of which are owned by state governments and are reeling under heavy debts.
- Low Social acceptance: renewable-based energy system is still not very encouraging in urban India. Despite heavy subsidies being provided by the government for the installation of solar water heaters and lighting systems, its penetration is still very low.
- Weak domestic manufacturing capability: It is important to set up manufacturing capacity in India to decrease imports and promote Aatmanirbhar Bharat.
- It would also aid in the creation of multiple manufacturing jobs.
- Sustainability: that is, how to expand reliable energy access and use while maintaining affordability for consumers and financial stability for the DISCOMs.
- Integration into the national grid: that is how to integrate increasing shares of renewable energy securely



and reliably into the national electricity grid.

#### **Govt schemes to promote RE:**

- National Solar Mission (NSM) (Solar energy in India)
- Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan (PM-KUSUM).

#### **Atal Jyoti Yojana (AJAY) Phase-II:**

- The Ministry of New and Renewable Energy (MNRE) launched to illuminate dark regions through establishment of solar street lights.
- It is a sub scheme under off –grid and decentralized solar application scheme of Ministry of New and Renewable Energy (MNRE), Govt. of India.
- The Phase II is being implemented during 2018-19 and 2019-20.

#### **Way Forward:**

- India's switch from coal to clean power is a win-win and a promising step towards meeting the country's net zero emissions target by 2070. Governments and private sector organizations need to collaborate and work together to develop innovative solutions and strategies that can help to overcome these obstacles.
- India's energy demand is expected to increase more than that of any other country in the coming decades due to its sheer size and enormous potential for growth and development. Therefore, it is imperative that most of this new energy demand is met by low-carbon, renewable sources.

### **1.4 Article 299**

Recently, the Supreme Court gave judgement on the claims of immunity while entering into a contract in the President's name under Article 299 of the Constitution.

#### **About Article 299:-**

- Article 298 grants the Centre and the state governments the power to carry on trade or business, acquire, hold, and dispose of property, and make contracts for any purpose.
- Article 299 delineates the manner in which these contracts will be concluded.
- Article 299 of the Constitution provides that "all contracts made in the exercise of the executive power of the Union or of a State shall be expressed to be made by the President or by the Governor of the State" and that all such contracts and "assurances of property made in the exercise of that power shall be executed" on behalf of the President or the Governor by persons in a manner as directed and authorised by them.
- The phrase 'expressed to be made and executed' under Article 299 (1) means that there must be a deed or contract in writing and that it should be executed by a person duly authorised by the President or the Governor on their behalf.
- As per the 'Chatturbhuj Vithaldas Jasani v. Moreshwar Parashram & Ors'(1954), there must be a definite procedure according to which contracts must be made by agents acting on the government's behalf; otherwise, public funds may be depleted by unauthorized or illegitimate contracts.
- It implies that contracts not adhering to the manner given in Article 299(1) cannot be enforced by any contracting party.
- Article 299 (2) says that essentially, neither the President nor the Governor can be personally held liable for such contracts.

## 1.5 Central Electricity Authority

As per recent reports of the Central Electricity Authority, 57% of the power generated will be via renewable sources by 2027.

### About Central Electricity Authority:-

- The Central Electricity Authority (CEA) is a statutory organization constituted under Section 3 (1) of the repealed Electricity (Supply) Act, of 1948.
- It later continued under Section 70 of the Electricity Act, of 2003.
- Background: It was established as a part-time body in 1951 and made a full-time body in the year 1975.
- Composition: as per Section 70 (3) of the Electricity Act, 2003, the authority shall consist of not more than 14 members, including its chairperson.
- Not more than eight shall be full-time members appointed by the Central Government.
- Chairperson: the Chief Executive of the authority.

### Function:-

- It advises the government on matters relating to the National Electricity Policy (NEP).
- It formulates short-term and prospective plans for the development of electrical systems.
- It is the designated authority for cross border trade of electricity.
- It also prescribes the standards on matters such as the construction of electrical plants, electric lines and connectivity to the grid, safety and grid standards and installation and operation of meters.
- It is also responsible for the concurrence of hydropower development schemes of central, state and private sectors for the efficient development of rivers and their tributaries for power generation.

### Renewable Energy in India

- With a population of 1.3 billion, India has a massive demand for energy to fuel its rapidly growing economy. From a power deficit nation at the time of Independence, the efforts to make India energy-independent have continued for over seven decades. Today, we are a power surplus nation with a total installed electricity capacity of over Four lakh MW.
- Today, India is the world's third largest producer of renewable energy, with 40% of its installed electricity capacity coming from non-fossil fuel sources.

## 1.6 Retain Sedition Law with Amendments: Law Commission

The Law Commission of India has recommended against the total repeal of sedition law (Section 124A of the Indian Penal Code) and has instead proposed that the provision be retained with certain amendments.

### Highlights of the report submitted:

- The report highlighted that the offense of sedition is frequently regarded as a remnant of colonial rule, established during a time when it was frequently employed against India's freedom fighters.
- The Commission suggested that a provision analogous to Section 196(3) of the Code of Criminal Procedure, 1973 (CrPC) may be incorporated as a proviso to Section 154 of CrPC, which would provide the requisite procedural safeguard before the filing of an FIR with respect to an offence under Section 124A of IPC.

### **About Sedition Law:**

- Sedition laws were enacted in 17th century England when lawmakers believed that only good opinions of the government should survive, as bad opinions were detrimental to the government and monarchy.
- The law was originally drafted in 1837 by Thomas Macaulay, the British historian-politician, but was inexplicably omitted when the Indian Penal Code (IPC) was enacted in 1860.
- Section 124A was inserted in 1870 by an amendment introduced by James Stephen when it felt the need for a specific section to deal with the offence.
- Today the Sedition is a crime under Section 124A of the Indian Penal Code (IPC).

### **Section 124A IPC:**

- It defines sedition as an offence committed when “any person by words, either spoken or written, or by signs, or by visible representation, or otherwise, brings or attempts to bring into hatred or contempt, or excites or attempts to excite disaffection towards the government established by law in India”.
- Disaffection includes disloyalty and all feelings of enmity.
- However, comments without exciting or attempting to excite hatred, contempt or disaffection, will not constitute an offence under this section.

### **Punishment for the Offense of Sedition:**

- It is a non-bailable offence.
- Punishment under Section 124A ranges from imprisonment up to three years to a life term, to which a fine may be added.
- A person charged under this law is barred from a government job.
- They have to live without their passport and must appear in court at all times as and when required.

### **Need of continuation of Section 124A:**

- Misuse of freedom of speech: Freedom of speech although is protected through Article 19 (1) but it is not unlimited.
- Sometimes speech is used as a tool to destabilise country polity and to promote enmity in society.
- The main reason behind the continuation of Sedition act after independence was to prevent the misuse of free speech (reasonable restrictions) that would be aimed at inciting hatred and violence.
- Internal security: Maoist insurgency and rebel groups virtually run a parallel administration; it would be dangerous to abolish it.
- These groups openly advocate the overthrow of the state government by revolution.
- Thus keeping section 124A is important for Indian security.
- Destabilising polity: Sometimes, propaganda and facts are modified and used to destabilise the country's peace and polity by deliberately targeting government actions.

### **Arguments for Section 124A:**

- Section 124A of the IPC has its utility in combating anti-national, secessionist and terrorist elements.
- It protects the elected government from attempts to overthrow the government with violence and illegal means.
- The continued existence of the government established by law is an essential condition of the stability of the State.
- Many districts in different states face a Maoist insurgency and rebel groups virtually run a parallel administration.
- These groups openly advocate the overthrow of the state government by revolution.

- Therefore, there is a need to retain the provision to effectively combat anti-national, secessionist and terrorist elements.
- The plea had contended that the provision which was used by the British against Mahatma Gandhi and Bal Gangadhar Tilak is still being “grossly abused” to stifle freedom of speech and expression of those who choose to express dissent against policies of the Governments in power.

#### **Arguments against Section 124A:**

- Mahatma Gandhi called Section 124A “the prince among the political sections of the IPC designed to suppress the liberty of the citizen”.
- Jawaharlal Nehru said that the provision was “obnoxious” and “highly objectionable”, and “the sooner we get rid of it the better”.
- It is a constraint on the legitimate exercise of constitutionally guaranteed freedom of speech and expression.
- Dissent and criticism of the government are an essential ingredient of robust public debate in a vibrant democracy.
- The British, who introduced sedition to oppress Indians, have themselves abolished the law in their country.
- There is no reason why India should not abolish this section.
- The sedition law is being misused as a tool to persecute political dissent. A wide and concentrated executive discretion is inbuilt into it, which permits the blatant abuse.

#### **Way Forward:**

- India, being the largest democracy in the world, has to ensure its essential ingredients of free speech and expression. The expression or thought that is not in consonance with the policy of the government of the day should not be considered sedition.
- It is also essential to protect national integrity. Given the legal opinion and the views of the government in favour of the law, it is unlikely that Section 124A will be scrapped soon. However, it should not be misused as a tool to curb free speech.

## **1.7 Necrophilia**

Context: Recently, the Karnataka High Court observed that “necrophilia” is an erotic attraction to corpses.

#### **About Necrophilia:-**

- It is a psychosexual disorder, classified under the DSM-IV, among a group of disorders, called “paraphilias”.
- Paraphilias: include disorders like paedophilia, exhibitionism, and sexual masochism.
- Necrophilia could be the result of rage, experimentation, or lust rather than sexual necessity or habit.
- As of date, the IPC does not list “necrophilia” as a specific offence under sexual offences mentioned in the code.
- The court mentioned that it could be brought under Section 297 as causing “indignity to any human corpse” if someone trespasses into a place for performing funeral rites or a depository for the remains of the dead.

### **Section 297 of IPC:-**

- The knowledge that any person's feelings are likely to be wounded or their religion is likely to be insulted by such an act will make it an offence under Section 297.
- The ruling of Karnataka High Court in Rangaraju @Vajapeyi vs State of Karnataka" case:-
- It held that having sexual intercourse with a woman's dead body would not attract the offence of rape, punishable under Section 376 of the Indian Penal Code, as there is no provision in the IPC for it. (UPSC CSE: Rape and sexual crimes law in India)
- The provisions of Sections 375 and 377 of the Indian Penal Code make it clear that the dead body cannot be called a human or person.
- Thereby, these provisions of the IPC would not apply.
- The court clarified that sexual intercourse on a dead body is nothing but necrophilia.
- Hence, it is not a punishable offence under Section 376 (punishment for rape).
- National Human Rights Commission's advisory, on "Upholding the Dignity and Protecting the Rights of the Dead:
- The court invoked the 2021 advisory of NHRC, which states that there cannot be any physical exploitation or discrimination in the treatment of the body.
- It also mentions the right to a decent and timely burial.
- It also asked the Centre to amend the law.
- Recommendation of Karnataka High Court to the centre:-

### **To amend Section 377 of IPC**

- To include dead bodies of men, women, and animals.
- To protect the dignity of the dead.
- Criminalising necrophilia: It also offered an alternative that the Centre brings in a separate penal provision to criminalise necrophilia with life imprisonment up to 10 years with a fine.

### **The ruling of Supreme Court in Parmanand Katara, Advocate vs Union of India (1989):-**

- The court relied on and held that the dignity of a dead body must be maintained.
- It established a corresponding duty on the state to ensure decent cremation is served to the person.
- The right to dignity and fair treatment under Article 21 of the Constitution of India is not only available to a living man but also to his body after his death.

### **Countries that prohibit necrophilia:-**

- The United Kingdom's Sexual Offences Act, 2003, includes necrophilia as an offence under Section 70, which makes "sexual penetration of a corpse" an offence punishable with six months to two years imprisonment.
- Canada, New Zealand, and South Africa, too, prohibit necrophilia under different laws.

### **Status in India:-**

- India does not have any specific provision punishing necrophilia.
- The Karnataka High Court made recommendations to the Central government for including it under Section 377 of the IPC or as a new provision.

## 1.8 Adverse Possession in India

As per the recent report by 22nd Law Commission there is no justification for introducing any change in the law relating to adverse possession.

### About adverse possession:

- Adverse possession essentially means when a tenant possesses the property of the owner when they are not legally entitled to do the same overtly, without any attempt regarding the concealment from the owner.
- In such a situation, if they continue to hold the property unlawfully for more than 12 years and the owner, despite having the same, does not take any action over these years, they would lose their right to claim the property by filing a suit in the court of law upon the expiration of this term.
- The concept originally dates back to 2000 BC, finding its roots in the Hammurabi Code, but the historical basis of “title by adverse possession” is the development of the statutes of limitation on actions for recovery of land in England.
- The first such statute was the Statute of Westminster, 1275. However, it was the Property Limitation Act, 1874, that set the period of limitation at twelve years from when the cause of action first arose, which laid the groundwork for the limitations model inherited by colonial India.
- Act XIV of 1859 regulated the limitation of civil suits in British India.
- After the passage of the Limitation Act in 1963, the law on adverse possession underwent significant changes.

### Arguments in favour of adverse possession:

- To avoid long disputes: The real aim of law is to neither punish the one nor reward the other.
- However, a society should not be bothered with disputes for eternity.
- Therefore, the law puts a limit of twelve years for such quarrels and disputes before which the title must be settled.
- Land should be put to a judicious use: The concept of adverse possession stems from the idea that land must not be left vacant but instead, be put to judicious use.
- Essentially, adverse possession refers to the hostile possession of property, which must be continuous, uninterrupted, and peaceful.
- According to the Law Commission, the rationale behind this comes from considerations that the “title to land should not long be in doubt”, “society will benefit from someone making use of land the owner leaves idle,” and “persons who come to regard the occupant as owner may be protected.”
- Original titleholder neglected his rights: The maxim that the law does not help those who sleep over their rights is invoked in support of adverse possession.

### Argument against adverse possession:

- Harsh for true owner: The law as it exists is extremely harsh for the true owner and a windfall for a dishonest person who has illegally taken possession of the property.
- Avoidable and expensive litigation: True owners have been subjected to, such as “avoidable and expensive litigation” by unscrupulous persons” who are acquainted with fraud, the already overburdened machinery of the courts is further saddled with avoidable work, much to the misery of the litigants.
- Struck off law will not harm anybody: If the law of adverse possession is struck off from the Limitation Act it will not hinder anybody’s right nor will it cause any neglect of land resources.
- Promotes false claims: The fact that land prices are skyrocketing in both rural and urban areas defeated the Commission’s argument that land is not put to proper use.

- In an over-populous country like India where land is scarce, the law of adverse possession only promotes false claims under the colour of adverse possession, which ultimately does not stand judicial scrutiny.
- Different laws for state and private individuals: If in a welfare state and under law, state and common person have same rights and same Acts being applicable, then why is there a different time window for the adverse possession over Government land.

#### SC Rulings:

- In the 2004, Karnataka Board of Wakf v Government of India, the apex court held “A person who claims adverse possession should show:
  - on what date he came into possession,
  - what was the nature of his possession,
  - whether the factum of possession was known to the other party,
  - how long his possession has continued, and
  - His possession was open and undisturbed.”
- In 2008, HemajiWaghaji Jat v. BhikhabhaiKhengarbhai Harijan and Others, the court ruled that Article 65 “ousts an owner on the basis of inaction within limitation” and is “irrational, illogical, and wholly disproportionate” and recommended the government “to seriously consider and make suitable changes in the law of adverse possession”.
- Owing to the importance of the subject, coupled with the fact that the reference had been pending since 2008, the present Law Commission found it “expedient to deliberate afresh over the subject.”

#### Way Forward:

- Parliament might simply require the adverse possession claimants to possess the property in question for a period of 30 to 50 years, rather than a mere 12. A longer statutory period would also decrease the frequency of adverse possession suits and ensure that only those claimants most intimately connected with the land acquire it, while only the most passive and unprotected owners lose title.

### 1.9 District Legal Services Authority

District Legal Services Authority in West Tripura recently organized Door-to-Door Legal Aid Campaign.

#### About District Legal Services Authority:-

- Legal Services Authorities are statutory bodies that are formed in the various states of India under the Legal Services Authorities Act, of 1987.
- Objective: to provide free legal aid and services to the weaker sections of this society to make sure that opportunities for securing justice are not denied to any citizen because of economic or other disabilities.
- It is organized at the district level to provide effective monitoring of legal aid programmes and their composition.

#### Related Constitutional provision:

- Article 39-A: Deals with the provision of providing free legal services to the citizens of India.
- The provision applies to the citizens if they are unable to bear the expenditure of legal services.
- It also helps the defendant by appointing a lawyer to act for him in legal aspects.
- Composition of DLSA:-
- The State Government in consultation with the Chief Justice of the High Court constitutes it. (UPSC CSE: Judicial appointments)

- Chairman: District Judge
- Other members: must have the experience and qualifications as prescribed by the State Government.
- The Government in consultation with the Chief Justice of the High Court may nominate these members.
- The person to be appointed shall belong to the State Judicial Service and not lower than rank than that of a Subordinate Judge or Civil Judge posted at the seat of the District Judiciary as Secretary of the District Authority.
- Member Secretary of the District Authority: Assistant Commissioner of the concerned District
- The officers and other employees of the District Authority are entitled to salary and allowances and shall be subject to such other conditions of the services as the State Government in consultation with the Chief Justice of the High Court prescribes.

### **Legal Services Institutions at Various Levels:-**

The Legal Services Authorities Act, of 1987 mandates the establishment of the following at various levels;

#### **National Level: National Legal Services Authorities (NALSA)**

- The NALSA was founded in 1995 under the Legal Services Authorities Act of 1987.
- Objective: to monitor and review the effectiveness of legal aid programs and to develop rules and principles for providing legal services under the Act.
- Patron-in-Chief: Chief Justice of India
- It distributes funding and grants to state legal services authorities and non-profit organisations to help them execute legal aid systems and initiatives.

#### **State Level: State Legal Services Authority**

- Patron-in-Chief: Chief Justice of the State High Court
- At District Level: District Legal Services Authority.
- ex-officio Chairman: District Judge of the District
- At Taluka/Sub-Division Level: Taluka/ Sub-Divisional Legal Services Committee.
- A senior Civil Judge heads it.

#### **Eligibility for free legal service:-**

- Women and children
- Members of SC/ST
- Industrial workmen
- Victims of mass disasters, violence, flood, drought, earthquake, and industrial disasters.
- Disabled persons
- Persons in custody
- Those persons who have an annual income of less than the amount prescribed by the respective State Government, if the case is before any court other than the Supreme Court, and less than Rs. 5 Lakhs if the case is before the Supreme Court.
- Victims of Trafficking in Human beings or begar.
- Nyaya Bandhu's (Pro Bono Legal Services)
- It is a primary initiative to establish a framework for the dispensation of pro bono (free of cost) legal services across the country.
- Under Nyaya Bandhu, practising advocates, interested to volunteer their time and services, are connected, via mobile technology, with eligible marginalised beneficiaries.
- Nyaya Bandhu Mobile application (Android/IOS) has been developed in collaboration with technical



partner Common Services Centres (CSC) e-Governance Pvt. Ltd.

- Common Services Centres (CSC) are the access points for the delivery of various e-governance and business services to citizens in rural and remote areas of the country. (UPSC MAINS: Risks in e-governance)
- CSC e-Governance Services India Limited, a Special Purpose Vehicle set up under the Companies Act, 1956.
- Ministry: Ministry of Electronics & IT
- Objective: to oversee the implementation of the CSC scheme.
- It provides a centralized collaborative framework for the delivery of services to citizens through CSCs, besides ensuring the systemic viability and sustainability of the Scheme.
- Nyaya Bandhu Mobile application has been on boarded on the UMANG platform.
- UMANG (Unified Mobile Application for New-age Governance) is developed by the Ministry of Electronics and Information Technology (MeitY) and the National e-Governance Division (NeGD).

### 1.10 Covid Vaccine Intelligence Network (CoWIN) Portal Data Breach

- The CoWIN portal, which is used by most Indians to register for COVID-19 vaccination, has been in the news recently after reports of a data breach by a Telegram bot.
- The Indian Computer Emergency Response Team (CERT-In) had been asked to investigate the issue and submit a report.
- CERT-In, in its initial report, has pointed out that the back-end database for the Telegram bot was not directly accessing the APIs (application programming interfaces) of the CoWIN database.

#### About CoWIN Portal:

- CoWIN Portal is the digital platform to capture covid-19 vaccination program details.
- CoWIN connects to various stakeholders, including vaccine manufacturers, administrators, and verifiers, public and private vaccination facilities, and vaccine recipients etc.
- The CoWIN platform was developed at a record speed with ample consideration to its scalability, modularity and interoperability.
- CoWIN has been integrated with other government mobile applications such as Aarogya Setu and UMANG.
- CoWIN provides access to third-party applications that have been authorised by the government to use its APIs (application programming interfaces).
- APIs are a set of rules that allow two applications to communicate and share data.

#### Data access on the CoWIN portal:

- At present individual level, vaccinated beneficiary data access on the CoWIN portal is available at three levels.
- Beneficiary dashboard: The person who has been vaccinated can have an access to the Co-WIN data through use of registered Mobile number with OTP authentication.
- CoWIN authorized user: The vaccinator with use of authentic login credential provided can access personal level data of vaccinated beneficiaries.
- But the CoWIN system tracks and keeps record of each time an authorized user accesses the CoWIN system.
- API based access: The third party applications who have been provided authorised access of Co-WIN APIs can access personal level data of vaccinated beneficiaries only through beneficiary OTP authentication.

**Implications of this data leak:**

- Identity theft risks: The leaked data exposes individuals to the risk of identity theft, as sensitive information can be misused for fraudulent activities.
- Targeted frauds and phishing attacks: With access to personal details, scammers may attempt targeted frauds and phishing attacks, leading to financial loss and potential harm to individuals.
- Loss of trust in government systems: The data breach undermines public trust in the government's ability to safeguard sensitive information, affecting confidence in the vaccination program and other government initiatives.
- Reputational damage: The incident could tarnish the reputation of the CoWIN platform and associated government agencies, affecting their credibility in managing sensitive data.
- Impact on future vaccination drive: Concerns about data security may deter individuals from participating in the vaccination program, slowing down efforts to control the spread of COVID-19.
- Calls for accountability: The data leak prompts demands for accountability from the responsible government agencies and the implementation of stricter measures to protect citizen data.

**Need for Data Protection in India:**

- India as a data-driven economy: As per a report by the Telecom Regulatory Authority of India (TRAI) in 2019, there were 665.31 million internet subscribers in India.
- This indicates that personal data is becoming available in the public domain due to high mobile internet usage.
- Younger Generation and Data: Statistics show that 30.5% of Indians are below the age of 25 and extensively use mobile apps to access social media.
- Therefore, it becomes imperative for the government to protect the personal data of its citizens.
- Risks to Individual Data: Loss of individual privacy, including the loss of individuals' control on usage of their personal data, is one of the most significant data risks at present.
- Financial Losses: Data breaches have become a significant issue in India, resulting in financial losses to individuals.
- Hackers often target bank account details, credit card information, and other financial identifiers, leading to fraudulent activities and financial harm.
- Discrimination and Marginalization: Profiling individuals or groups based on their personal data can lead to unfair exclusion, marginalization, or discrimination.

**Way Forward:**

- Increase awareness among the software community on producing safer software and push organisations to invest in better practices. There is need to invest in cutting-edge defence mechanisms, enact stringent legislation, and foster cross-sector collaboration to counter evolving threats.

**1.11 Pradhan Mantri Krishi Sinchayee Yojana**

Context: Recent investigations led by the Indian Express have revealed, gaps in the implementation of the Pradhan Mantri Krishi Sinchayee Yojana in Jharkhand.

**About Pradhan Mantri Krishi Sinchayee Yojana:-**

- PMKSY is an umbrella scheme.
- Launched: 2015.
- Ministries: Ministries of Agriculture and Farmer's Welfare, Water Resources and Rural Development.

**Historical Background:-**

- It has been formulated amalgamating ongoing schemes
- Accelerated Irrigation Benefit Programme (AIBP):-
- It was launched in 1996 as a central assistance programme.
- Implementation: Ministry of Water Resources, River Development, and Ganga Rejuvenation.
- Objective: Accelerate the implementation of irrigation projects that exceed the resource capabilities of states.

**Integrated Watershed Management Programme (IWMP):-**

- Launch: 2009-10
- Implementation: Department of Land Resources of Ministry of Rural Development.
- Objective: to restore ecological balance by harnessing, conserving and developing degraded natural resources such as soil, vegetative cover and water.

**On Farm Water Management (OFWM):-**

- Launch: 2002
- Implementation: Department of Agriculture and Cooperation of Ministry of Agriculture and Farmer's Welfare.
- Objective: it focuses primarily on enhancing water use efficiency by promoting efficient on-farm water management technologies and equipment.

**PMKSY is a Centrally Sponsored Scheme:-**

- Centre- States will be 75:25 per cent.
- In the case of the northeastern region and hilly states, it will be 90:10.
- Centrally Sponsored Scheme: are funded entirely or partly by the central government but implemented by the states.

**Implementation of PMKSY:-**

- The programme architecture of PMKSY will be to adopt a 'decentralized State level planning and projected execution'.
- It will allow States to draw up their own irrigation development plans.

**The objective of PMKSY:-**

- To achieve convergence of investments in irrigation at the field level.
- To expand cultivable area under assured irrigation.
- To improve on-farm water use efficiency to reduce wastage of water.
- To enhance the adoption of precision irrigation and other water-saving technologies.

**Components of PMKSY:-**

- Accelerated Irrigation Benefits Programme (AIBP)
- It aims for financial support to irrigation projects.
- Har Khet Ko Pani (HKKP)
- It aims for the enhancement of physical access on the farm by:-
- Creation of new water sources through Minor Irrigation (both surface and groundwater).
- Repair, restoration and renovation of water bodies.
- construction of rainwater harvesting structures (Jal Sanchay)

- Command area development: strengthening and creation of distribution network from source to the farm.
- Groundwater development in the areas where it is abundant, so that sink is created to store runoff/ flood water during peak rainy season.
- Improvement in water management and distribution system for water bodies to take advantage of the available source which is not tapped to its fullest capacity (deriving benefits from low-hanging fruits)
- Creating and rejuvenating traditional water storage systems.
- Watershed Development
- It is implemented by the Department of Land Resources.
- It focuses on the development of rainfed areas.
- It works towards soil and water conservation, regeneration of groundwater, arresting runoff and promoting extension activities related to water harvesting and management.
- Per Drop More Crop(PDMC)
- It is implemented by the Department of Agriculture and Farmers Welfare.
- The dedicated Micro Irrigation Fund(MIF) is with NABARD under PMKSY.

## 1.12 22nd Law Commission and Uniform Civil Code

The Law Commission recently decided to solicit views from the public on the idea of a uniform civil code.

### About Uniform Civil Code (UCC):

- The UCC refers to a common set of laws governing personal matters such as marriage, divorce, adoption, inheritance and succession for all citizens, irrespective of religion.
- Article 44: This Article of the Constitution makes a reference to a UCC and says, “The State shall endeavour to secure for the citizens a uniform civil code throughout the territory of India.”
- This is in the chapter dealing with the Directive Principles of State Policy and is therefore presumed to be advisory in nature.
- Article 37: States that the vision of a Uniform Civil Code (along with other directive principles) is enshrined in the Indian Constitution as a goal towards which the nation should strive, but it isn’t a fundamental right or a Constitutional guarantee.
- One can’t approach the court to demand a UCC. But that doesn’t mean courts can’t opine on the matter.

### Significance and need of UCC:

- Uniform Principles: Common Code would enable uniform principles to be applied in respect of aspects such as marriage, divorce, succession etc. so that settled principles, safeguards and procedures can be laid down and citizens are not made to struggle due to the conflicts and contradictions in various personal laws.
- Promotion of secularism: One set of laws to govern the personal matters of all citizens irrespective of religion is the cornerstone of true secularism.
- It would help end gender discrimination on religious grounds and strengthen the secular fabric of the nation.
- Protection of Vulnerable and Women’s Rights: It will protect the vulnerable sections of society.
- Women have been denied via personal laws in the name of socio-cultural-religious traditions.
- Therefore UCC could bring all communities together to ensure Women the Right to a dignified life and control over their life as well as body.
- Reduced Discord: if and when the whole population will start following the same laws, chances are there

that it would bring more peace in the living and reduce riots.

- Hence, Religious harmony will be created for peaceful living in the country
- Prevents religion-based discrimination: Personal laws differentiate between people on grounds of religion. A unified law having the same provisions regarding marital affairs would provide justice to those who feel discriminated against.
- Ending unjust customs and traditions: A rational common and unified personal law will help eradicate many evil, unjust and irrational customs and traditions prevalent across the communities.
- For example, Law against Manual scavenging. It might have been a custom in the past but in a mature democracy like India, this custom cannot be justified.
- National integration: A common civil code will help the cause of national integration by removing disparate loyalties to laws that have conflicting ideologies.
- Best Practice: While delivering a judgment legitimising the Portuguese Civil Code of 1867, the Supreme Court reportedly described Goa as a “shining example” with a Uniform Civil Code.
- Remove vote bank politics: Opting the UCC will remove the religious nexus of the Political system in which voters are divided on the basis of religion, caste etc.
- Eases Administration: UCC would make it easy to administer the huge population base of India.
- Global practice of UCC: Almost all Muslim nations like Morocco, Pakistan etc. have been following the UCC.

#### **Arguments Against UCC:**

- Hampering diversity and multiculturalism: Indian society has a unique identity in the form of being diverse and multicultural, and unified law might do away with these unique characteristics of this nation.
- Violation of fundamental rights: Religious bodies oppose a uniform civil code on the ground that it would be interference in religious affairs which would violate fundamental rights guaranteed under Article 25 of the constitution.
- May lead to communal unrest: It would be a tyranny to the minority and when implemented could bring a lot of unrest in the country.
- The All India Muslim Personal Law Board stated that the laws pertaining to marriage and inheritance were part of religious injunctions for ages.
- Constitution of the 22nd Law Commission: The Commission is headed by former Karnataka High Court Chief Justice Rituraj Awasthi.

#### **Functions:**

- The Commission, among other things, shall “identify laws which are no longer needed or relevant and can be immediately repealed; examine the existing laws in the light of Directive Principles of State Policy and suggest ways of improvement and reform.
- suggest such legislations as might be necessary to implement the Directive Principles and to attain the objectives set out in the Preamble of the Constitution”; and “revise the Central Acts of general importance so as to simplify them and remove anomalies, ambiguities and inequities”.
- The Commission is also looking into several significant issues like
- Implementation of a Uniform Civil Code (UCC).
- Holding of simultaneous elections.
- The 22nd Commission has claimed that years have elapsed since similar views were sought by the previous panel on UCC, and that a fresh effort was needed to garner varied opinions.
- According to critics, the Law Commission’s decision to solicit views from the public on the idea of a uniform civil code appears to be a political initiative aimed at bringing the potentially divisive issue under

focus.

**Way Forward:**

- The goal of a UCC should ideally be reached in piecemeal manner, like the recent amendment on the age of marriage. Government need to balance the aims of the Constitution dealing with the aspects of valuing and preserving the rich heritage of composite culture and renouncing practices that are derogatory to the dignity of people especially women.

Edge IAS

## 2. International Relations

### 2.1 India and Shanghai Cooperation Organisation

Recently, the government announced dropping the plans to host the Shanghai Cooperation Organisation summit in Delhi.

#### About India and Shanghai Cooperation Organisation:-

**Shanghai Cooperation Organization**  
The Shanghai Cooperation Organization (SCO) is a regional intergovernmental security alliance involving Russia, China and four Central Asian states



**Milestones**

- 1996** Foundation of the Shanghai Five, the SCO predecessor
- 1999** Foundation of the Bishkek Group to counter border criminality
- 2001** Uzbekistan joins SCO
- June 15, 2001** Shanghai Cooperation Organization Founding Declaration signed
- 2008** Iran submits official application for full-right SCO membership

**Basic documents**

- 2001** Shanghai Convention on the Struggle against Terrorism, Separatism and Extremism
- 2002** SCO Charter
- 2002** Regional Anti-Terrorist Structure (RATS) Founding Agreement

**Goals and Objectives**

- Strengthening of mutual trust and good-neighborly policies between member states
- Promotion of effective cooperation in politics, trade, economics, science, technology, and culture, as well as education, energy, transport, tourism and environmental protection
- Jointly ensuring peace, security and stability in the region
- Advancement to a new democratic, fair and rational global political and economic order

**SCO Structure**

- Council of Heads of State
- Council of Heads of Government
- Council of Foreign Ministers
- Meetings of Heads of Ministries and Departments
- Council of National Coordinators
- Regional Anti-Terrorist Structure

Russian Foreign Ministry  
Ambassador-at-Large Vitaliy Vorobyov is the Presidential Envoy for SCO Affairs

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- The Shanghai Cooperation Organisation is a permanent intergovernmental international organisation.
- It was created in 2001. (UPSC PRELIMS: Shanghai Cooperation Organization (SCO))
- The SCO Charter was signed in 2002 and entered into force in 2003. (UPSC MAINS: What are India's stakes in the Shanghai Cooperation Organisation (SCO))
- Objectives: It aims to maintain peace, security and stability in the region.
- SCO's official languages: Russian and Chinese.

#### India and SCO:-

#### India's membership in SCO can help in achieving the following goals:-

##### Security:-

- India through RATS can improve its counterterrorism abilities by working toward intelligence sharing, law enforcement and developing best practices and technologies.
- It will also help India to work on anti-drug trafficking and small arms proliferation

##### Energy:-

- SCO can provide India with an opportunity to meet its energy requirements through regional diplomacy.
- For example, Talks on the construction of stalled pipelines like the TAPI (Turkmenistan-Afghanistan-Pakistan-India) pipeline; IPI (Iran-Pakistan-India) pipeline can get a much-needed push through the SCO.

### Trade:-

- SCO provides India with direct access to trade in Central Asia.
- Central Asian countries provide India with a market for its IT, telecommunications, banking, finance and pharmaceutical industries.

### Geopolitical:-

- It will India to fulfil its aspiration of playing an active role in its extended neighbourhood as well as checking the ever-growing influence of China in Eurasia.
- It is also a platform for India to simultaneously engage with its traditional friend Russia as well as its rivals, China and Pakistan.

## 2.2 Iran and Afghanistan's water conflict

The long-standing issue of Iran and Afghanistan's water conflict arose again as clashes broke out along the border recently.

### About Iran and Afghanistan's water conflict:-



### Background:-

- Afghanistan and Iran signed the Helmand River Treaty in 1973.
- Objective: to regulate the allocation of river water.
- However, the accord was neither ratified nor fully implemented, causing disagreements and tensions to persist.

### Disagreements:-

- Iran accuses Afghanistan of violating water rights: Iran has consistently accused Afghanistan of infringing upon its water rights, claiming that it receives significantly less water than agreed upon in the 1973 treaty.
- Afghanistan blames climatic factors for reduced water flow: Afghanistan has refuted Iran's allegations, citing climatic factors such as reduced rainfall and diminished river water volumes as the primary causes of the current situation.
- Concerns over Afghanistan's dam and irrigation projects: Iran expresses concerns over Afghanistan's construction of dams, reservoirs, and irrigation systems along the Helmand River, fearing that these initiatives negatively affect water flow into Iran.

### Current situation:-

- Water shortages and other problems: Sistan-Baluchistan region of Iran faces severe water shortages,



contributing to economic and social difficulties in one of Iran's poorest areas.

- Setting up an inquiry commission: to address the recent border clash, Iran and Afghanistan have agreed to establish a commission of inquiry to investigate the incident.
- Short-term focus on internal problems: Both Iran and the Taliban prioritize short-term solutions and focus on internal issues rather than actively resolving the water dispute.
- Both Iran and the Taliban show little interest in addressing the mismanagement of water resources and environmental challenges in the region.

#### **The Helmand is Afghanistan's longest river.**

- Origin: near Kabul (Afghanistan) in the western Hindu Kush mountain range. (UPSC CSE: India-Afghanistan)
- Drainage: It flows in a south-westerly direction through desert areas.
- It empties into Lake Hamun, which straddles the Afghanistan-Iran border.
- Lake Hamun is the largest freshwater lake in Iran. (UPSC CSE: Chabahar port)
- The Lake has experienced a drastic decline in water levels, attributed to factors such as drought and the construction of dams.
- Economic Importance: Lake Hamun supports agricultural activities, livelihoods, and economic sectors in the surrounding areas.

## **2.3 BRICS**

Prime Minister Narendra Modi recently discussed cooperation in BRICS (Brazil, Russia, India, China, and South Africa) with the South African President during a telephone conversation.

#### **About BRICS (Brazil, Russia, India, China, and South Africa):-**

- BRICS is an acronym for the grouping of the world's leading emerging economies, namely Brazil, Russia, India, China and South Africa. (BRICS)
- Origin: the British Economist Jim O'Neill coined the term "BRIC" in 2001 to describe the four emerging economies of Brazil, Russia, India, and China.
- BRICS Leaders' Summit is convened
- Chairmanship is rotated annually among the members, in accordance with the acronym B-R-I-C-S.
- Together, BRICS accounts for about 40% of the world's population and about 30% of the GDP (Gross Domestic Product), 16% of the global trade.
- Initiatives: New Development Bank (NDB), Contingent Reserve Arrangement, BRICS Payment System Customs Agreements, Remote Sensing Satellite.
- New Initiative: BRICS is planning to launch its own "new currency" system, a major step towards de-dollarization.
- De-dollarization: reducing dependence on the US dollar for trade.
- First BRIC Summit: the first BRICS Summit took place in 2009 in the Russian Federation.
- Recent BRIC Summit: the 14th BRICS Summit was convened in 2022 in a virtual format, under the Chairmanship

#### **Objectives:-**

- To deepen, broaden and intensify cooperation within the grouping and among the individual countries for more sustainable, equitable and mutually beneficial development.
- It takes into consideration each member's growth, development and poverty objectives.

- It is emerging as a new and promising political-diplomatic entity with diverse objectives.

### **New Development Bank**

- Origin: During the Sixth BRICS Summit in Fortaleza ,Brazil.(2014) (UPSC CSE: NDB)
- HQ: Shanghai
- Key areas of operation: clean energy, transport infrastructure, irrigation, sustainable urban development and economic cooperation among the member countries.

### **Membership**

- The Agreement on the New Development Bank entered into force in July 2015, with the official declaration of all five states that have signed it. The five founding members of the Bank include Brazil, Russia, India, China and South Africa.
- Bank's Articles of Agreement specify that all members of the United Nations could be members of the bank; however, the share of the BRICS nations can never be less than 55% of voting power.
- According to the Bank's General Strategy: 2017–2021, the NDB plans to expand membership gradually so as not to overly strain its operational and decision-making capacity.
- In September 2021, Bangladesh, the United Arab Emirates and Uruguay joined the NDB.
- In December 2021, the NDB admitted Egypt as a new member.

### **BRICS Contingent Reserve Arrangement (CRA)**

- It was signed by the BRICS nations in 2014 as part of the Fortaleza Declaration at the Sixth BRICS Summit.
- Objective: to provide short-term liquidity support to the members through currency swaps to help mitigate the BOP crisis and further strengthen financial stability.
- The initial total committed resources of the CRA will be 100 billion dollars with individual commitments as follows:
- China (\$41 billion),
- India (\$18 billion),
- Brazil (\$18 billion),
- Russia (\$18 billion) and
- South Africa (\$5 billion).

### **India and BRICS**

- India is a founding member of BRICS.
- It conducted 13th BRICS Summit in 2021 in New Delhi.

### **Importance of BRICS for India:-**

- Nuclear Supplier Group (NSG) membership: India is engaged with the other BRICS countries on its NSG membership.
- Funds for infrastructure: NDB will help India raise and avail resources for their infrastructure and sustainable development projects.
- SUMMITS held in India: India hosted the 13th BRICS summit in 2021.
- An agreement on BRICS Cooperation on Remote Sensing Satellite Constellation was signed.

## 2.4 Supreme Audit Institutions of G20 countries Summit (SAI20)

Context: The second Supreme Audit Institutions of G20 countries Summit (SAI20) was organised in Goa recently.

### About Supreme Audit Institutions of G20 countries Summit (SAI20) :-

- It is a forum where SAIs from G20 countries can engage with each other to share their experiences and expertise in auditing public policies and governance practices.
- Objective of the G20 SAI Summit: to promote cooperation among the SAIs in addressing global challenges and fostering accountability in governance.
- The group meets annually to discuss important issues related to public auditing and to develop joint initiatives to promote good governance and accountability in their respective countries.
- Chairmanship: Shri Girish Chandra Murmu, the Comptroller & Auditor General of India (CAG) will chair SAI20.

### Top Priority areas for SAI20 deliberations Under India's presidency

#### Two priority areas have been selected for SAI20 deliberation:

##### Blue Economy

- It is defined by the World Bank as the Sustainable use of ocean resources for economic growth, improved livelihoods, and jobs while preserving the health of the ecosystem.
- Responsible Artificial Intelligence
- Artificial intelligence (AI): the ability of a computer or a robot controlled by a computer to do tasks that are usually done by humans.

### Important functions of Supreme Audit Institutions (SAIs):-

- Independent audits: SAIs conduct independent audits of government finances and operations.
- They ensure that public funds are being used in accordance with the law and that government agencies are operating effectively and efficiently.
- Promoting transparency and accountability: SAIs promote transparency and accountability by making audit reports publicly available.
- Improving governance: By identifying weaknesses and inefficiencies in government operations, SAIs can help to improve governance.
- Supporting the legislative branch: SAIs support the legislative branch by providing information and analysis that can help lawmakers make informed decisions about government programs and policies.
- Ensuring compliance with laws and regulations: SAIs ensure compliance with laws and regulations by reviewing government operations and financial statements.
- Fostering international cooperation: SAIs collaborate and share best practices with their counterparts in other countries to promote good governance and accountability globally.

### Comptroller and Auditor-General of India (CAG)

- CAG is an independent authority under the Constitution of India.
- He is the head of the Indian audit & account department.
- He is the chief Guardian of the Public purse.
- Appointment: he is appointed by the President by warrant under his hand and seal.
- Tenure: 6 years or 65 years of age, whichever is earlier.
- Removal: by the President only in accordance with the procedure mentioned in the Constitution that is the manner same as the removal of a Supreme Court Judge.

- He is ineligible to hold any office, either under the Government of India or of any state, once he retires/resigns as a CAG.

#### **Constitutional Provisions regarding the CAG:-**

- Article 148: it broadly deals with the CAG appointment, oath and conditions of service.
- Article 149: it deals with the Duties and Powers of the Comptroller and Auditor-General of India.
- Article 150: it says that the accounts of the Union and of the States shall be kept in such form as the President may, on the advice of the CAG, prescribe.
- Article 151: it says that the reports of the Comptroller and Auditor-General of India relating to the accounts of the Union shall be submitted to the president, who shall cause them to be laid before each House of Parliament.
- The reports of the Comptroller and Auditor-General of India relating to the accounts of a State shall be submitted to the Governor of the State, who shall cause them to be laid before the Legislature of the State.
- Article 279: Calculation of “net proceeds” is ascertained and certified by the Comptroller and Auditor-General of India, whose certificate is final.
- Third Schedule: Section IV of the Third Schedule of the Constitution of India prescribes the form of oath or affirmation to be made by the Judges of the Supreme Court and the Comptroller and Auditor-General of India at the time of assumption of office.
- Sixth Schedule: According to this schedule, the District Council or Regional Council should be kept in such form as the CAG prescribes with the approval of the President.
- In addition, these bodies’ accounts are audited in such manner as CAG may think fit, and the reports relating to such accounts shall be submitted to the Governor who shall cause them to be laid before the Council.

## **2.5 Bangkok vision 2030**

The Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) summit end of this year will adopt a Bangkok Vision 2030 as announced by the Ministry of External Affairs (MEA) recently.

#### **About Bangkok Vision 2030:-**

- The Bangkok Vision 2030 was proposed by Thailand.
- Objective: to propel BIMSTEC towards a prosperous, resilient, and open region, fostering sustainable and balanced growth.
- Vision: to advance BIMSTEC as a prosperous, resilient, and open region.
- It emphasizes sustainable and balanced growth, adapting to rapid changes in regional and global architecture.
- It aims to further promote BIMSTEC as a region of peace, stability, and economic sustainability.
- The goals are in line with the United Nations’ Sustainable Development Goals and Thailand’s bio-circular-green economic model.

#### **Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) summit**

- It is a regional organization.
- Objective: Creating an enabling environment for the rapid economic development of the sub-region.
- Established: 1997, by the signing of the Bangkok Declaration.
- Member countries: Bangladesh, India, Myanmar, Sri Lanka, Thailand, Bhutan and Nepal.

- Initially, it was formed with four Member States with the acronym 'BIST-EC' (Bangladesh, India, Sri Lanka and Thailand Economic Cooperation).
- It became renamed 'BIMST-EC' in 1997, following the inclusion of Myanmar.
- With the admission of Nepal and Bhutan in 2004, the name of the grouping was changed to 'Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation' (BIMSTEC).
- Chairmanship of BIMSTEC: rotates according to the alphabetical order of the English names of the Member States.
- Current chair: Thailand.
- Secretariat: Dhaka, Bangladesh.
- It was established during the third BIMSTEC Summit(2014).

## 2.6 India-US Relations

India and the United States recently unveiled a roadmap for enhanced collaboration in high-technology areas which focuses on addressing regulatory barriers and aligning export controls for smoother trade and “deeper cooperation” in critical areas.

### About India – USA Relations:

#### Bilateral engagement:

- India and the United States enjoy a comprehensive global strategic partnership covering almost all areas of human endeavour, driven by shared democratic values, convergence of interests on a range of issues, and vibrant people-to-people contacts.
- Regular exchanges at the leadership-level have been an integral element of the expanding bilateral engagement.
- Despite COVID-19 pandemic, India-U.S. cooperation witnessed intense engagement under various bilateral dialogue mechanisms in a wide range of areas including defence, security, health, trade, economic, science & technology, energy and people-to-people ties.

#### Defence and Security:

- India-US defence cooperation is based on “New Framework for India US Defence Cooperation”, which was renewed for a period of ten years in 2015.
- In 2016, the defence relationship was designated as a Major Defence Partnership (MDP).
- Bilateral military exercises and defence exchanges are important aspects of deepening military-to-military cooperation.

#### QUAD:

- The four Quad partners (India, Japan, United States & Australia) first formed a “Core Group” in 2004, to swiftly mobilise aid during the joint response to the 2004 Tsunami. Since 2017, Quad engagements have increased and intensified.

#### Counter Terrorism Cooperation:

- Cooperation in counter-terrorism has seen considerable progress with information exchange, operational cooperation and sharing of counterterrorism technology and equipment.
- India-U.S. Joint Working Group on Counter-Terrorism oversees the expanding CT cooperation.

### **Trade and Economic Relations:**

- The rapidly expanding trade and commercial linkages form an important component of the multi-faceted partnership between India and the United States.
- The U.S. is India's second largest trading partner and a major destination for our exports of goods and services.
- Bilateral trade in goods and services stood at US\$ 146 billion in 2019.
- During the financial year 2020-21, India received the highest ever foreign direct investment amounting to USD 81.72 billion, as per data published by the Ministry of Commerce and Industry, Government of India.
- The US replaced Mauritius as the second largest source of foreign direct investment into India during 2020-21 with inflows of USD 13.82 billion.
- The US is one of the top 5 investment destinations for Indian FDI.

### **Education partnership:**

- It is an important pillar of India-US ties and both the countries share strong linkages and history of higher education collaborations.
- The United States Educational Foundation in India (USEFI) was set up after a bilateral agreement on education exchange was signed between India and the US on February 2, 1950

### **Indian Diaspora:**

- About 4.2 million Indian Americans/Indian origin people reside in the US. The Indian Americans [3.18 million] constitute the third largest Asian ethnic group in the US.

### **Challenges between India-US relations:**

- Trade: Recently India and US confronted each other regarding tariffs and protectionist policies.
- US has continuously accused India of high tariffs and India have accused USA of restriction to US markets and high tariffs on Indian products.
- Intellectual Property Rights: US has continuously criticised India for its IPR policies. It has accused India of acting against Intellectual properties of major companies especially pharmaceutical over generic drugs.
- Continuous support to Pakistan: Although US has reduced support to Pakistan, it has still provided monetary support to Pakistan.
- In February 2016, the Obama administration notified the US Congress that it intended to provide Pakistan eight nuclear-capable F-16 fighters and assorted military goods including eight despite strong reservations from US lawmakers regarding the transfer of any nuclear weapons capable platforms to Pakistan.
- Relations with Russia: Russia has always supported India in international platform. It helped India to develop its defence capabilities.
- In 2018, India inked the historic agreement worth with Russia to procure four S-400 surface-to-air missile defence system, the most powerful missile defence system in the world ignoring America's CAATSA act.
- Relations with Iran: US has put sanctions on Iran due to its nuclear development. India has strategic interest in Iran to buy oil.
- The United States threatened India with sanctions over India's decision to buy oil from Iran.
- But recently it exempted India from sanctions that allowed India to buy oil from Iran.

### **Way Forward:**

- It appears highly likely that in strategic, political, security, defence and economic terms, relations between India and the USA will continue their upward trajectory under the present leadership. Impact of USA's relations with Pakistan over India is likely to be beneficial and positive. Geopolitical manoeuvres can have

significant impact on India-USA relations; however, it would remain to be multi-faceted and an “indispensable partnership”.

## 2.7 Grievance Redressal Assessment and Index (GRAI) 2022

Grievance Redressal Assessment and Index (GRAI) 2022 was launched recently.

### About Grievance Redressal Assessment and Index (GRAI) 2022:-

- Designed by: Department of Administrative Reforms and Public Grievances (DARPG), Govt. of India. (UPSC CSE: Alternative Dispute Resolution (ADR) Mechanisms)
- Objective: to present an organization-wise comparative picture and provide valuable insights about strengths and areas of improvement regarding the grievance redressal mechanism.
- Eighty-nine Central Ministries and Departments were assessed and ranked based on a comprehensive index in the dimensions of:-
  - Efficiency
  - Feedback
  - Domain and
  - Organisational Commitment and corresponding 12 indicators.
- The Centralised Public Grievance Redressal and Management System (CPGRAMS) was used for this purpose.

### Key Findings:-

- There has been a decline of almost 50% in the average disposal time for Central Ministries/Departments from 32 days in 2021 to 18 days in 2023.
- The progress in May, 2023 alone showed 1,16,734 grievances redressed by Central Ministries/Departments, with an average disposal time of 16 days per grievance.
- The number of disposed Public Grievance cases has consistently increased, crossing 1 lakh cases per month multiple times.
- The adoption of the 10-Step CPGRAMS reforms resulted in a significant decrease in the average time for grievance disposal.
- These reforms have enhanced the efficiency, accountability, and accessibility of the grievance redressal process.

### Centralized Public Grievances Redress and Monitoring System (CPGRAMS)

- CPGRAMS is an online platform that allows citizens to lodge their grievances related to service delivery to public authorities.
- Developed by: National Informatics Centre (Ministry of Electronics & IT [MeitY]), Directorate of Public Grievances (DPG) and Department of Administrative Reforms and Public Grievances (DARPG).
- Launched by: Department of Administrative Reforms & Public Grievances (DARPG) under the Ministry of Personnel, Public Grievances & Pensions.
- It is available 24x7 for citizens to access.
- It serves as a single portal that is connected to all Ministries/Departments of the Government of India as well as the State governments.
- This enables seamless communication and grievance redressal between citizens and the government.
- Each Ministry and State has role-based access to CPGRAMS, allowing them to effectively address and resolve grievances in their respective areas of responsibility.

- It is also accessible to citizens through a mobile application.
- The status of the grievance filed in CPGRAMS can be tracked with the unique registration ID provided at the time of registration of the complainant.
- CPGRAMS also provides appeal facility to the citizens if they are not satisfied with the resolution by the Grievance Officer.

**Process of appeal:-**

- After closure of grievance if the complainant is not satisfied with the resolution, he/she can provide feedback.
- If the rating is 'Poor' the option to file an appeal is enabled.
- The status of the Appeal can be tracked by the petitioner with the grievance registration number.

Edge IAS



## 3. Economy

### 3.1 Toy Industry of India

India has recently turned a net exporter of toys, during 2020-21 and 2021-22, ending decades of import dominance.

#### Toy Industry in India:

- Presently, the Indian toy industry is only 5% of the global industry size indicating a large potential growth opportunity.
- The domestic toy demand forecasted to grow at 10-15% against the global average of 5%.
- The report 'State of play: India's toy story- Unboxing fun and beyond' said India could also target a 2% share of global exports by 2025.
- There is high growth potential for India in exports of plastic toys and board games in the US, EU, and the Middle East among other markets.

#### Growth of India's Toy Industry:

- Indian Toys Industry is estimated to be US\$ 1.5 billion making up 0.5% of global market share.
- The toy manufacturers in India are mostly located in the NCR, Maharashtra, Karnataka, Tamil Nadu and clusters across central Indian States.
- The sector is fragmented with 90% of the market being unorganized and 4,000 toy industry units from the MSME sector.
- According to a joint report by industry body FICCI and KPMG, the India's toy industry is expected to double from US\$ 1 billion in 2019-20 to US\$ 2 billion by 2024-25.
- A share of 0.5% of the global toy industry shows indicates large potential growth opportunity.
- The domestic toy demand is forecasted to grow at 10-15% against the global average of 5%.
- According to the Ministry of Commerce and Industry, the import of toys into India has declined sharply from US\$ 304 million in 2018-19 to US\$ 36 million in 2021-22.
- On the other hand, exports have increased from US\$ 109 million in 2018-19 to US\$ 177 million in 2021-22.

#### Factors driving growth of India's Toy Industry:

- Huge consumer base: India's population stands at around 1.4 billion, with approximately 26.62% of the population falling into the 0-14 age category.
- Rising disposable income: India has experienced strong GDP growth rates for the last several years, and the middle-class population has experienced strong growth.
- Rise in online purchases: Online sales channels have witnessed a boom in India with the evolution of smartphones and other digital media.
- Shifting preferences: According to the Toy Association report in 2018, parents believe in STEM-focussed toys as their primary way to encourage science and math development in young children.
- Disincentivising imported toys: The Indian government has increased the basic customs duty on toys from 20% to 60%, reduced availability of imported toys and enhanced demand for the domestic toy industry.

#### Challenges associated with the toy industry:

- India's toy industry is minuscule and during the one-and-half decades between 2000 and 2016, industry output was halved in real terms (net of inflation) with job losses.

- Imports accounted for up to 80% of domestic sales until recently.
- Between 2000 and 2018-19, imports rose by nearly three times as much as exports.
- India hardly figures in the global toy trade, with its exports at a mere half a percentage point.
- Between 2014-19, the Indian toy industry witnessed negative productivity growth.
- India followed an inward-oriented industrial policy in the Planning era, which sheltered domestic production by providing a “double protection” — by import tariffs and reservation of the product for exclusive production in the small-scale sector — known as the “reservation policy”.
- Toy manufacturing remained stagnant, archaic, and fragmented, even as imports of modern, safe, and branded toys boomed.
- The output of the informal or unorganised sector shrank, though it continues to account for the majority of establishments and employment.
- ‘Make in India’ had a negligible effect on strengthening toy production and exports on a sustained basis.

#### **Steps taken by the Government to aid growth of Toy Industry:**

- **Call to the Start-ups:** The Government has called upon start-up entrepreneurs to explore the toy sector.
- The Government has also urged industry players to support local toys and reduce reliance on foreign goods.
- Educational institutions have been asked to organise hackathons for students to innovate in toy technology and design, including online games, to reflect Indian ethos and values.
- **Increase in Custom Duty:** The Government has increased basic customs duty from 20% to 60%.
- It is likely to result in toy importing brands to explore manufacturing in India, especially for the Indian market.
- It has also increased demand of toys manufactured by domestic toy industry.
- **Mandatory Quality Certification:** The Government has made toy quality certification mandatory to revive the indigenous industry.
- The Government began enforcing quality control for imported toys from September 1, 2020, to ensure that only products conforming to standards enter the country.
- **Programmes Boosting the Toy Industry:** The Government has chalked out a plan to promote traditional toys manufactured in the country by creating Toy Labs (a national toy fair for innovative Indian-themed toys).
- A plan to establish networks of toy labs such as Atal Tinkering Labs is also in the works to provide support for physical toys and for children to learn, play and innovate.
- Such labs will also be a way of specialised toy marking for quality certification and original design.

### **3.2 Small Finance Banks**

Recent reports suggest that Small Finance Banks have revolutionised banking services in rural and semi-urban areas.

## About Small Finance Banks:-

SMALL BANKS CAN GO PAN-INDIA		
	PAYMENTS BANKS	SMALL BANKS
WHO CAN PROMOTE	<ul style="list-style-type: none"> <li>Prepaid card issuers, telecom companies, NBFCs, business correspondents, supermarket chains, corporates, realty sector co-ops &amp; PSUs</li> </ul>	<ul style="list-style-type: none"> <li>Individuals/professionals with 10 years experience in finance, NBFCs, microfinance cos, local area banks</li> </ul>
WHAT THEY MUST DO	<ul style="list-style-type: none"> <li>Have a minimum capital of Rs 100cr</li> <li>Maintain 75% of deposits in govt bonds</li> <li>Maintain 25% of deposits in other banks</li> <li>Have at least 26% investment by Indians</li> <li>Get listed if net worth crosses Rs 500cr</li> <li>Have 25% of branches in unbanked areas</li> <li>Be fully networked and technology driven</li> <li>Have Rs 1 lakh cap for deposits in one a/c</li> </ul>	<ul style="list-style-type: none"> <li>Have a minimum capital of Rs 100cr</li> <li>Extend 75% of loans to priority sector</li> <li>Have 25% of branches in unbanked areas</li> <li>Maintain reserve requirements</li> <li>Cap loans to individuals and groups at 10% and 15% of net worth</li> <li>Have a business correspondent network</li> </ul>
WHAT THEY CAN DO	<ul style="list-style-type: none"> <li>Offer internet banking</li> <li>Sell mutual funds, insurance, pensions</li> <li>Offer bill payment service for customers</li> <li>Have ATMs and business correspondents (BC)</li> <li>Can function as BC of another bank</li> </ul>	<ul style="list-style-type: none"> <li>Sell forex to customers</li> <li>Sell mutual funds, insurance, pensions</li> <li>Can convert into a full-fledged bank</li> <li>Expand across the country</li> </ul>
WHAT THEY CAN'T DO	<ul style="list-style-type: none"> <li>Offer credit cards</li> <li>Extend loans</li> <li>Handle cross-border remittances</li> <li>Accept NRI Deposits</li> </ul>	<ul style="list-style-type: none"> <li>Extend large loans</li> <li>Float subsidiaries</li> <li>Cannot deal in sophisticated financial products</li> </ul>

- Small Finance Banks are the financial institutions, which provide financial services to the unserved and unbanked region of the country.
- They are registered as a public limited company under the Companies Act, 2013.
- Minimum paid-up capital– 100 cr.
- Capital adequacy ratio – 15% of risk-weighted assets.
- Foreign shareholding capped at 74% of paid capital.
- Foreign Portfolio investment ( FPIs) cannot be more than 24%.
- Priority sector lending requirement of 75% of total adjusted net bank credit. (UPSCE MAINS: Micro finance has the ability to unleash rural India’s entrepreneurial zeal.)

### Eligibility Criteria:-

- Resident individuals/professionals, having at least 10 years of experience in banking and finance can start Small Finance Banks with the approval of RBI.
- Existing Non-Banking Finance Companies (NBFCs), Micro Finance Institutions (MFIs), and Local Area Banks (LABs) in the private sector
- Indian residents and have a successful record of accomplishment of running their businesses for at least a period of five years must control these.
- Joint ventures for setting up small finance banks are not permitted.

### Functions:-

- Take small deposits and disburse loans.
- Distribute mutual funds, insurance products and other simple third-party financial products.
- Lend 75% of their total adjusted net bank credit to priority sector. (Revised Priority Sector Lending Guidelines).
- Maximum loan size would be 10% of capital funds to single borrower, 15% to a group.
- Minimum 50% of loans should be up to 25 lakhs.

### 3.3 Credit Information Bureau India Ltd (CIBIL)

Recently, the Kerala High Court held that an education loan application should not be rejected based on a low Credit Information Bureau India Ltd (CIBIL) score.

#### About Credit Information Bureau India Ltd (CIBIL):-

- Credit Information Bureau (India) Limited is one of the Credit Information Companies in India.
- It is involved in keeping the documentation of every credit-related action of individuals and companies.
- Different financial institutions and the banks, submit their individual information to CIBIL.
- CIBIL provides CIR (Credit Information Report) and the credit scores.
- The reports on CIBIL accommodate the information in detail about the credits an individual is taking like car loans, credit cards, home loans, personal loans, etc.

#### Two types of CIBIL reports are available:-

- CIBIL Report on Company Credit– CIBIL CCR is a record of your company's credit history. This is created from data submitted to CIBIL by lending institutions across India. The past payment behaviour of a company is a strong indication of its future behaviour
- Credit Information Report– it is created for individuals and contains in-depth information about credit behaviour in past and a score of CIBIL.

#### Importance of Credit Rating:

##### For Lenders;

- Better Investment Decision: No bank or money lending companies would like to give money to a risky customer. With credit rating, they get an idea about the creditworthiness of a company (that is borrowing the money) and the risk factor attached with them. By evaluating this, they can make a better investment decision.
- Safety Assured: High credit rating means an assurance about the safety of money and that it will be paid back with interest on time.

##### For Borrowers;

- Easy Loan Approval: With a high credit rating, you will be seen as a low/no risk customer. Therefore, banks will approve your loan application easily.
- Competitive Rate of Interest: You must be aware of the fact that every bank offers loans in a particular range of interest rates. One of the major factors that determine the rate of interest on the loan you take is your credit history. Higher the credit rating, lower the rate of interest.

#### Credit Information Companies (CICs):-

- At present, there are four CICs.
- They are provided with a Certificate of Registration.
- These include Equifax Credit Information Services Private Limited, CRIF High Mark Credit Information Services Private Limited, Credit Information Bureau (India) Limited, and Experian Credit Information Company of India Private Limited.
- Credit Information Companies in India are licensed by the Reserve Bank of India and governed by the Credit Information Companies Regulation Act, 2005.

### 3.4 Offer-for-sale

Recently, the shares of Coal India dropped 5% as offer-for-sale kicked off.

#### About Offer-for-sale:-

- Under the offer-for-sale method, securities are not issued directly to the public but are offered for sale through intermediaries like issuing houses or stockbrokers.
- The OFS mechanism was originally developed and implemented by the Securities and Exchange Board of India (SEBI) in 2012.
- Objective: to make it simpler for founders of publicly traded firms to reduce their shareholding and conform to the required public shareholding standard.
- Unique conditions under which an OFS turns out to be a suitable option:-
- The issued shares are reserved for retail investors in an amount of at least 10%.
- A minimum of 25% of the available shares are reserved for mutual funds and insurance firms.
- Sponsors can sell firm shares straightaway through an Offer for Sale rather than being required to pause for an IPO.
- Initial Public Offering (IPO): it is issued by a business to raise money from the stock markets, for the inaugural period.
- The Offer for Sale is open to shareholders with greater than 10% ownership of a corporate entity.
- The trading hours, from 15 AM to 3 PM, are available for placing an OFS.
- Any allocations will not be made if the offer value falls below the prevailing market price.
- Before the OFS, the organization must notify the stock markets at least 2 days in advance.

### 3.5 RBI's lightweight' payments system

Recently, the Reserve Bank of India (RBI) announced the conceptualisation of the 'lightweight' payments system.

#### About RBI's lightweight' payments system:-

- The lightweight' payment system is to ensure uninterrupted digital payments during emergencies such as natural calamities or war.
- Background: the RBI is working on strengthening the oversight framework for Centralised Payment Systems as part of the Utkarsh 2.0 initiative.

#### Salient Features:-

- This system will operate independently of existing payment technologies like UPI(Unified Payment Interface), NEFT (National Electronic Funds Transfer), and RTGS(Real-Time Gross Settlement (RTGS))
- It can be operated from anywhere.
- It requires minimal staff during emergencies.
- It will process critical transactions, such as bulk payments and interbank payments, during extreme and volatile situations.
- The system operates on minimalistic hardware and software.
- It gets activated only when needed.
- Lightweight' payments system v/s UPI(Unified Payment Interface)
- UPI and other conventional systems prioritise handling large transaction volumes and require a stable and robust infrastructure. (UPSC CSE: UPI)
- On the other hand, the lightweight system is designed to operate even in volatile and extreme conditions

when regular payment systems may not be accessible.

#### **Utkarsh 2.0:**

- In January 2023, the Reserve Bank of India (RBI) launched Utkarsh 2.0, which is the second phase of its medium-term strategy for strengthening regulatory and supervisory mechanisms.
- Utkarsh 2.0 builds upon the foundation laid by Utkarsh 0.1, which was launched in July 2019 and covered the period from 2019 to 2022.
- Utkarsh 2.0 will guide the RBI over the period from 2023 to 2025 and includes six vision statements that are designed to improve the performance of the RBI's statutory and other functions, enhance its relevance and significance at the national and global levels, and improve its internal governance, infrastructure, and human resources.

#### **The six vision statements are:**

- Excellence in performance of statutory and other functions:
- Strengthened trust of citizens and institutions in the RBI:
- Enhanced relevance and significance in national and global roles:
- Transparent, accountable, and ethics-driven internal governance:
- Best-in-class and environment-friendly digital and physical infrastructure: This vision statement seeks to improve the RBI's digital and physical infrastructure by making it the best-in-class and environmentally friendly
- Innovative, dynamic, and skilled human resources

### **3.6 National Statistical Office**

Recently, the National Statistical Office released provisional estimates of national income.

#### **About National Statistical Office:-**

- The National Sample Survey Office (NSSO) merged with the Central Statistical Office (CSO) to form the National Statistical Office (NSO) in 2019.
- National Sample Survey Office (NSSO): formerly called the National Sample Survey Organisation was the largest organization in India conducting periodic socio-economic surveys.
- Central Statistics Organisation of India: was responsible for the coordination of statistical activities in India, and evolving and maintaining statistical standards.
- NSO is under the Ministry of Statistics and Programme Implementation (MOSPI).

#### **Functions:-**

- Acts as the nodal agency for the planned development of the statistical system in the country.
- Lays down and maintain norms and standards in the field of statistics.
- Coordinates the statistical work in respect of the Ministries/Departments of the Government of India.
- Prepares national accounts as well as publishes annual estimates of national products, Government and Private final consumption expenditure, Capital Formation, Savings, etc.
- Compiles and releases Consumer Price Index (CPI). (UPSC CSE: CPI)
- Maintains liaison with International Statistical Organizations.
- Compiles and brings out reports as per international/regional commitments.
- Compiles and releases the Index of Industrial Production (IIP) every month. (UPSC CSE: IIP)

- Provides statistical information to assess and evaluate the changes in the growth, composition and structure of the organized manufacturing sector.

### 3.7 Pulses Production in India

There are two agricultural commodities in which India is significantly import-dependent: Edible oil and pulses.

#### About pulses production in India:

- Pulses are annual leguminous crops yielding between one and 12 grains or seeds of variable size, shape and colour within a pod, used for both food and feed.
- Bengal Gram (Desi Chick Pea / Desi Chana), Pigeon Peas (Arhar / Toor / Red Gram), Green Beans (Moong Beans), Chick Peas (Kabuli Chana), Black Matpe (Urad / Mah / Black Gram), Red Kidney Beans (Rajma), Black Eyed Peas (Lobiya), Lentils (Masoor), White Peas (Matar) are major pulses grown and consumed in India.
- February 10 is a designated global event to recognize and emphasize the importance of pulses and legumes as a global food.
- The UN General Assembly adopted 2016 as the International Year of Pulses (IYP).
- According to the Agriculture Ministry, India's pulses output has increased from 19.26 MT in 2013-14 to 27.50 MT in 2022-23.
- The reduction in pulses imports have come essentially on the back of higher domestic production.
- It can be seen that imports of two items have recorded dramatic drops: Yellow/white peas (matar) and chickpea (chana).

#### Significance of pulses:

- Pulses are rich in nutritional and protein values and are an important part of a healthy diet.
- Pulses and legumes (lentils, peas, chickpeas, beans, soybeans, and peanuts) play an equally important role in health maintenance and overall improvement.
- Pulses also contribute majorly to achieving the goals of the 2030 Agenda of Sustainable Development.
- Pulses play a critical role in marking challenges of poverty, food chain security, degraded health, and climate change.
- Pulses and legume crops help in improving the feasibility of agricultural production systems.
- The nitrogen-fixing properties of pulses improve soil fertility, which increases the productivity and fertility of the farmland.
- Pulses are important for a healthy diet.

#### Challenges to the Pulse Production:

- Infrastructure: Poor and inadequate storage facilities
- Prices: Volatility in the prices due to rainfed dependency of the crops
- Decrease in the cultivation area, farmers opting Higher Yielding Crops with higher MSP.
- Inconsistencies in Minimum Support Price (MSP) like the Agricultural Costs and Prices Commission who fixes MSP is by status a department whose recommendations are only advisory.
- Representation of farmers is minimal.
- The so-called 50 per cent profit to the farmer is not per the government's intended formula, and so it is relatively low. The farmers do not even get the declared MSP.
- The pulses are imported at prices lower than the domestic ones.

- Vulnerability to pests is also a major hindrance in the production of pulses.
- Farmers lack crop Insurance and credit facilities.

#### **Government of India Initiatives to boost pulses production:**

- National Food Security Mission: Launched by the Government of India during 2007-08 at the beginning of the 11th five-year plan.
- To expand the area under cultivation of pulses, and;
- To enhance productivity by bridging the gap between the actual and potential yield.
- Rashtriya Krishi Vikas Yojana programme: It is a continuing scheme under implementation from the 11th Five Year Plan period of National Development Council (NDC).
- The scheme will incentivize States in enhancing more allocation to Agriculture and Allied Sectors.
- PM-POSHAN: The Indian government has urged states to procure pulses (for Mid-day meals) under the PM-POSHAN (Prime Minister's Overarching Scheme for Holistic Nutrition) program from NAFED (National Agricultural Cooperative Marketing Federation of India Ltd.).

#### **Way Forward:**

- India is moving closer to AatmaNirbharta on pulses with consistent efforts by the government. It is vital to raise awareness about the benefits of eating pulses that are high in macronutrients for both sustainability and dietary needs.

### **3.8 Plastic Pollution**

- Every year, June 5 is celebrated as World Environment Day. The day called for global solutions to combat the pandemic of plastic pollution.
- The date was chosen by the UN General Assembly during the historic 1972 Stockholm Conference on the Human Environment – considered to be the first world conference to make the environment a major issue.
- Over the years, it has grown to become the largest global platform for environmental outreach, with millions of people from across the world engaging to protect the planet.
- 2023 marks the 50th anniversary of the World Environment Day.
- #BeatPlasticPollution: Hosted by Côte d'Ivoire and supported by the Netherlands, this year's World Environment Day campaign is aimed towards discussing and implementing solutions to the problem of plastic pollution.

#### **About Plastic Pollution:**

- Plastic refers to a wide range of synthetic or semi-synthetic materials that use polymers as a main ingredient with their defining quality being their plasticity – the ability of a solid material to undergo permanent deformation in response to applied forces.
- These include Polyethylene terephthalate or PET, High-density polyethylene or HDPE, Polyvinyl chloride or PVC, Low-density polyethylene or LDPE, Polypropylene or PP, and Polystyrene or PS.
- Each of these have different properties and can be identified by their resin identification code (RIC) denoted by symbols found on plastic products.
- Plastic pollution occurs when plastic has gathered in an area and has begun to negatively affect the natural environment and create problems for plants, wildlife, and even the human population.
- This includes killing plant life and posing dangers to local animals.
- Plastic is an incredibly useful material, but it is not biodegradable.



- According to UN data, more than 400 million tonnes of plastic is produced every year worldwide, half of which is designed to be used only once.
- Of that, less than 10 per cent is recycled. Consequently, an estimated 19-23 million tonnes end up in lakes, rivers and seas annually.
- Around the world, one million plastic bottles are purchased every minute, while up to five trillion plastic bags are used worldwide every year.
- In total, half of all plastic produced is designed for single-use purposes – used just once and then thrown away.

#### **Common sources of Plastic pollution:**

- Merchant ships expel cargo, sewage, used medical equipment, and other types of waste that contain plastic into the ocean.
- The largest ocean-based source of plastic pollution is discarded fishing gear (including traps and nets).
- Continental plastic litter such as Food Wrappers and Containers, Bottles and container caps, Plastic bags, Straws etc. enters the ocean largely through storm-water runoff.

#### **Issues Associated with Plastic-Waste in India:**

##### **More Plastic per Person:**

- Like much of the world, India is struggling to dispose of its growing quantities of plastic waste given how ubiquitous it has become- from our toothbrushes to debit cards.
- A little over 10,000 tonnes a day of plastic waste remains uncollected.

##### **Unsustainable Packaging:**

- India's packaging industry is the biggest consumer of plastics.
- A 2020 study on packaging in India projects a loss of almost 133 billion dollars' worth of plastic material value over the next decade due to unsustainable packaging.
- Unsustainable packaging involves general packaging through single use plastic.

##### **Online Delivery:**

- The popularity of online retail and food delivery apps, though restricted to big cities, is contributing to the rise in plastic waste.
- India's biggest online delivery startups Swiggy and Zomato are each reportedly delivering about 28 million orders a month.
- E-commerce companies too have come under fire for excess use of plastic packaging.

##### **Upsets the Food Chain:**

- Polluting plastics can affect the world's tiniest organisms, such as plankton.
- When these organisms become poisoned due to plastic ingestion, this causes problems for the larger animals that depend on them for food.
- Larger items, such as plastic bags and straws, can choke and starve marine life, while smaller fragments (microplastics) can cause liver, reproductive, and gastrointestinal damage in animals and it can directly affect the blue economy as well.

##### **Impact on Human Health:**

- The World Health Organisation published shocking research in 2018 that exposed the presence of micro plastics in 90% of bottled water.

- We absorb plastic through our clothes, 70% of which are synthetic and the worst fabric for the skin.
- We even breathe plastic when due to poor waste management by burning the trash in the open air.
- Plastic toxicity in humans can lead to hormonal disruption and adverse reproductive and birth outcomes.

#### **Govt Initiatives to tackle plastic pollution:**

- National Dashboard on Elimination of Single Use Plastic and Plastic Waste Management:
- India launched a nationwide awareness campaign on Single Use Plastics on World Environment Day in June 2022.
- A mobile app for Single Use Plastics Grievance Redressal was also launched to empower citizens to check sale/usage/manufacturing of SUP in their area and tackle the plastic menace.

#### **Plastic Waste Management Amendment Rules, 2022:**

- It prohibits the manufacture, import, stocking, distribution, sale and use of several single-use plastic items as of July 1, 2022.
- It has also mandated Extended Producer Responsibility (EPR) that incorporates circularity by making manufacturers of products responsible for collecting and processing their products upon the end of the products' lifetime.

#### **India Plastics Pact:**

- It is the first of its kind in Asia. The Plastics Pact is an ambitious and collaborative initiative to bring stakeholders together to reduce, reuse and recycle plastics within the material's value chain.

#### **Mascot 'Prakriti':**

- To spread awareness among masses about small changes that can be sustainably adopted in lifestyle for a better environment.

#### **Project REPLAN:**

- Project REPLAN (stands for REducing PLastic in Nature) launched by Khadi and Village Industries Commission (KVIC) aims to reduce consumption of plastic bags by providing a more sustainable alternative.

#### **Way Forward: Adaptation of the 3R's +E Strategy**

- Reduce: To efficiently reduce plastic pollution, there is an evident need of reducing our usage of plastic.
- Reuse: Many plastic items can be reused or used for different purposes. Before throwing plastic items, it is important to consider how they can be reused.
- Recycle: Plastic recycling consists of collecting plastic waste and reprocessing it into new products, to reduce the amount of plastic in the waste stream.
- Educate: Another crucial solution is education in order to increase awareness and behavioural change.

### **3.9 Securities Appellate Tribunal (SAT)**

Recently, the SAT quashed an order of SEBI, which had earlier cancelled licence of Brickwork Ratings', a credit rating agency. .

### **About Securities Appellate Tribunal (SAT):-**

- It is a statutory body created under the provisions of the SEBI Act, 1992.
- It has only one bench, which sits in
- Jurisdiction: the whole of India
- Composition of the SAT: It consists of a Presiding Officer and two other members.
- Appointment of the Presiding Officer: by the Central Government in consultation with the Chief Justice of India or his nominee.
- Powers: it has powers similar to a civil court.
- Appeals from its orders can be challenged in the Supreme Court.

### **Key Functions:-**

- To hear and dispose of appeals against orders passed by the Securities and Exchange Board of India (SEBI) or by an adjudicating authority under the Act.
- To exercise jurisdiction, authority and powers conferred on the SAT by or under this Act or any other law for the time being in force.
- To hear and dispose of appeals against orders passed by the Pension Fund Regulatory and Development Authority (PFRDA).

### **Pension Fund Regulatory and Development Authority (PFRDA):-**

- It is a pension regulatory authority, which was established in 2003.
- It is a statutory body established under PFRDA Act, 2003.
- Ministry: Ministry of Finance
- HQ: New Delhi
- Function: It promotes old age income security by establishing, developing and regulating pension funds.
- It protects the interests of subscribers to schemes of pension funds and related matters.
- To hear and dispose of appeals against orders passed by the Insurance Regulatory Development Authority of India (IRDAI).

### **Insurance Regulatory Development Authority of India (IRDAI):-**

- It is an autonomous and statutory body established under the IRDA Act 1999.
- The apex body supervises and regulates the insurance sector in India.
- Objective: To protect the interests of policyholders, to regulate, promote and ensure orderly growth of the insurance industry in India.
- Nodal Ministry: Ministry of Finance
- Head Office:
- Composition: IRDAI is a 10-member body. It has a Chairman, five full-time members, and the Government of India appoints four part-time members..

### **Functions:-**

- To have a fair regulation of the insurance industry while ensuring financial soundness of the applicable laws and regulations.
- Registering and regulating insurance companies.
- Protecting policyholders' interests.
- Licensing and establishing norms for insurance intermediaries.
- Regulating and overseeing premium rates and terms of non-life insurance covers.

### 3.10 Prepaid Payment Instrument (PPI) holders

Recently, an RBI-appointed committee has recommended the extension of Deposit Insurance and Credit Guarantee Corporation (DICGC) cover to Prepaid Payment Instrument (PPI) holders.

#### About Prepaid Payment Instrument (PPI) holders:-

- PPIs are instruments that facilitate the purchase of goods and services.
- These include financial services, remittance facilities, etc. (UPSC CSE: Bharat Bill Payment System (BBPS))
- Prepaid instruments can be issued as smart cards, magnetic stripe cards, internet accounts, internet wallets, mobile accounts, mobile wallets, paper vouchers and any of the instruments used to access the prepaid amount. (UPSC CSE: Non-Bank PSPs to Join Centralised Payment System )

#### Three types Types of PPIs:-

- Closed System PPIs: These PPIs are issued by an entity for facilitating the purchase of goods and services from that entity only.
- They do not permit cash withdrawals.
- The operation of such instruments does not require approval by the RBI.
- The most common example of a closed system PPI is a brand-specific gift card.
- Semi-closed System PPIs: banks (approved by RBI) and non-banks (authorized by RBI) issue these PPIs.
- They are for the purchase of goods and services at merchant locations, which have a specific contract with the issuer to accept the PPIs as payment instruments.
- Open System PPIs: These PPIs are issued only by banks (approved by RBI).
- These are used at any merchant for the purchase of goods and services.
- Cash withdrawal at ATMs / Points of Sale (PoS) terminals / Business Correspondents (BCs) is allowed through such PPIs.

#### Deposit Insurance and Credit Guarantee Corporation (DICGC)

- The merger of Deposit Insurance Corporation (DIC) and Credit Guarantee Corporation of India Ltd. (CGCI) in 1978 resulted in the formation of DICGC.
- It is a statutory body under the Deposit Insurance and Credit Guarantee Corporation Act, 1961.
- It serves as a deposit insurance and credit guarantee for banks in India. It protects deposit accounts up to a INR 5 lakh per bank account holder. If a deposit balance of a bank account holder in a single bank exceeds INR 5 lakh, the DICGC will pay up to INR 5 lakh, comprising interest and principal, if the bank goes bankrupt.
- It is a fully owned subsidiary of The RBI governs it.
- Coverage of DGCI:-Banks including regional rural banks, local area banks, foreign banks with branches in India, and cooperative banks, are mandated to take deposit insurance cover with the DICGC.
- Types of Deposits Covered:-DICGC insures all bank deposits, such as saving, fixed, current, recurring, etc. The following types of deposits are not covered under DICGC:-
- Deposits of foreign Governments.
- Deposits of Central/State Governments.
- Inter-bank deposits.
- Deposits of the State Land Development Banks with the State co-operative banks.
- Any amount due on account of any deposit received outside India.
- Any amount which has been specifically exempted by the corporation with the previous approval

### 3.11 Financial Services Institution Bureau (FSIB)

Recently, Financial Services Institution Bureau (FSIB) selected new chiefs for General Insurance Corporation of India and National Insurance Company Limited.

#### About Financial Services Institution Bureau (FSIB):-

- It was established by passing a resolution by the Cabinet Appointments Committee (ACC) to establish it in place of the Banks Board Bureau (BBB).

#### Composition:-

- FSIB would be headed by a chairman, a central government nominee.
- The board would comprise the Secretaries of the DFS, the chairman of IRDAI, and a deputy governor of the RBI.
- Additionally, it will have three part-time members who are experts in banking and three more from the insurance sector.

#### Functions:-

- The FSIB selects the chiefs of public sector banks and insurance companies. (UPSC CSE: Financial Services Institutions Bureau (FSIB))
- It has the mandate to issue guidelines and select general managers and directors of state-run non-life insurers, general insurers and Financial Institutions.
- It works under the Department of Financial Service, Ministry of Finance.
- It also monitors and assesses the performance of public sector banks, government-owned financial institutions and insurance companies.
- It is the single entity for making recommendations for appointments of WTD (Whole-time Director) and NEC (Non-executive Chairman) in Public Sector Banks, India Private Limited companies and Financial Institutions.

#### General Insurance Corporation of India (GIC)

- GIC is an Indian nationalised reinsurance company.
- It was set up by the General Insurance Business (Nationalisation) Act, of 1972.
- It was enacted to nationalise all private companies undertaking general insurance business in India.

#### Four subsidiary companies of GIC are:-

- National Insurance.
- New India Assurance.
- Oriental Insurance.
- United India Insurance.
- The General Insurance Business (Nationalisation) Act, 1972 was subsequently amended in 2002 to transfer the control of these four subsidiary companies from GIC to the central government.
- Since 2000, GIC exclusively undertakes the reinsurance business.

#### National Insurance Company Limited (NIC)

- It is India's oldest Insurance Company.
- It was started in Kolkata, West Bengal in 1906.
- 66 years later, after the passing of the General Insurance Business Nationalisation Act in 1972, it was

merged along with 21 foreign and 11 Indian companies to form National Insurance Company Limited.

- It became one of the four subsidiaries of the General Insurance Corporation of India.
- It is fully owned by Govt. of India.
- 2002: National insurance was delinked from GIC and formed as an independent insurance company.

#### **Products of National Insurance:**

- Personal Line of Insurance
- Motor Vehicle Insurance.
- Rural Insurance
- Industrial & Commercial Insurance.

### **3.12 India's Fisheries Sector**

Recently, the Union Minister for Fisheries, Animal Husbandry and Dairying stressed the need for strengthening marketing in the fisheries sector, by evolving a system similar to that of agriculture marketing.

#### **About India's Fisheries Sector:-**

- India is the third-largest fish producer and the second-largest aquaculture producer
- The Indian Blue Revolution has led to a major improvement in the fishing and aquaculture industries.
- Blue Revolution: it refers to the time of intense growth of the worldwide aquaculture industry from the mid-1960s to the present day.
- It was launched in India during the seventh Five Year Plan (FYP), from 1985 to 1990.
- These industries are regarded as sunrise sectors and are anticipated to have a big impact on the Indian economy.
- Sunrise sectors: is a term used for a sector that is just in its infancy but shows promise of a rapid boom.

#### **Recent trends in the Fisheries sector:-**

- In the recent past, Indian fisheries have witnessed a paradigm shift from marine-dominated fisheries to inland fisheries, with the latter emerging as a major contributor to fish production from 36% in the mid-1980 to 70% in the recent past.
- The Fish production reached an all-time high of 16.25 MMT during FY 2021-22.
- The marine exports touched Rs. 57,586 Crores. (UPSC CSE: Agreement on Fisheries Subsidies (Agreement))

#### **Top Fish Producing States:-**

- Andhra Pradesh is the largest producer of fish in India followed by West Bengal.

#### **Challenges of the Fisheries Sector:-**

- Illegal, Unreported, and Unregulated (IUU) fishing: it exacerbates overfishing and undermines the sustainability of the sector.
- IUU fishing involves activities such as fishing without proper licenses, using banned gear, and disregarding catch limits.
- Inadequate Infrastructure and Technology: Outdated fishing vessels, gear, and processing facilities hinder the efficiency and productivity of the sector. Insufficient cold storage and transportation infrastructure result in post-harvest losses.
- Climate Change and Environmental Degradation: Rising sea temperatures, ocean acidification, and

changing currents have a profound impact on marine ecosystems and fish populations.

- Socio-Economic Issues: a large number of small-scale and artisanal fishers who face multiple socio-economic challenges characterizes the fisheries sector in India.
- These challenges include low incomes, lack of access to credit and insurance, inadequate social security measures
- Gender disparities and the marginalization of women in fisheries also pose challenges.
- Market Access and Value Chain Inefficiencies: Despite India's significant fish production, there are challenges in accessing domestic and international markets.

### 3.13 Self-reliance in Fertilisers

When the world is in crisis, we must pledge — a pledge that is greater than the crisis itself. We must endeavour to make the 21st century, India's century and the path to achieving this is self-reliance. The above statement of Indian prime minister Modi reflects the vision of India for Aatmanirbhar.

#### Fertilizer Consumption in India:

- India's fertiliser consumption in FY20 was about 61 million tonnes — of which 55% was urea—and is estimated to have increased by 5 million tonnes in FY21.
- Since non-urea (MoP, DAP, complex) varieties cost higher, many farmers prefer to use more urea than actually needed.
- The government has taken a number of measures to reduce urea consumption. It introduced neem-coated urea to reduce illegal diversion of urea for non-agricultural uses. It also stepped up the promotion of organic and zero-budget farming.
- Currently, the fertiliser production of the country is 42-45 million tonnes, and imports are at around 18 million tonnes.
- Subsidy on Urea: The Centre pays subsidy on urea to fertiliser manufacturers on the basis of cost of production at each plant and the units are required to sell the fertiliser at the government-set Maximum Retail Price (MRP).
- Subsidy on Non-Urea Fertilisers: The MRPs of non-urea fertilisers are decontrolled or fixed by the companies. The Centre, however, pays a flat per-tonne subsidy on these nutrients to ensure they are priced at "reasonable levels".
- Examples of non-urea fertilisers: Di-Ammonium Phosphate (DAP), Muriate of Potash (MOP).
- All Non-Urea based fertilisers are regulated under Nutrient Based Subsidy Scheme.

#### Challenges of the sector:

- High government subsidies such as on Urea and DAP
- About 73 lakh crore or 5 percent of GDP, the second-highest after food
- Companies are obliged to sell at MRP, with their higher cost of production or imports being reimbursed as subsidy by the Centre.
- Small Farmer Inability to derive full benefits: Only 17,500 crores or 35 per cent of total fertiliser subsidies reaches small farmers.

#### Heavy Import dependence:

- Entire potash requirement, about 90 per cent of phosphatic requirement, and 20 per cent urea requirement is met through imports.
- The use of nitrogen (N), phosphorous (P) and potassium (K) in the country has over the last few years

sharply deviated from the ideal NPK use ratio of 4:2:1.

- This causes worsening of soil quality.
- Imbalance in application: MOP, which contains 60% K, has a high MRP so farmers have no incentive today to apply the same.

**Environmental concerns:**

- Nutrient imbalance owing to their use — disproportionate to other, more expensive fertilisers — could have implications for soil health, ultimately affecting crop yields.
- The India Fertilizers Market is fragmented, with the top five companies occupying 28.93%.

**Black market and corruption:**

- Urea is highly regulated and is only subsidised for agriculture
- This creates a black market that burdens small farmers disproportionately; incentivises production inefficiency, leads to over-use, depleting soil quality and damaging human health.

**Government Initiatives and Schemes:**

**Neem Coating of Urea:**

- The Department of Fertilizers (DoF) has made it mandatory for all the domestic producers to produce 100% urea as Neem Coated Urea (NCU).

**The benefits of use of NCU are as under:**

- Improvement in soil health.
- Reduction in usage of plant protection chemicals.
- Reduction in pest and disease attack.
- An increase in yield of paddy, sugarcane, maize, soybean, Tur/Red Gram.
- Negligible diversion towards non-agricultural purposes.
- Due to slow release of Nitrogen, Nitrogen Use Efficiency (NUE) of Neem Coated Urea increases resulting in reduced consumption of NCU as compared to normal urea.

**New Urea Policy (NUP) 2015: Objectives of the policy are**

- To maximize indigenous urea production.
- To promote energy efficiency in the urea units.
- To rationalize the subsidy burden on the Government of India.

**New Investment Policy- 2012:**

- The Government announced New Investment Policy (NIP)-2012 in January, 2013 and made amendments in 2014 to facilitate fresh investment in the urea sector and to make India self-sufficient in the urea sector.

**Policy on Promotion of City Compost:**

- The Government of India approved a policy on promotion of City Compost, notified by the DoF in 2016 granting Market Development Assistance of Rs. 1500/- for scaling up production and consumption of city compost.
- To increase sales volumes, compost manufacturers willing to market city compost were allowed to sell city compost in bulk directly to farmers.
- Fertilizer companies marketing city compost are covered under the Direct Benefit Transfer (DBT) for Fertilizers.



### Use of Space Technology in Fertilizer Sector:

- DoF commissioned a three year Pilot Study on “Resource Mapping of Rock Phosphate using Reflectance Spectroscopy and Earth Observations Data” by National Remote Sensing Centre under ISRO, in collaboration with Geological Survey of India (GSI) and the Atomic Mineral Directorate (AMD).

### The Nutrient Based Subsidy (NBS) Scheme:

- It has been implemented from April 2010 by the DoF.
- Under NBS, a fixed amount of subsidy decided on an annual basis, is provided on each grade of subsidized Phosphatic & Potassic (P&K) fertilizers depending on its nutrient content.
- It aims at ensuring the balanced use of fertilizers, improving agricultural productivity, promoting the growth of the indigenous fertilizers industry and also reducing the burden of Subsidy.

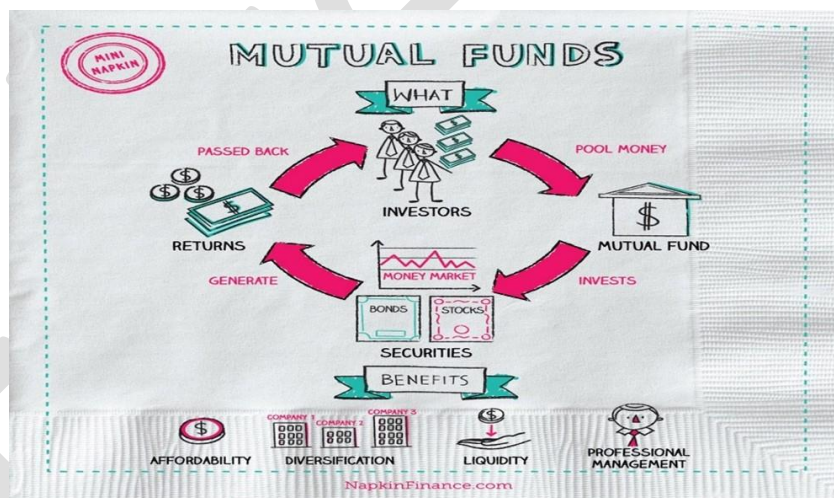
### Way Forward:

- The Department of Fertilisers has positioned India as a key player in the global fertiliser supply chain. India’s bold move towards self-reliance in fertiliser is a testament to the government’s commitment to ensuring food security for its citizens and fulfilling PM Modi’s vision of an Aatmanirbhar Bharat.

## 3.14 Execution-only platform (EOP)

Recently, the Securities and Exchange Board of India (SEBI) directed existing Mutual Funds ‘Execution-Only Platforms’ (EOPs) to obtain registration within three months.

### About Execution only platform (EOP):-



- Execution-only platform (EOP) is a digital or online platform which facilitates transactions such as subscription, redemption and switch transactions in direct plans of schemes of mutual funds.
- Mutual funds: it is a financial vehicle that pools assets from shareholders to invest in securities like stocks, bonds, money market instruments, and other assets.
- Mutual funds are operated by professional money managers, who allocate the fund’s assets and attempt to produce capital gains or income for the fund’s investors.

### Historical Background:-

- Till now, there was no specific framework available for technology/digital platforms to provide execution-only services in direct plans of mutual fund schemes.

**Current Status:-**

- As per the new SEBI's new guidelines, no entity would be allowed to operate as an EOP without obtaining registration from SEBI or the Association of Mutual Funds in India (AMFI).
- AMFI: nodal association of mutual funds across India.

**Categories of EOP**

The capital markets regulator has divided EOPs into two categories:-

**Category 1 EOPs:-**

- These would need to be registered with AMFI.
- Under this category, the EOPs would act as an agent of asset management companies (AMCs) and integrate their systems with AMCs and/or Registrar and Transfer Agents (RTAs) authorized by AMCs to facilitate transactions in mutual funds.
- These entities may act as an aggregator of the transactions in direct plans of schemes of mutual funds and provide services to investors or other intermediaries.

**Category 2 EOPs:-**

- These would need to be registered as a stock broker with SEBI.
- It can operate as an agent of investors.
- It can operate only through the platforms provided by the stock exchanges.

**Securities and Exchange Board of India (SEBI)**

- It is a statutory body established under the Securities and Exchange Board of India Act, 1992.
- It was established in 1992. (UPSC CSE: SEBI)
- Objective: to protect the interests of investors in securities and to promote and regulate the securities market.
- HQ: Mumbai, Maharashtra
- Ministry: Ministry of Finance

**Historical Background:-**

- Before SEBI came into existence, the Controller of Capital Issues was the regulatory authority.
- It derived authority from the Capital Issues (Control) Act, 1947.
- In 1988 the SEBI was constituted as the regulator of capital markets in India under a resolution of the Government of India.
- Initially SEBI was a non-statutory body.
- It became autonomous and given statutory powers by SEBI Act 1992.

**Members:-**

- Chairman: nominated by the Union Government of India.
- Two members: Officers from the Union Finance Ministry.
- One member: from the Reserve Bank of India.
- Remaining five members: nominated by the Union Government of India.
- Out of these at least three shall be whole-time members.

### Functions of SEBI:-

- Quasi-legislative: it drafts regulations
- Quasi-judicial: it passes rulings and orders
- Quasi-executive: it conducts investigation and enforcement action

### Powers of SEBI:-

- To approve by-laws of Securities exchanges.
- To require the Securities Exchange to amend its by-laws.
- Inspect the books of accounts and call for periodical returns from recognised Securities exchanges.
- Inspect the books of accounts of financial intermediaries.
- Registration of Brokers and sub-brokers.

## 3.15 Wilful defaulters

Recently, the Reserve Bank of India (RBI), allowed wilful defaulters involved in frauds to go in for a compromise settlement with respective banks to settle their dues.

### About Wilful defaulters:-

- Wilful Defaulter is an entity or a person that has not paid the loan taken back to the bank despite having the ability to repay it. Wilful defaulters are acted against comprehensively. (UPSC CSE: Time for 5th generation banking reforms)

### As per the RBI a wilful default occurs when:-

- The unit has defaulted in meeting its payment/repayment obligations to the lender when it has the capacity to honour these commitments.
- The funds are not utilised for the specific purpose for which finance was availed but rather have been diverted for other purposes.
- Those that have disposed of or removed movable fixed assets or immovable property given for the purpose of securing a term loan.

### Reasons for wilful defaults:-

- Businesses failure.
- Gaps in Internal audits, controls and procedures.
- Wrong investment decision.
- Bank's failure in identifying such defaulters at an early stage of loan repayment.

### Steps by Government:-

- SARFAESI Act (Securitisation and Reconstruction of Financial Assets and Enforcement of Securities Interest Act, 2002):-
- Under the provisions of this act many cases involving secured assets have been initiated.
- SARFAESI Act, 2002: allows banks and other financial institutions for auctioning commercial or residential properties to recover a loan when a borrower fails to repay the loan amount.

### RBI Instructions:-

- As per the instructions provided by the Reserve Bank of India (RBI), wilful defaulters are not sanctioned any additional facilities by banks/financial institutions, their unit is debarred from floating new ventures

for 5 years.

- Even criminal proceedings are initiated wherever necessary.

#### **SEBI Regulations:-**

- Wilful defaulters and companies who have wilful defaulters as either promoters or directors have been debarred from accessing capital markets to raise funds.
- Insolvency and Bankruptcy Code (IBC), 2016: it has debarred wilful defaulters from participating in the insolvency resolution process.
- IBC 2016: it is India's bankruptcy law which seeks to consolidate the existing framework by creating a single law for insolvency and bankruptcy.
- Fugitive Economic Offenders Act, 2018: the act was enacted for effective action against wilful defaulters who flee Indian jurisdiction.
- It provides for attachment and confiscation of property of fugitive offenders and to disentitle them from defending any civil claim.
- Fugitive Economic Offenders Act, 2018: it seeks to confiscate the properties of economic offenders who have left the country to avoid facing criminal prosecution or refuse to return to the country to face prosecution.
- Public Sector Banks (PSB): the government has also advised all PSBs to decide on publishing photographs of all concerned wilful defaulters.
- It further suggested obtaining a certified copy of the passport of promoters/directors and other authorised signatories of companies availing loans of over ₹50 crores.
- PSBs: banks owned or controlled by the government of India, which holds more than 50% of their shares.

#### **Reserve Bank of India (RBI)**

- It was established in 1935 by the Reserve Bank of India Act, of 1934.
- It is the Central Bank of India. (UPSC CSE: RBI surplus transfer)
- HQ: Mumbai
- It plays a multi-facet role by executing multiple functions such as overseeing monetary policy, issuing currency, managing foreign exchange etc.

#### **Structure of RBI:-**

- The Reserve Bank's affairs are governed by a central board of directors.
- The board is appointed by the Government of India in keeping with the Reserve Bank of India Act.
- Directors: are appointed/nominated for a period of four years.

#### **Functions of the RBI:-**

- It implements and monitors the monetary policy and ensures price stability while keeping in mind the objective of growth.
- Amendment to RBI Act, 1934, in 2016
- Section 45ZB of the RBI Act, 1934 was amended to provide for a six-member Monetary Policy Committee (MPC).
- It is to be constituted by the Central Government by notification in the Official Gazette.
- MPC determines the policy interest rate required to achieve the inflation target.
- It regulator and Supervisor of the Financial System.
- It manages the Foreign Exchange reserves of India.
- It issues and exchanges or destroys currency and coins not fit for circulation.

- Banker to the Government: it performs merchant banking functions for the central and state governments.
- Banker to banks: it maintains banking accounts of all scheduled banks. It also acts as the lender of last resort by providing funds to banks.

### 3.16 Dairy Sector in India

The Union Minister of Heavy Industries Dr Mahendra Nath Pandey unveiled the “Dugdh Sanakalan Sathi Mobile App” at Mussoorie, Uttarakhand.

#### About the App:

- It improves the quality of milk, foster transparency among stakeholders, and streamline operations at the grassroots village level, including Milk Cooperative Societies.
- Designed and Developed by: Rajasthan Electronics and Instruments Limited (REIL), Jaipur, a ‘Mini Ratna’ Central Public Sector Enterprises under the Ministry of Heavy Industries

#### Dairy Sector in India:

- India’s success story in milk production was scripted by Dr Verghese Kurien, known as the “Father of the White Revolution” in India.
- Dairy is the single-largest Agri commodity in India. It contributes 5% to the national economy and employs 80 million dairy farmers directly.
- Growth in the liquid milk segment, which accounts for over half of the dairy industry, is likely to remain stable (6-7%).
- The organised dairy segment, which accounts for 26-30% of industry (by value), has seen faster growth, compared to the unorganised segment.
- Notably, 228 dairy cooperatives reach out to 17 million farmers, many of whom are likely to be assured of their milk being procured at the right time and at a fair price.

#### Operation Flood:

- Operation Flood helped quality milk reach consumers across 700 towns and cities through a National Milk Grid.
- The programme also helped remove the need for middlemen, thereby reducing seasonal price variations.
- In 1968-69, prior to the launch of Operation Flood, milk production was only 21.2 MT which increased to 30.4 MT by 1979-80 and 51.4 MT by 1989-90. Now it has increased to 210 million tonnes in 2020-21.

#### Significance of the Dairy Sector in India:

- India’s dairy industry has played a crucial role in the country’s economic development.
- The sector has demonstrated an important part in achieving food security, reducing poverty, generating employment opportunities, and providing a regular source of income for rural households.
- The Operation Flood has reduced the import bill, converted India from a milk importer to the world’s largest producer.

#### Underlying Supply Constraints in India’s Dairy Sector:

##### Fodder Inflation and Supply Constraints:

- Fodder and feed account for 70% of the cost of milk.
- Fodder development has not found much of a place in animal husbandry budgets.

- Fodder is grown on just 4% of farmland, leading to supply constraints.

#### **Demand Destruction during the Covid-19 Pandemic:**

- The pandemic led to a crash in milk prices, impacting farmers' ability to invest in cattle upkeep.
- The effects of this demand destruction will linger for some time.

#### **Lumpy Skin Disease Outbreak:**

- Lumpy skin disease has wreaked havoc on livestock, leading to losses in income and capital.

#### **Cooperatives' Limited Success:**

- Dairy cooperatives have revolutionized dairying, but their success has not gone beyond Gujarat and Karnataka.
- Private players have taken market share by offering higher prices in a buoyant market.

#### **Inefficient Breeding Practices:**

- Inefficient breeding practices lead to low productivity and genetic variability, ultimately reducing milk production.
- Many farmers still rely on traditional breeding practices and do not have access to modern technologies for genetic improvement.

#### **Government Initiatives to Boost Dairy Industry:**

- Rashtriya Gokul Mission: Aims to genetically improve the cattle population and promote and conserve indigenous cattle breeds.
- Under the mission, farmers now have access to several cutting-edge technologies at their doorstep, including sex-sorted semen, IVF technique and genomic selection.
- National Programme for Dairy Development (NPDD): Aims to build or strengthen infrastructure for the production of high-quality milk as well as for the procurement, processing, and marketing of milk and milk products through the State Implementing Agency or State Cooperative Dairy Federation.
- Dairy Entrepreneurship Development Scheme (DEDS): DEDS is being implemented by the Department of Animal Husbandry, Dairying, and Fisheries to create self-employment opportunities in the dairy industry.
- The National Bank for Agriculture and Rural Development is carrying out the programme.
- e-GOPALA: The web version of the e-GOPALA application developed by the National Dairy Development Board (NDDB) has been launched to aid dairy farmers.
- Launching of Dairy mark: The National Dairy Development Board (NDDB) and Bureau of Indian Standards (BIS) together developed a dedicated 'Dairy Mark' logo as a unified quality mark across India to boost the confidence of consumers in milk and milk products.

#### **Way Forward:**

- The milk shortage in India is a complex issue that requires a multi-pronged approach to address. While demand destruction during Covid, lumpy skin disease, and fodder inflation have all contributed to the drying up of milk output, there is hope that the first two factors may be transient.
- However, fodder inflation is an endemic issue that requires urgent attention from policymakers. Investing in policies to address embedded supply constraints, such as fodder development, could provide a solution to this long-standing problem.

### 3.17 Semiconductor Fab: The Unfinished Agenda

Semiconductor fabrication represents the ultimate frontier of human tech advancement.

#### About Semiconductors:

- Semiconductors are materials that have electrical conductivity between that of a conductor
- Copper is a good conductor and Rubber is an insulator.
- This means that semiconductors can conduct electricity, but not as well as conductors, and they can also act as insulators, but not as effectively as insulators.
- This property allows for the creation of electronic components with specific electrical properties; enable the design of complex circuits and devices.
- Semiconductors are typically made from materials such as silicon, germanium, and gallium arsenide.

#### India's semiconductor sector:

- The country's electronics and semiconductor products manufacturing sector has witnessed a quantum growth in the last almost a decade.

#### Import and manufacturing:

- In 2014, some 92% of the mobile devices sold in the country were imported while in 2022 some 97% of mobile devices were manufactured in the country.

#### The global semiconductor industry:

- The global semiconductor industry is currently valued at \$500-\$600 billion and caters to the global electronics industry currently valued at about \$3 trillion.
- The chip-making industry is a highly concentrated one, with the big players being Taiwan, South Korea and the U.S. among others.
- 90% of five nm (nanometer) chips are mass-produced in Taiwan, by the Taiwan Semiconductor Manufacturing Company (TSMC).

#### Applications of semiconductors:

- Electronic devices: Semiconductors are the basis transistors, diodes, integrated circuits, microprocessors, and memory chips, which are used in electronic devices such as computers, smart phones, televisions, radios, and more.
- Solar cells: They are used in manufacture of solar cells, which convert sun light into electricity.
- Lighting: They are used in light-emitting diodes (LEDs) to produce energy-efficient lighting.
- Sensors: They are used in power-electronics, which are used to control and convert electrical power.

#### Challenges associated with the industry:

##### Setting up of Semiconductor fabs:

- Semiconductor fabrication represents the ultimate frontier of human tech advancement. However, the progress of miniaturisation is accompanied by higher complexity and costs.
- Investment in a semiconductor fab is one of the riskiest. Billions of dollars need to be recovered before the technology becomes obsolete.

##### Challenges of chip manufacturing:

- Developing an ecosystem for chip manufacturing in a Greenfield location is a major challenge.
- Hundreds of chemicals and gases are required for chip fabrication, people need to be trained, and

abundant clean water be made available. Above all is the art of chip making.

- Despite the best of equipment, poor quality and low yields can make fabs fail.

#### **Need for an advanced technology:**

- There are other issues, such as whether to set up a logic/processor, memory or analog fab.
- Electronic equipment and its functionalities are characterized by their logic chips, which are therefore strategically important and generate the highest profit.
- The most advanced set of technologies is needed to manufacture them.

#### **China's monopoly in the sector:**

- Elaborating on the opportunities for India currently, he said electronics and semiconductor products today was a \$1.5 trillion industry with China solely accounting for almost 75% of it and having enjoyed a monopoly in the sector for over two decades now.

#### **Lessons for India from China:**

- Acquiring existing fabs offers several advantages, including reasonable pricing, established technology, a supply chain ecosystem, an existing product line, and an established market.
- By acquiring these fabs, India can build its fab ecosystem and train its human resources.
- Moreover, lower subsidies would be required for such acquisitions, allowing the saved funds to be utilized for advanced research and development (R&D) in fab technologies.
- This, in turn, would contribute to the development of a state-of-the-art fab in the coming years.
- Another strategy is the establishment of Assembly, Testing, Packaging, and Marking (ATMP) facilities.
- Tessolve, which is now owned by the Tatas, set up an ATMP in 2013-14.
- This ATMP has been successful in packaging chips with a feature size of up to seven nm. China, on the other hand, has more than 100 ATMPs.

#### **Way Forward:**

- India's pursuit of a semiconductor fab faces various challenges and uncertainties. By examining the reasons behind past failures and considering alternative approaches, India can learn valuable lessons from China's successful semiconductor industry.
- Acquiring existing fabs, developing ATMPs, and investing in advanced R&D can help India establish a robust fab ecosystem and compete in the global chip warfare. The urgency to act now, despite trailing China in this journey, remains crucial for India's future success in the semiconductor industry.



## 4. Science & Technology

### 4.1 Chytridiomycosis

Recently, scientists developed a diagnostic test for Chytridiomycosis.

#### About Chytridiomycosis:-

- Chytridiomycosis is a fungal disease in frog populations.
- It has caused severe declines in over 500 frog species and led to 90 extinctions, making it the deadliest animal disease known.

#### How does it infect?

- It infects frogs skin.
- This damages their ability to balance water and salt levels.
- Origin- the disease originated in Asia.
- It spread globally through amphibian trade and travel.
- Mortality rate- extremely high.

#### Natural immunity:-

- Some amphibian species have some form of natural immune resistance and do not become sick when they carry the fungus.
- This Immunity might come from anti-microbial chemicals within the skin, symbiotic bacteria on the skin, white blood cells and antibodies in the blood, or combinations of these mechanisms.
- So far, no clear trend has been found between resistance and immune function.

### 4.2 KAVACH

- The recent train tragedy in Odisha has brought to the surface the need for KAVACH in preventing rail accidents. Kavach was not available on this route.

#### About KAVACH:-

- KAVACH is an Automatic Train Protection (ATP) electronic system designed to help the Indian Railways achieve Zero Accidents.
- Objective: to achieve safety in train operations across Indian Railways.

#### Development:-

- It has been indigenously developed.
- It is developed by the Research Design and Standards Organisation (RDSO) in collaboration with the Indian industry.
- Research Design and Standards Organisation (RDSO): it is a research and development organisation under the Ministry of Railways.

### **Working of KAVACH:-**

- It has a set of electronic devices and Radio Frequency Identification (RFID) devices installed in locomotives, in the signalling system as well as the tracks. (UPSC CSE: RFID)
- These connect to each other using ultra-high radio frequencies to control the brakes of trains.
- It also alerts drivers, all based on the logic programmed into them. (UPSC MAINS: KAVACH)
- It is a Safety Integrity Level 4 (SIL-4) certified technology.
- Safety Integrity Level (SIL): it comes from two voluntary standards used by plant owners/operators to quantify safety performance requirements for hazardous operations.

### **There are four SIL Levels (1-4).**

- A higher SIL Level means a greater process hazard and a higher level of protection.
- KAVACH is the world's cheapest automatic train collision protection system.
- Initial development of Kavach started in 2012 under the name Train Collision Avoidance System (TCAS) and completed development on 2022.
- First successful trial: between Gullaguda–Chitgidda Railway stations of South Central Railway in 2022.
- The Budget of 2022-23 had proposed rollout of Kavach in 2000 kms.

### **Salient features:-**

- Automatic activation of the train braking system if the driver fails to control the train speed.
- Preventing collision between two Locomotives equipped with a functional KAVACH system.
- Sending continuous updates of Movement. (UPSC CSE: Mobile Train Radio Communication (MTRC) )
- Auto Whistling while approaching Level Crossing Gates
- Sending SoS Messages during emergency situations.
- Centralised live monitoring of train movements through the Network Monitor System.

## **4.3 Mission on Advanced and High-Impact Research (MAHIR)**

Mission on Advanced and High-Impact Research (MAHIR) was launched recently to leverage Emerging Technologies in Power Sector.

### **About the Mission of Advanced and High-Impact Research (MAHIR):-**

- It aims to facilitate indigenous research, development and demonstration of the latest and emerging technologies in the power sector.
- Timeline: It is planned for an initial period of five years from 2023-24 to 2027-28.
- Ministry: Ministry of Power and the Ministry of New and Renewable Energy

### **Objectives of MAHIR:-**

- To identify emerging technologies in the power sector that have the potential for future relevance globally.
- To serve as a platform for collective brainstorming.
- To Support pilot projects for indigenous technologies.
- Leverage foreign alliances to accelerate research and development efforts.
- To create a vibrant and innovative ecosystem in the power sector.

**Funding and Collaboration:-**

- MAHIR is funded through pooling of resources from the Ministry of Power, Ministry of New and Renewable Energy, and Central Public Sector Enterprises under these ministries.
- Additional funding will be from the budgetary resources of the Government of India.
- The mission encourages funding by inviting proposals from companies and organizations worldwide.

**Structure of MAHIR:-**

- MAHIR operates through a two-tier structure comprising a Technical Scoping Committee and an Apex Committee.
- Led by the Chairperson of the Central Electricity Authority.

**Areas Identified for Research:-**

- Alternatives to Lithium-Ion storage batteries
- Modifying electric cookers/pans to suit Indian cooking methods
- Carbon capture (UPSC CSE: Decarbonisation of India's Power Sector)
- Geothermal energy
- Solid-state refrigeration.
- Nanotechnology for EV battery
- Indigenous CRGO technology

**Central Electricity Authority (CEA)**

- It is a statutory organization constituted under Section 3 (1) of the repealed Electricity (Supply) Act, of 1948.
- It is now under Section 70 of the Electricity Act, 2003.
- As per Section 70 (3) of the Electricity Act, 2003, the authority shall consist of not more than 14 members, including its chairperson.
- Not more than eight shall be full-time members to be appointed by the Central Government.

**Functions of Central Electricity Authority:-**

- It advises the government on matters relating to the National Electricity Plan (NEP).
- It formulates short-term and perspective plans for the development of electricity systems.
- It is the designated authority for cross border trade of electricity.
- It also prescribes the standards on matters such as the construction of electrical plants, electric lines and connectivity to the grid etc.
- It is also responsible for the concurrence of hydropower development schemes of central, state and private sectors.

**National Electricity Plan (NEP)**

- The latest draft of the National Electricity Plan (NEP), which covers the period 2022-27.
- The NEP guides the development of the power sector in India.
- The Central Electricity Authority (CEA) formulates it every five years under the Electricity Act, 2003.
- The new NEP recognizes the need for additional coal-based capacity, ranging from 17 GW to nearly 28 GW, till 2031-32, over and above the 25 GW of coal-based capacity that is currently under construction.
- The draft Plan also highlights the need for significant investments in battery storage, with an estimated requirement of between 51 GW to 84 GW by 2031-32.
- It projects an increase in the Plant Load Factor (PLF) of coal-fired power plants from 55% up to 2026-27 to

62 % in 2031-32.

- It also emphasizes the challenges posed by the increasing reliance on renewables, which will require careful management and planning in the years ahead.

#### 4.4 Non-Communicable Diseases

For a State which takes immense pride in consistently coming at the top in the health index rankings of NITI Aayog every year, the findings of the ICMR-INDIAB study, which puts Kerala right on top with the worst overall indicators for long-term morbidity and mortality due to non-communicable diseases (NCD), has come a cropper.

##### About Non-Communicable Diseases (NCD):

- No communicable diseases (NCDs), also known as chronic diseases, tend to be of long duration and are the result of a combination of genetic, physiological, environmental and behavioral factors.
- The main types of NCD are cardiovascular diseases (such as heart attacks and stroke), cancers, chronic respiratory diseases (such as chronic obstructive pulmonary disease and asthma)

##### Causes:

- The rise of NCDs has been driven by tobacco, harmful use of alcohol, unhealthy diet, insufficient physical activity, and overweight/obesity, raised blood pressure, raised blood sugar and raised cholesterol.

##### Consequences:

- The epidemic of NCDs poses devastating health consequences for individuals, families and communities, and threatens to overwhelm health systems.
- The socioeconomic costs associated with NCDs make the prevention and control of these diseases a major development imperative for the 21st century.
- The diseases kill 7 out of 10 people globally from risk factors like tobacco, alcohol, unhealthy diet, physical inactivity and air pollution.
- Apart from the lives they take, NCDs take a heavy toll on economies, cutting down people in their most productive years.

##### Kerala's case study:

- Kerala has known since the mid or late 90s that NCDs are going to be its biggest health challenge.
- A current diabetes prevalence of nearly 24%, pre-diabetes at 18.1% and hypertension prevalence at a whopping 44%, is certainly not the picture of a healthy State.
- With more than half the State's population having high cholesterol levels and abdominal obesity, the incidence of cardiovascular diseases and chronic kidney diseases could skyrocket in the near future and have significant impact on the State's health expenditure as well as private spending on catastrophic illnesses.

##### Data Analysis for India

- According to the study report "India: Health of the Nation's States"- The India State-Level Disease Burden Initiative in 2017 by Indian Council of Medical Research (ICMR), it is estimated that the proportion of deaths due to Non-Communicable Diseases (NCDs) in India have increased from 37.9% in 1990 to 61.8% in 2016.
- The four major NCDs are cardiovascular diseases (CVDs), cancers, chronic respiratory diseases (CRDs) and diabetes, which share four behavioral risk factors –unhealthy diet, lack of physical activity, and use of

tobacco and alcohol.

#### **Indian initiatives for tackling NCDs:**

- National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS) is being implemented under the National Health Mission (NHM).
- The Central Government is implementing the Strengthening of Tertiary Care Cancer facilities scheme to support the setting up of State Cancer Institutes (SCI) and Tertiary Care Centres (TCCC) in different parts of the country.
- Oncology in its various aspects has a focus in case of new AIIMS and many upgraded institutions under Pradhan Mantri Swasthya Suraksha Yojana (PMSSY).
- Affordable Medicines and Reliable Implants for Treatment (AMRIT) Deendayal outlets have been opened at 159 Institutions/Hospitals with an objective to make available Cancer and Cardiovascular Diseases drugs and implants at discounted prices to the patients.
- Jan Aushadhi stores are set up by the Department of Pharmaceuticals to provide generic medicines at affordable prices.

#### **Way Forward:**

- Achieving the SDG target by reducing one-third of premature mortalities due to NCD will make India more resilient to future viral pandemics. Thus, India must strengthen its health infrastructure through the Aatmanirbhar Swasth Bharat programme.

### **4.5 Initiative on Critical and Emerging Technology (iCET).**

India and the United States recently unveiled a roadmap for enhanced collaboration in high-technology areas under the Initiative on Critical and Emerging Technology (iCET).

#### **About Initiative on Critical and Emerging Technology (iCET):-**

- The iCET is a partnership between India and the US to work together in developing important and new technologies.
- Objective: to increase the technology interaction between the US and India while also potentially adding additional strategic depth and breadth to their growing partnership.
- Areas of collaboration under iCET: quantum computing, semiconductors, 5G and 6G wireless infrastructure, and civilian space projects such as lunar exploration. (UPSC CSE: India-USA: Trade and Climate)
- Supervision: the Prime Minister's Office in Delhi and the White House in Washington will oversee and direct the iCET.

#### **Significance of iCET for India:-**

- Growing convergence of Indian and US interests can help in managing the security, economic, and technological challenges presented by China.
- It can help secure an alternative for India and reduce dependence on Russian military technology.
- It would help boost India's technological capabilities and provide India with access to cutting-edge technology and expertise in areas that are critical and emerging in nature.
- It will help India's economic growth by having more business with the US.
- It will help them bring more investment and employment opportunities.

## 4.6 Artemis Accord

India and the United States of America signed the Artemis Accord recently.

### About the Indo-US talks:-

- The Artemis Accord along with some other significant decisions was signed during Prime Minister Narendra Modi's recent USA visit.
- It is expected to take India and US cooperation in Space Research and bilateral relations to a new high.
- ISRO is also likely to team up with NASA for a manned mission on the moon by 2025.

### About Artemis Accord:-

- Artemis Accord is a non-binding set of principles designed to guide civil space exploration and use in the 21st century.
- It is a non-binding agreement with no financial commitments.

### Objectives:-

- Enhancing the governance of civil exploration.
- Use of outer space with the intention of advancing the Artemis program.
- It ensures that space exploration is conducted in a safe, sustainable and transparent manner and in full compliance with international law.
- Establishment: 2020.
- Established by: NASA, in coordination with the U.S. Department of State, established the Artemis Accords with eight founder nations.
- Founding members of the Artemis Accords: Australia, Canada, Italy, Japan, Luxembourg, United Arab Emirates, United Kingdom, and the US.
- Artemis Accords signatories as of May 2023: Australia, Bahrain, Brazil, Canada, Colombia, Czech Republic, France, Israel, Italy, Japan, Luxembourg, Mexico, New Zealand, Nigeria, Poland, the Republic of Korea, Romania, Rwanda, Saudi Arabia, Singapore, Spain, Ukraine, the United Arab Emirates, the United Kingdom, and the United States.

### Aims of Artemis Accord:-

- Peaceful Purposes: Consistent with the Outer Space Treaty, the Artemis Accords affirm that cooperative activities should be exclusively for peaceful purposes and in accordance with international law. (UPSC CSE: Indian Space Association)
- Outer Space Treaty: it provides the basic framework of international space law.
- Transparency: signatories are committed to the broad dissemination of information regarding their respective national space policies and space exploration plans in accordance with their national rules and regulations.
- Interoperability: Interoperability enhances the potential for space exploration that is safe and robust among cooperating nations.
- Emergency Assistance: Accords signatories commit to taking all reasonable efforts to render necessary assistance to personnel in outer space who are in distress.
- Registration of Space Objects: The Artemis Accords reinforce the importance of meeting the obligations under the Registration Convention.
- Release of Scientific Data: Sharing scientific data with the global community in a timely and transparent manner.
- Protecting Heritage: Accords signatories intend to preserve historically significant human or robotics

landing sites, artefacts, spacecraft etc.

- Space Resources: The utilization of space resources should be done in a manner that complies with the Outer Space Treaty, can benefit humankind and is critical to sustainable operations.
- Deconfliction of Activities: Artemis Accords signatories need to provide notification of their activities and coordinate.
- The area covered by the notification and coordination is referred to as a “safety zone.”
- Orbital Debris and Spacecraft Disposal: Planning to mitigate orbital debris, as well as disposing safely of spacecraft, is critical to maintaining a safe environment in space.

#### 4.7 Rethinking importance of cord blood in regenerative medicine

Cord blood banking is not a ‘biological insurance’ and its role in regenerative medicine is hypothetical. It is recommended only if there is a family member (siblings or biological parents only), currently suffering from diseases approved to be benefitted by allogenic stem cell transplantation.

##### About Cord Blood:

- The blood from the newborn that is still present in the placenta and umbilical cord after birth is known as cord blood.
- Umbilical cord blood is a rich source of stem cells; cord blood banking is the process of conserving it for use in the future.
- Hematopoietic stem cells, which are unique cells, are present in them and can be employed to cure certain disorders.
- In the body, hematopoietic stem cells can develop into many types of blood cells.

##### About Cord Blood Banking:

- A System that preserves umbilical cord blood for use in the future is known as a Cord Blood Bank.
- Public cord blood banks operate similarly to public blood banks in that they accept donations to be utilised for anybody in need. Historically, the medical establishment has been more open to the idea of public cord blood banking. Private cord blood banks only keep cord blood for the donor or the donor’s family to potentially use.
- However, the Indian Council of Medical Research (ICMR) asserts that there is no scientific support for cord blood storage for future self-use, posing moral and social concerns.
- The ICMR does not advocate using stem cells for commercial purposes and Commercial cord blood banking also.

##### Significance of Cord Blood:

- Despite primarily coming from donors, cord blood stem cells are now being used to treat a number of deadly diseases, most notably malignancies, blood disorders, and genetic diseases of the blood and immune system.
- Recent research has revealed that cord blood transplants have special benefits over conventional bone marrow transplants, especially for children.
- In rare circumstances where a suitable bone marrow donor cannot be found, cord blood transplants can even save a patient’s life.
- There is a 25% probability that siblings will match, and there is a 50% chance that grandparents and parents will match using cord blood.
- Using the stem cells in cord blood to treat a disease has the following benefits compared with using those

in bone marrow:

- Stem cells from cord blood can be given to more people than those from bone marrow.
- More matches are possible when a cord blood transplant is used than when a bone marrow transplant is used.
- In addition, the stem cells in cord blood are less likely to cause rejection than those in bone marrow.
- It is easier to collect cord blood than it is to collect bone marrow. Collecting bone marrow poses some risks and can be painful for the donor.
- Cord blood can be frozen and stored. It is ready for anyone who needs it. Bone marrow must be used soon after it is collected.
- Stem cells in cord blood can be used to strengthen the immune system during cancer treatments. Bone marrow stem cells do not have this capability.

#### **Concerns related to Cord Blood Banking:**

- Stem cell banking has been aggressively marketed even as its use is still in experimental stages.
- But these companies charge enormous fees from parents to preserve cells.
- The concern here is that it is merely by emotional marketing that companies convince parents to bank the cells for several years promising future therapeutic use.
- Private companies who have forayed into this field offer packages anywhere between Rs 50,000 and Rs 1 lakh to store and preserve the cells in right conditions.
- So far there is no scientific basis for preservation of cord blood for future self-use and this practice, therefore, raises ethical and social concerns.
- The Indian Council of Medical Research (ICMR) does not recommend commercial stem cell banking.

#### **Cord blood banking in India:**

- License: Umbilical Cord Blood banks (UCB) are permitted only under license and monitoring by the Central Drug Standards Controlling Organization (CDSCO).
- Repositories of stored cord blood: 'Community' or 'social' banks, are repositories of stored cord blood from multiple donors, accessible to those who register for these services with the stem cell banking companies.
- The stored stem cells remain the property of the client for the first two years after which they are transferred to the social banking repository.
- Initially, banking started in the metro urban class of people who could afford the cost of banking.
- Now with intensive advertisement by the cord blood banks, the upper middle and middle class is getting aware about banking and opting for it even in smaller cities and towns.

#### **Way Forward:**

- Commercial cord blood banking involves storing a newborn's umbilical cord blood stem cells for potential future medical use. The decision to bank cord blood is personal and should be based on individual circumstances and considerations such as the family history of genetic disorders and the likelihood of using the stored cells.
- It is important to carefully research and compare different cord blood banking options and consider the cost, storage options, and reputation of the facility before deciding.



## 5. Environment & Ecology

### 5.1 Kanger Valley National Park

Recently, a rare mouse deer was caught on a camera trap set up at Kanger Valley National Park.



#### About Kanger Valley National Park:-

- Kanger valley national park is situated in Jagdalpur,
- It was established as a national park in the year (UPSC CSE: Eco-sensitive Zones (ESZ) )
- It derives its name from the Kanger River that flows through it.
- The Cuddapah group of rock formations, as well as the Vindhyan group of rock formations, are the most prevalent rock formations in the park.
- The state bird of Chhattisgarh, the Bastar Hill Myna, is the most famous species in this area. It can imitate human voices.
- Kutumbasar, Kailash, and Dandak are three caves in the park, known for their geological features of stalagmites and stalactites.
- Fauna: Tigers, Leopards, Mouse Deer, Rhesus Macaque, Sloth Bear, Flying Squirrel, Chital, Sambar, Barking Deer, Pythons, Cobra, Snakes etc. (UPSC CSE: Chhattisgarh's state animal, Wild buffalo, close to extinction)
- Flora: Teak, Haldu, Sal, Tendu, Mahua, Saja, Bija, Dhavara, Tinsa, Mahulbel, Amarbel, Bandha etc.

### 5.2 Shrinking of lakes worldwide

More than 50 percent of the world's largest lakes and reservoirs have shrunk over the past three decades primarily due to climate change and human activities, according to a new study.

#### Highlights of the study:

- From these water bodies, approximately 600 cubic km of water was lost between 1992 and 2020 — an amount equivalent to the total water used in the United States for the entire year of 2015.
- The researchers found that out of the 1,052 natural lakes that were examined, 457 had significant water losses in the past three decades.
- They attributed 57 per cent of the net decline in the water quantity in natural lakes to human activities, such as unsustainable consumption of water, and increasing temperature and potential evapotranspiration (PET) with the latter two indicating the role of climate change.

- Contrary to previous studies, natural lakes located in humid tropics and high altitudes are experiencing water shortages.
- Two-thirds of all reservoirs across the globe have experienced significant storage declines.
- Reservoirs, however, showed a net global increase in water levels, owing to 183 recently filled reservoirs.
- The main reason behind the drop in water levels is sedimentation — the process of particles such as sand and stones settling to the bottom of a body of water.

#### **Findings of the Study:**

- The study also pointed out the worst affected largest lakes across the world and why they are shrinking in size.
- For instance, the Aral Sea in Central Asia, Lake Mar Chiquita in Argentina, the Dead Sea in the Middle East, and the Salton Sea in California have mainly dried due to unsustainable water consumption.
- Whereas, increasing temperature and (potential evapotranspiration)PET caused the complete disappearance of Lake Gowd-e-Zareh in Afghanistan, Toshka lakes in Egypt, and marked drying of Lake Kara-Bogaz-Gol in Turkmenistan, Lake Khyargas in Mongolia, and Lake Zonag in China.
- Notably, lakes have shrunk or disappeared completely across 82 percent of the Arctic’s lake-rich regions in the past 20 years.
- In India, more than half of the reservoirs located in peninsular India have witnessed substantial water storage decline, mainly due to sedimentation.
- Moreover, among the worst affected natural lakes in the country is Ladakh’s Tso Morari.

#### **Reasons for Shrinking of Lakes:**

- Human Activities: 57 percent of the net decline in the water quantity in natural lakes to human activities, such as unsustainable consumption of water.
- Climate Change: The Arctic lakes have shrunk because of a “combination of changes in precipitation, runoff, temperature, and potential evapotranspiration (PET) — loss of water due to both evaporation and transpiration, which are likely a concurrent result of natural variability and climate change.
- Sedimentation: The main reason behind the drop in water levels is sedimentation — the process of particles such as sand and stones settling to the bottom of a body of water.

#### **Consequences of shrinking lakes:**

- Nearly two billion people, one-quarter of the global population in 2023, will be affected as they live in basins with large water bodies that have witnessed a significant drop in their water levels in the past three decades.
- Many of these drying lakes have been identified as important sources of water and energy.
- The reduced size of these lakes not only results in freshwater decline and environmental degradation but also disrupts the water and carbon cycles.
- Widespread water shortage in these water bodies, “particularly accompanied by rising lake temperatures, could reduce the amount of absorbed carbon dioxide and increase carbon emissions to the atmosphere given that lakes are hotspots of carbon cycling.”

#### **Way Forward:**

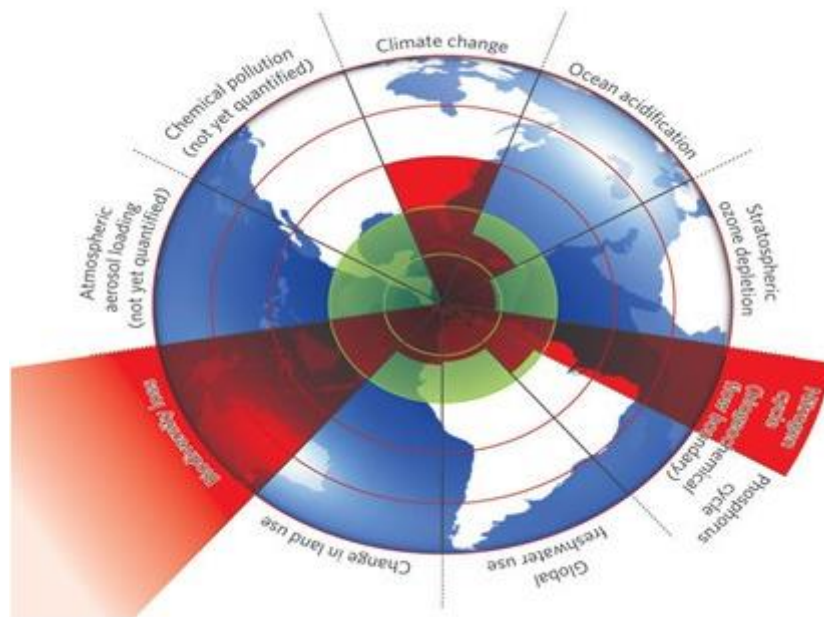
- There is a need to manage them in an integrated manner. Steps like restrictions on water consumption and climate mitigation to bring down global temperatures are some of the ways to conserve them.
- This will also help in reducing sedimentation in reservoirs as the rate of sedimentation is linked to climate change — it increases when there is extreme precipitation, as well as land disturbance such as wildfires,

landslides and deforestation.

### 5.3 Earth system boundaries (ESBs)

Recent reports suggest that seven of eight Earth system boundaries (ESBs) that are critical for the stability of the planet's health and survival of species have already been crossed.

#### About Earth system boundaries (ESBs):-



- Earth System Boundaries (ESBs) are scientifically measured limits for climate, freshwater, biodiversity and different kinds of pollution.
- Operating within these limits, can help maintain a stable and resilient planet. (UPSC CSE: Climate Change Performance Index (CCPI))
- These are hard limits and even temporary overshooting of some of the boundaries can permanently damage the planet's critical systems.

#### Key Findings of the Report:

- Two or more ESBs have already transgressed 52% of the world's land surface, affecting 86% of the global population.
- India, along with other parts of South Asia, Europe, and parts of Africa is an ESB transgression hotspot.
- Himalayan foothills have recorded at least 5 ESB transgressions.

#### The seven ESBs that have been crossed are:-

- Climate, functional integrity, and levels of surface water, groundwater, nitrogen, phosphorus and aerosols.
- The eighth, which has not been crossed, is. 5 degrees C warming:
- The global annual mean interhemispheric aerosol optical depth (AOD) difference, which measures the degree of air pollution globally has also not been crossed.

## 5.4 Pet coke

The Government recently, permitted the import of pet coke as a raw material for lithium-ion batteries.

### About Pet Coke:-

- Pet Coke is one of the industrial by-products produced during oil refining.
- It is dark solid carbon material.
- It is used as a source of energy and carbon for various industrial applications.
- It is abundantly used in India in several manufacturing industries such as cement, steel and textile.
- It is significantly cheaper than coal, has high calorific value and is easier to transport and store.
- There are two kinds of pet coke produced during oil refining viz.
- Fuel-grade pet coke (80%) and
- Calcined pet coke (20%).
- India is the world's biggest consumer of pet coke. (UPSC CSE: Strategic Petroleum Reserves (SPR))
- Local producers: Indian Oil Corp, Reliance Industries and Bharat Petroleum Corp.
- Cement companies in India account for about three-fourths of the country's pet coke use.

### Environment and Health Hazards of Pet Coke:-

- Pet coke is a much more potent pollutant than coal.
- It contains a whopping 74,000 PPM of sulphur content, which is released into the atmosphere as emissions, which is much higher than vehicular emissions.
- It is also a source of fine dust, which can get through the filtering process of the human airway and lodge in the lungs, which can cause serious health problems.
- It releases sulphur, nitrous oxide, mercury, arsenic, chromium, nickel, and hydrogen chloride, which contribute to global warming.

### Lithium

- It is a soft, silvery-white metal.
- It is the lightest metal and the lightest solid element.
- It has the highest specific heat capacity of any solid element.
- It is a good conductor of electricity.
- It is flammable and can even explode when exposed to air and water.
- Lithium is a crucial building block of the lithium-ion rechargeable batteries.
- Currently, India is heavily dependent on import of these cells and the move to ink sourcing pacts for lithium is seen as a move to reduce its dependency on China, which is a key source of both the raw material and cell.

### Lithium-ion batteries

- A lithium-ion battery or Li-ion battery is a type of rechargeable battery.
- Working: Li-ion batteries use an intercalated (Intercalation is the reversible inclusion or insertion of a molecule into materials with layered structures) lithium compound as one electrode material.
- The battery consists of electrolyte, which allows for ionic movement, and the two electrodes are the constituent components of a lithium-ion battery cell.
- Lithium ions move from the negative electrode to the positive electrode during discharge and back when charging.

**Applications:-**

- Power electric vehicles (EVs), laptops and mobile phones.
- Applications in electronic gadgets, Telecommunication, Aerospace, Industries.
- Power source for electric and hybrid electric vehicles.

**Advantages of Li-Ion battery:-**

- It is light weighted and is one-third the weight of lead acid batteries.
- It is nearly 100% efficient in both charging and discharging as compared to lead battery, which has 70% efficiency.
- It completely discharges i.e. 100% as compared to 80% for lead acid.
- It has life cycle of 5000 times or more compared to just 400-500 cycles in lead acid.
- It also maintains constant voltage throughout entire discharge cycle whereas voltage in lead acid battery drops consistently throughout its discharge cycle.
- It is much cleaner technology and is safer for environment.
- It can be wireless.

**Disadvantages of Li-ion Batteries:-**

- Long charging times.
- Safety issues: instances of batteries catching fires have been there.
- Expensive to manufacture

**5.5 The Environmental Information, Awareness, Capacity Building and Livelihood Programme (EIACP)**

The Environmental Information, Awareness, Capacity Building and Livelihood Programme (EIACP) Centres have spread the message on LiFE during the World Environment Day celebrations held recently.

**About The Environmental Information, Awareness, Capacity Building and Livelihood Programme (EIACP):-**

- It is a Central Sector sub-scheme being implemented in alignment with Mission LiFE. . (UPSC CSE: EIACP)
- Ministry: Ministry of Environment, Forest and Climate Change (MoEF&CC)
- In 2023, The Environmental Information System (ENVIS) was renamed EIACP (Environmental Information, Awareness, Capacity Building and Livelihood Programme).
- ENVIS: came into existence as in 1983.
- The focus of ENVIS was to provide environmental information to decision-makers, policy planners, scientists and engineers, research workers, etc. all over the country.
- EIACP is being implemented in alignment with Mission LiFE. (UPSC CSE: LIFE – Lifestyle for Environment)
- Objective: it serves as a one-stop platform for the dissemination of environmental information, informed policy formulation on various facets of the environment and facilitation of alternate livelihoods through green skilling.
- 60 EIACP Centres are actively engaged in promoting awareness about sustainable actions that individuals can undertake.

**Environment Education Programme (EEP)**

- It is a Central Sector sub-scheme.
- Objective: for imparting non-formal environment education through inter alia initiatives for strengthening Eco-club activities in schools and colleges.

- Sharing the common goal of promoting a sustainable lifestyle.
- Implementation: It is implemented in full alignment with Mission LiFE, through State/UT-level Implementing Agencies.
- Implementing Agencies of EEP have organized some unique and eco-friendly initiatives like nature camps, eco-art workshops, clay & pottery workshop, promotion of eco-friendly green wedding ideas, awareness campaigns on medicinal plants, campaigns in marketplaces against single-use plastics etc.
- Eco-clubs are used as an effective medium to spread messages on LiFE.

#### **Mission Lifestyle for Environment (Life):-**

- Background: At the 2021 UN Climate Change Conference (UNFCCC COP26), Hon'ble Prime Minister of India Shri Narendra Modi announced Mission LiFE.
- Aim: to bring individual behaviours at the forefront of the global climate action
- LiFE envisions replacing the prevalent 'use-and-dispose' economy with a circular economy, which would be defined by mindful and deliberate utilisation.

#### **Approach:-**

- Focus on Individual Behaviours: Make Life a mass movement (Jan Andolan) by focusing on behaviours and attitudes of individuals and communities.
- Co-create Globally: Crowdsource empirical and scalable ideas from the best minds of the world, through top universities, think tanks and international organisations.
- Leverage Local Cultures: Leverage climate-friendly social norms, beliefs and daily household practices of different cultures worldwide to drive the campaign.

#### **Objectives :-**

- It aims to promote an environmentally conscious lifestyle that focuses on 'mindful and deliberate utilisation' instead of 'mindless and wasteful consumption'.
- It aims to utilise the power of collective action.
- It aims to nudge individuals across the world to undertake simple climate-friendly actions in their daily lives.
- It aims to create and nurture a global network of individuals, namely 'Pro-Planet People' (P3).
- Pro-Planet People' (P3): to have a shared commitment to adopt and promote environmentally friendly lifestyles.
- It seeks to leverage the strength of social networks to influence social norms surrounding climate.

## **5.6 Transition to a low-carbon City**

It has been observed that Cities are critical actors in the energy transition.

#### **About Energy-system transitions:**

- An energy-system transition could reduce urban carbon dioxide emissions by around 74%.
- With rapid advancements in clean energy and related technologies and nosediving prices, we have also crossed the economic and technological barriers to implementing low-carbon solutions.
- The transition must be implemented on both the demand and the supply sides.
- Mitigation options on the supply side include phasing out fossil fuels and increasing the share of renewables in the energy mix, and using carbon capture and storage (CCS) technologies.

- On the demand side, using the 'avoid, shift, improve' framework would entail reducing the demand for materials and energy, and substituting the demand for fossil fuels with renewables.
- Additionally, in order to address residual emissions in the energy sector, we must implement carbon-dioxide removal (CDR) technologies.

#### **Role of Cities in energy-system transitions:**

- In 2020, cities dumped a whopping 29 trillion tonnes of carbon dioxide into the atmosphere.
- This carbon dioxide along with other greenhouse gases poses a serious health hazard.
- It also manifests as extreme weather events, leading to the loss of lives, livelihoods, assets, and social well-being.
- Therefore, given the significant impact that cities have on the environment, low-carbon cities are crucial to mitigate the effects of climate change.
- An energy-system transition could reduce urban carbon dioxide emissions by around 74%.
- Implications of rising CO<sub>2</sub> and Need for low-carbon cities/net-zero cities:
- This may lead to extreme weather events, can lead to the loss of lives and livelihoods, property and resources, and overall social wellbeing.
- By 2050, seven billion people will be living in cities, and that will accentuate the concerns regarding worsening climate, sustainability.
- Global warming may have adverse impact on health like damage in lung tissue, heightened complications for asthma patients due to increase the ozone concentration.
- It may affect food security and can lead to the resource conflicts.
- This transition to low carbon cities will help to mitigate the effects of climate change.

#### **Challenges of Energy Transition:**

- Groups of people or communities of developing economies depends on fossil fuels and has limited access to renewable energy options.
- Hence, they could be affected disproportionately.
- For example Nigeria, Angola, and Venezuela.
- In developed countries, it may lead to inequity due to high-energy costs and associated poverty/low incomes.
- There is an inherent issue of energy justice and social equity, which has severe implications for -economic well-being of people, livelihoods and economic development.
- Concerns related to Justice concerns are land evictions for large-scale renewable energy projects, the marginalisation of few communities, increased gender gaps etc.,
- There need to be a focus on energy-transition policies that are socially and environmentally fair.
- As a city's requirement is different, spatial form, land-use pattern, level of development etc. to be given a special focus.

#### **Government interventions:**

- System of Air Quality and Weather Forecasting and Research (SAFAR) Portal
- Air Quality Index: AQI has been developed for eight pollutants viz. PM<sub>2.5</sub>, PM<sub>10</sub>, Ammonia, Lead, nitrogen oxides, sulphur dioxide, ozone, and carbon monoxide.
- Graded Response Action Plan (for Delhi)
- For Reducing Vehicular Pollution:
- BS-VI Vehicles,
- Push for Electric Vehicles (EVs),

- Odd-Even Policy as an emergency measure (for Delhi)
- New Commission for Air Quality Management
- Subsidy to farmers for buying Turbo Happy Seeder (THS) Machine for reducing stubble burning.
- National Air Quality Monitoring Programme (NAMP):
- Under NAMP, four air pollutants viz. SO<sub>2</sub>, NO<sub>2</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> have been identified for regular monitoring at all locations.

#### Way Forward:

- Transitioning cities to low-carbon energy systems requires efforts that consider factors such as urbanization, national contexts, and institutional capacities. Hence, it is important to engage multiple stakeholders in energy governance and decision-making processes.

### 5.7 Agency for New and Renewable Energy Research and Technology (ANERT)

The Kerala State government has recently, nominated the Agency for New and Renewable Energy Research and Technology (ANERT) as the State-level nodal agency for Green Hydrogen initiatives.

#### About Agency for New and Renewable Energy Research and Technology (ANERT):-

- ANERT is the single nodal agency for drafting and publishing the Green Hydrogen policy for the state of Kerala. (UPSC CSE: Green Hydrogen)
- A Chief Executive Officer (CEO) appointed by the Government heads ANERT.
- ANERT is also the Nodal Agency for the Ministry of New and Renewable Energy Sources (MNRE), Govt. of India, to carry out the National Programmes in Kerala.
- Chairman: Minister for Electricity
- Supervision: ANERT is guided by a:-
- Governing Body- chaired by the Minister for Electricity, Kerala and
- Executive Committee- chaired by the Additional Chief Secretary to Government/ Principal Secretary.
- Power Department, Government of Kerala provides guidelines for ANERT's activities in various energy-related areas.

#### Objectives of ANERT:-

- To identify, formulate, implement and implementation of projects aimed at providing energy requirements of the State of Kerala.
- Evolving long-term plans based on harnessing solar energy, wind energy, wave energy, biogas, biomass, energy plantations, micro and mini hydel projects, improved chulahs etc.
- To identify, formulate, implement and support the implementation of a broad-based energy conservation program including the conservation of energy at the source of generation, at the state of distribution and/ or its utilization.
- To provide technical, financial or other assistance for popularization and creation of awareness on alternative sources of energy, energy conservation and rural technologies.
- To undertake or sponsor training programs, seminars workshops etc. on non-conventional sources of energy, energy conservation, and rural technology.
- To sponsor, co-ordinate or promote research programs or projects of a development nature involving the development of prototypes, pilot plant investigation in the area of alternative and new sources of energy and rural technologies



### **PROGRAMMES under ANERT:-**

- Solar Photovoltaic Programmes
- Wind energy
- Solar Thermal Programme
- Improved chulhas
- Training and extension
- Other programmes
- Bioenergy

### **Green Hydrogen**

- Green Hydrogen is produced by electrolysis using renewable energy.
- Electricity splits water into hydrogen and oxygen.
- By Products: Water, Water Vapor.
- It is called 'green hydrogen' because has no carbon footprint. (UPSC CSE: G)
- Other Types of hydrogen:-
- Brown hydrogen: produced using coal where the emissions are released into the air. (UPSC CSE: Coal based Hydrogen)
- Blue hydrogen: produced from natural gas, where the emissions are captured using carbon capture and storage.

### **Significance of Green Hydrogen for India:-**

- Green hydrogen can drive India's transition to clean energy and combat climate change.
- Green hydrogen energy is vital for India to meet its Nationally Determined Contribution (INDC) Targets.
- Under the Paris Climate Agreement, India pledged to reduce the emission intensity of its economy by 33-35% from 2005 levels by 2030.
- It will reduce import dependency on fossil fuels.
- The localisation of electrolyser production and the development of green hydrogen projects can create a new green technologies market in India worth \$18-20 billion and thousands of jobs.

### **Advantages of green hydrogen:-**

- Environment Friendly: Green Hydrogen as an energy source is seen as the next big thing as its usage would lead to zero emissions
- Potential to decarbonise various sectors: It is a clean burning molecule, which can decarbonise a range of sectors including iron and steel, chemicals, and transportation.
- Efficient utilization of Renewable Energy: Renewable energy that cannot be stored or used by the grid can be channelled to produce hydrogen. (UPSC CSE: National Green Hydrogen Mission)

### **Applications of green hydrogen:-**

- It can be used in fuel cells to generate electricity, or power and heat.

## **5.8 Transgenic crops in India**

Three States, Gujarat, Maharashtra and Telangana, have recently rejected a proposal, approved by the Centre's Genetic Engineering Appraisal Committee (GEAC), to test a new kind of transgenic cotton seed.

### **About Transgenic Crops:**

- Transgenic crops are plants that have been modified through genetic engineering
- These crops have had specific genes inserted into their DNA to give them new characteristics or traits that are not naturally found in the species through traditional breeding methods.

### **About Genetically Modified Crops:**

- A Genetically Modified Organism (GMO) is any living organism whose genetic material has been modified to include certain desirable techniques.
- Genetic modification has previously been used for the large-scale production of insulin, vaccines, and more.
- In crops, genetic modification involves the manipulation of DNA instead of using controlled pollination—the conventional method to improve crops—to alter certain characteristics of the crop.

### **Status in India:**

- In India, only Cotton is currently commercially cultivated as a GM crop. Trials are underway for other crops like brinjal, tomato, maize, and chickpea using transgenic technology.
- The GEAC approved the environmental release of GM mustard hybrid DMH-11, bringing it closer to full commercial cultivation.
- However, there is an ongoing legal case in the Supreme Court questioning the permission for transgenic food crops. They seek a stay on GM mustard, citing concerns about farmers using banned herbicides.

### **Advantages:**

- **Disease resistant and Sustainability:** Through genetic modifications the genetically modified crops are made resistant to diseases. This enhances their sustainability and yield.
- **Environmental Protection:** According to an Oklahoma State University report, the increase of GM animals and crops often requires less time, tools and chemicals, and may help with reducing greenhouse gas emissions, soil erosion and environmental pollution.
- **Longer Shelf life:** Genetically modified foods have a longer shelf life. This enhances the ease of transportation and storage.
- **Affordability:** Due to reduced burden of inputs and longer shelf life hence reduced wastages, the prices of the output will be low. This increases the affordability.
- **Fortification:** According to the Food and Agricultural Organization of the United Nations, some GM foods have been engineered to become more nutritious in terms of vitamin or mineral content.
- This not only helps people get the nutrients they need, but also plays a significant role in fighting against malnutrition in third-world countries.

### **Disadvantages:**

- It is believed that consumption of these genetically engineered foods can cause the development of diseases which may be immune to antibiotics.
- This cross-pollination method can cause damage to other organisms that thrive in the environment.
- The technology could be carcinogenic. It is a killer technology that kills soil, microbes, pollinators, almost all medicinal herbs and adversely affects crop diversity. It may also cause cancer in humans,

### **Way Forward:**

- The GEAC has asked the Department of Biotechnology (DBT) and the ICAR to “jointly organise capacity-building activities with regard to GM crops for appraising the State/UT Government(s) about the

technology involved and the regulatory framework in place for evaluation of these GM crops.

- To resolve the issue of States not following approvals on testing, because of differing attitudes to GM crops, the GEAC is considering a proposal by the DBT to declare some regions across India as 'notified testing sites. There are 42 such proposed sites and, if it goes through, companies and institutions wanting to conduct trials of GM crops at these locations won't need the permission of States for trials.

## 5.9 Wild orchids of North Bengal

Recent reports suggest, that wild orchids of North Bengal are dying at an alarming rate.

### About Wild Orchids of North Bengal:-

- Orchids are attractively flowered and colorful plants.
- They are known for their vibrant and intricate flowers. (UPSC CSE: Arunachal to start red-listing of orchids)
- Habitat: they are found in various habitats around the world, including tropical rainforests, mountains, and even deserts.
- India has over 1200 species of Orchids ( 388 are endemic to India, out of which 128 are endemic to the Western Ghats)
- Endemic: a plant or animal native and restricted to a certain place.

### Protection Status of Wild Orchids of North Bengal:-

- CITES: Appendix II
- Types of Orchids
- Epiphytic Orchids:-
- These are plants growing on another plant including those growing on rock boulders and are often termed lithophytes.
- About 60% of all orchids found in India are epiphytic.
- Their occurrence decreases with an increase in altitude.

### Terrestrial Orchids:-

- These are plants growing on land and climbers.
- 447 species in India are terrestrial.
- These grow directly on the soil and are found in large numbers in temperate and alpine regions.

### Mycoheterotrophic Orchids:-

- These are plants which derive nutrients from mycorrhizal fungi that are attached to the roots of a vascular plant.

### Distribution:-

- Himalayan Zone: Richest in orchid species.
- Northeast India: Highest species concentration.
- Western Ghats: High endemism of orchids.
- Highest Number of Orchid Species: Arunachal Pradesh > Sikkim > West Bengal.

### Uses:-

- For aesthetic purposes.
- In herbal medicine.

- Vanilla is produced from Vanilla planifolia orchid.

## 5.10 Carbon Offsetting

Delta Air Lines in 2020 marketed itself as the “world’s first carbon-neutral airline”, but recently California-based Mayanna Berrin filed a lawsuit against Delta arguing that the airlines’ assertions were bogus, misleading and false.

### About Carbon Offsetting:

- It’s a slew of ways companies adopt to reduce or remove carbon emissions from the environment.
- Activities like planting trees, shifting to cleaner fuel and funding carbon capture techniques in theory balance out a company’s carbon emissions.
- Examples:
- Forestry: Tree planting projects restore areas facing deforestation. Trees absorb and hold carbon. Without them, that carbon would be in the atmosphere, making global warming worse.
- Agriculture: Farmers grow crops using technology and techniques to maximize resources and reduce waste when growing crops.
- Aviation: Airline operators optimize flight paths with AI to minimize the creation of contrail clouds.
- Renewable energy: These projects replace fossil fuel use with clean, renewable energy, such as that generated from a wind farm.

### Positive Effects of Offsetting

- These programmes have the particular benefit of being a crucial step in resolving the CO2 issue and, when carried out properly, may provide noticeable improvements.
- Businesses may take action to offset their emissions and make significant strides toward sustainability rather than continuing to pollute.
- In locations where they are most needed, carbon offset programmes can directly contribute to programmes that benefit communities and the environment.
- They also offer the additional advantage of transferring financial resources from developed countries to underdeveloped ones in a market worth up to \$120 billion.
- Funds for carbon offsets help developing nations create green infrastructure, make better use of their natural resources, and enhance the quality of their air, water, and land.
- Investing more money in green businesses may also provide economies of scale benefits, such as decreasing the price of solar and wind farms or creating innovative new technologies like direct air capture.

### Problems with carbon offsets:

- In genuineness: Most of world’s carbon offsets certifier do not represent geniuses in carbon reductions.
- Lack of alternatives: Mostly planting trees are considered to reduce emissions and there are only few alternatives to reduce emissions.
- Same mechanisms for all companies: Planting trees or other alternatives cannot reduce emissions for all companies.
- Cheaper carbon credit: The expense of carbon credit are cheaper than reducing carbon emission so companies mostly prefer carbon credits.
- Regulation: Lack of regulation to carbon offsets industry.
- Lack of technology: In carbon technologies to capture carbon directly to offset carbon.

- Greenwashing: Most companies adhere to the greenwashing via avoidance offsets projects.

#### **Govt. of India Initiatives:**

- PAT (Perform, Achieve and Trade), a market-based scheme, has already prevented CO2 emissions of up to 92 million tonnes during its 1st and 2nd cycles.
- Indian Carbon Market (ICM): with an objective to decarbonize the Indian economy by pricing GHG emissions through trading of carbon credit certificates and in compliance with Article 6.2 of the Paris Agreement.
- Carbon Credit Trading Scheme that is expected to be notified in June 2023 with Carbon Credit Certificates under it are expected to be available for trading by 2025.

#### **Way Forward:**

- There is an urgent need for companies and countries alike to identify high integrity projects that adhere to robust climate methodologies.
- While an important tool, carbon offsetting cannot be considered a substitute for direct emissions reductions. Airlines should focus on decarbonising commercial aviation, with the help of sustainable aviation fuel (SAF), hydrogen, and full-electric propulsion techniques rather than making false claims.

### **5.11 Global Environment Facility (GEF) Council**

Global Environment Facility (GEF) Council met in Brazil recently.

#### **Background:-**

- The Global Environment Facility (GEF) Council met in Brazil on June 26, 2023.
- The question of the funding needed to achieve the goals and targets of the Kunming-Montreal Global Biodiversity Framework was discussed at the GEF Council meeting.
- GEF was tasked to find funds for the implementation of the framework adopted at the 15th Conference of the Parties (COP15) to the Convention on Biological Diversity (CBD).
- At COP15, it was decided that a new trust fund, the Global Biodiversity Framework Fund (GBF), would be put in place to run the projects under the framework.
- Under Target 19 of the GBF, members have to generate at least \$200 billion per year by 2030 for biodiversity.

#### **About Global Environment Facility (GEF) Council:-**

- The Global Environment Facility (GEF) is a partnership for international cooperation.
- HQ: Washington DC, United States.
- Established: in 1991.
- It was set up as a fund under World Bank.
- World Bank: it is an international financial institution that provides loans and grants to the governments of low- and middle-income countries for the purpose of pursuing capital projects.
- Restructured: in 1994.
- 1992: at the Rio Earth Summit, the GEF was restructured and moved out of the World Bank system to become a permanent, separate institution.
- Since 1994, however, the World Bank has served as the Trustee of the GEF Trust Fund.
- Rio Earth Summit: it was a major United Nations conference held in Rio de Janeiro (Brazil) in 1992.

- It highlighted the impact of human socio-economic activities on the environment.
- Members: 183 countries work together with international institutions, civil society organizations and the private sector, to address global environmental issues.

#### **Funding:-**

- GEF funds are available to developing countries seeking to meet the objectives of international environmental agreements.
- Support is provided to government agencies, civil society organizations, private sector companies, research institutions, and other partners to implement projects and programs related to environmental conservation, protection, and renewal.

#### **Structure:**

- The GEF's governing structure is organized around an Assembly, Council, Secretariat, 18 implementing agencies, a Scientific and Technical Advisory Panel, and the Independent Evaluation Office.

#### **GEF Council:-**

- The Council, the GEF's main governing body.
- It comprises 32 members appointed by constituencies of member countries.
- GEF serves as a financial mechanism for :

#### **Convention on Biological Diversity (CBD)**

- Signed: 5 June 1992 – 4 June 1993.
- Effective from 1993.
- It is the international legal instrument for "the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits.
- United Nations Framework Convention on Climate Change (UNFCCC)
- Signed:1992-1993.
- Effective from 1994.
- It was adopted in 1992 with the ultimate aim of preventing dangerous human interference with the climate system.
- UN Convention to Combat Desertification (UNCCD)
- Signed: 14 October 1994 – 13 October 1995.
- Effective from 1996
- It was established in 1994 to protect and restore our land and ensure a safer, just, and more sustainable future.
- Stockholm Convention on Persistent Organic Pollutants (POPs)
- Signed:2001.
- Effective from 2004.
- It is an international environmental treaty that aims to eliminate or restrict the production and use of persistent organic pollutants (POPs).
- Minamata Convention on Mercury
- Signed: 2013.
- Effective from 2014.
- It is an international treaty designed to protect human health and the environment from anthropogenic emissions and releases of mercury and mercury compounds.
- Montreal Protocol on Substances that Deplete the Ozone Layer.

- Signed: 1987.
- Effective from 1989.
- It is a global agreement to protect the Earth's ozone layer by phasing out the chemicals that deplete it.

**GEF and India:**

- India is a founder member of GEF.
- It is both a donor and recipient of GEF funds.
- India represents the GEF South Asia Constituency (including, Bangladesh, Bhutan, Maldives, Nepal and Sri Lanka) in the GEF Council.
- GEF Political Focal Point: Department of Economic Affairs (DEA).
- It is responsible for issues related to GEF governance, including policies and decisions, as well as relations between member countries and the GEF Council and Assembly.
- GEF Operational Focal Point (OFP): The Ministry of Environment, Forest and Climate Change (MoEFCC).

Edge IAS

## 6. Security issues

### 6.1 Assam Rifles

Recently, the Assam Rifles secured the threatened supply route to Manipur's hill districts.

#### Background of the issue:

- Recently, after the ethnic violence erupted on May 3 in Manipur, the insurgent groups of Kuki and Meitei communities have blocked highways.
- Kuki: an ethnic group in the Northeastern Indian states of Manipur, Nagaland, Assam, Meghalaya, Tripura and Mizoram, as well as neighbouring countries of Bangladesh and Myanmar.
- Meitei: they are the dominant population of Manipur in northeastern India.
- This blockade is threatening free movement and the transport of essential supplies to various communities across the State.
- Since National Highway 2 or NH 2 has been blocked by Kuki groups in the north, the supplies to Meitei-dominated areas in the Imphal Valley are being maintained through NH 37.
- NH 2: it runs from Dibrugarh in Assam to Tuipang in Mizoram.
- NH 37: it is an Indian National Highway entirely within the state of Assam.
- It passes through: Junction with NH 31B near Goalpara – Guwahati – Jorabat – Kamargaon – Makum – Saikhoaghat
- The Assam Rifles has moved additional troops to secure a bridge on a national highway in south Manipur.
- It is the only route for essential supplies to the tribal district of Churachandpur district in the violence-hit State.

#### About Assam Rifles:-

- Assam Rifles is a Central Paramilitary Force under the Central Armed Police Forces (CAPF).
- It is also referred to as the Sentinels of the North East.
- It is the oldest paramilitary force in India.
- Paramilitary Forces: these are auxiliary units that assist the defence forces.
- Established in 1835.
- Historical Background: It was formed as a single unit called Cachar Levy in 1835.
- Objective: to assist the British rulers in maintaining peace in the Northeast.
- Participation: it served in both World Wars.

#### Control:-

- It was after the Chinese aggression in 1962 that the Assam Rifles battalions were placed under the operational control of the Army.

#### Present situation:

- Administrative control: Ministry of Home Affairs. (UPSC CSE: Administration of Assam Rifles)
- Operational control: Ministry of Defence.

#### Central Armed Police Forces (CAPF)

CAPF refers to seven security forces in India under the authority of the Ministry of Home Affairs.



These include:-

- Assam Rifles (AR)
- Border Security Force (BSF)
- Central Industrial Security Force (CISF)
- Central Reserve Police Force (CRPF)
- Indo Tibetan Border Police (ITBP)
- National Security Guard (NSG)
- Sashastra Seema Bal (SSB)

## 6.2 Svalbard mission

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.

### About Svalbard mission:-

- This visit offers an occasion to recall the challenging Svalbard mission, which took place 26 years ago at Ny-Alesund, Svalbard.
- In 1997, under the Svalbard mission, Antrix signed an agreement with the Norwegian Space Centre for the sale of a Rohini RH-300 Mk.II Sounding Rocket.
- Antrix Corporation Limited (ACL): is a marketing arm of ISRO for the promotion and commercial exploitation of space products, technical consultancy services and transfer of technologies developed by ISRO.
- 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.'
- Challenge: the Rohini rockets had until then flown only in the tropical hot and humid conditions in India. While the Svalbard archipelago's temperatures were on the extremely low side.
- ISRO 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.
- Nevertheless, the Norwegian scientists seemed happy with the launch as the data collected during the flight led to some new findings.
- This launch marked a new era of cooperation between the two countries in space research.

### RH-300

- It is a single-stage sounding rocket.
- Derived from French Belier rocket engine technology.
- Launch altitude:100 km.
- A variant, the RH-300 Mk-II, has a maximum launch altitude of 116 kilometers.
- Payload: up to 80 kilograms (20 kg of scientific payload).
- Numerous payloads can be tested in a single flight.

### ISRO

- ISRO was formed on August 15, 1969 with an expanded role to harness space technology. Department of Space (DOS) was set up and ISRO was brought under DOS in 1972.
- It is the space agency under the Department of Space of the Government of India.

- HQ: Bengaluru, Karnataka.
- Vision: to harness space technology for national development, while pursuing space science research and planetary exploration.
- Objective: development and application of space technology for various national needs.
- To fulfil this objective, ISRO has established major space systems for communication, television broadcasting and meteorological services; resources monitoring and management; space-based navigation services. (UPSC CSE: ISRO's hybrid propulsion system)
- Chairman: the activities of ISRO are guided by him.
- He would be the secretary of the Department of Space.
- He would also be Chairman of the Space Commission.
- Space Commission: the apex body that formulates the policies and oversees the implementation of the Indian Space Programme.

### 6.3 Anjadip and Sanshodhak

Two warships Anjadip, and Sanshodhak, were launched recently.

#### About Anjadip and Sanshodhak:-

##### Anjadip:

- It is an anti-submarine warfare shallow watercraft vessel built for the Indian Navy.
- Built by: Kolkata-based Garden Reach Shipbuilders and Engineers (GRSE).
- Anjadip is the third of the eight ships of the Shallow Water Craft (SWC) Project.
- Shallow Water Craft (SWC) Project: the contract that was signed between Garden Reach Shipbuilders and Engineers, Kolkata and the Ministry of Defence in 2019.

##### Historical significance of the name: –

- The ship has been named Anjadip to signify the strategic maritime importance accorded to the island of Anjadip, Karnataka.
- The island close to India's western coast that is now part of the Indian Naval base INS Kadamba.
- INS Kadamba: is currently the third-largest Indian naval base.
- Anjadip offered strong resistance in 1961 when India took back Goa from the Portuguese.
- The island also has a memorial for the brave Indian marines who were martyred there.
- The 'Arnala' class of ships would replace the current 'Abhay' class of Anti-Submarine Warfare Corvettes of the Navy.
- These are designed to undertake anti-submarine operations in coastal waters

##### Features:-

- It is powered by water-jet propulsion.
- Maximum speed: 25 knots (46 km/h).
- It has an endurance of 1,800 nautical miles (3,300 km) at 14 knots (26 km/h).
- Crew: 57 members, including seven officers and 50 sailors.
- It is equipped with an Anti-submarine Combat Suite, potentially the DRDO-developed IAC MOD'C', a Hull Mounted Sonar, and a Low-frequency Variable depth Sonar.
- It also features a fire control system (FCS), an integrated Platform Management system, an Atomic Power Management system, and a Battle Damage control system.

- The ships would have 80 per cent indigenisation.

### **Sanshodhak**

- It is the fourth Survey Vessel Large (SVL) of the Indian Navy. (UPSC CSE: Ikshak Survey Vessel)
- The ship is named 'Sanshodhak', meaning 'Researcher'.
- It signifies the primary role of the ship as a Survey Vessel.
- SVL ships will replace the existing Sandhayak Class survey ships, with new-generation hydrographic equipment.
- It will help to collect oceanographic data.

### **Features:-**

- They have the capability to carry four Survey Motor Boats and an integral helicopter.
- The primary role of the ships would be to undertake full-scale coastal and deep-water hydrographic surveys of ports and navigational channels.
- The ships would also be deployed for collecting oceanographic and geophysical data for defence as well as civil applications.

## 7. Social issues

### 7.1 Fixed Dose Combinations (FDCs) Ban Issue

- The Union Health Ministry has published a gazette notification banning 14 Fixed Dose Combination (FDC) drugs citing lack of therapeutic justification and an expert committee's recommendation for their prohibition.

#### About Fixed Dose Combination (FDC) Drugs:

- Combination products or fixed dose drug combinations (FDCs) consist of two or more active drugs in a single dosage form.
- The Food and Drug Administration (FDA) in the USA defines a combination product as a product composed of a drug and a device, a biological product and a device, a drug and a biological product, or a drug, device, and a biological product.
- It is widely accepted that most drugs should be formulated as single compounds.
- Examples: Phenytoin + Phenobarbitone Sodium, Chlorpheniramine + Codeine Phosphate + Menthol Syrup, Salbutamol + Bromhexine, Paracetamol + Bromhexine + Phenylephrine + Chlorpheniramine + Guaiphenesin etc

#### Justification for Ban:

- The ban, which comes into effect immediately, follows recommendations of the Expert Committee formed to examine the efficacy of these drug combinations and the Drugs Technical Advisory Board.
- The expert committee recommended, "there is no therapeutic justification for these FDCs and the FDCs may involve risk to human beings".

#### Advantages of FDC Drugs:

- Complementary Mechanism of Action: FDC formulations combine drugs with complementary mechanisms of action, which can enhance the therapeutic effectiveness of the treatment.
- The combined action of multiple drugs in a single dosage form can target different aspects of a disease or provide a more comprehensive treatment approach.
- Synergistic Effects: FDCs can exhibit synergistic effects, where the combined action of the drugs produces a greater therapeutic effect compared to individual drugs used alone.
- This can result in improved efficacy and better treatment outcomes for patients.
- Better Tolerability: In some cases, combining drugs in an FDC can help reduce side effects or improve tolerability.
- The interaction between the drugs can minimize adverse reactions, making the treatment more manageable for patients.
- Elongated Product Life-Cycle Management: FDC formulations can extend the life cycle of a product by combining drugs that have already been individually approved.
- This allows pharmaceutical companies to innovate and offer new treatment options without going through the lengthy process of developing and gaining approval for completely new drugs.
- Cost Savings: FDCs can lead to cost savings for both patients and healthcare systems. By combining multiple drugs into a single formulation, the overall cost of treatment may be reduced.
- This can make the medication more affordable and accessible, particularly in resource-constrained settings.

- Minimized Pill-Burden: Using FDCs reduces the number of pills a patient needs to take.
- This can simplify treatment regimens and improve patient adherence to medication schedules, especially for individuals who need to take multiple drugs regularly.

#### **Disadvantages of FDCs:**

- There may not be an FDC available with the appropriate drugs and/or in the most appropriate respective strength(s) for a given patient, which can lead to some patients getting too much of an ingredient and others getting too little.
- Thus, FDCs “limit clinicians’ ability to customize dosing regimens.”
- If an adverse drug reaction occurs from using an FDC, it becomes difficult to identify the active ingredient responsible for causing the reaction.
- Scientists face challenges in the development stages of multi-drug formulations such as compatibility issues among active ingredients and excipients affecting solubility and dissolution.
- If one drug is contraindicated for a patient, whole FDC cannot be prescribed.

## **7.2 Price support scheme**

The government recently announced the removal of the procurement ceiling for tur, urad and masur dal under the price support scheme.

#### **About the Price support scheme:-**

- The scheme is for procurement, through NAFED.(UPSC CSE: NAFED and APMC)
- Under PSS, NAFED undertakes procurement of oil seeds, pulses and cotton when prices fall below the MSP
- Procurement under PSS is continued until prices stabilize at or above the MSP.
- Farmers can avail the benefit of the scheme by selling their produce at support price in Agricultural Produce & Livestock Market Committee (APMC) centres.
- The Central Government reimburses the loss incurred by NAFED in undertaking such operations.

#### **NAFED:-**

- It was established in 1958.
- It is registered under the Multi-State Co-operative Societies Act, 2002.
- It is the apex organization of marketing cooperatives for agricultural produce in India.
- It undertakes the procurement as and when prices fall below the MSP.
- It is at present, one of the largest procurement as well as marketing agencies for agricultural products in India.

#### **Objectives:-**

- To organize, promote and develop marketing, processing, storage of agricultural, horticultural, and forest produce.
- To distribute agricultural machinery, implements and other inputs.
- To act and assist for technical advice in agricultural production.

#### **Minimum Support Price (MSP)**

- The MSP are announced at the beginning of the sowing season crops based on the recommendations of the Commission for Agricultural Costs and Prices (CACP). CACP: is an attached office of the Ministry of

#### Agriculture and Farmers Welfare

- It is at least one-and-a-half times the cost of production incurred by the farmers.
- Objective: to support the farmers from distress sales and to procure food grains for public distribution.
- Cabinet Committee on Economic affairs declares MSP.

#### Crops under MSP:-

- The Centre currently fixes MSPs for 23 farm commodities based on the CACP's recommendations.
- 7 cereals: paddy, wheat, maize, bajra, jowar, ragi and barley
- 5 pulses: chana, arhar/tur, urad, moong and masur
- 7 oilseeds: rapeseed-mustard, groundnut, soyabean, sunflower, sesamum, safflower and nigerseed
- 4 commercial crops: cotton, sugarcane, copra and raw jute
- Fair and remunerative price (FRP) for sugarcane

### 7.3 Manual Scavenging in India

According to the Ministry of Social Justice and Empowerment's recent report, only 66% of districts in a country are free of manual scavenging.

#### About manual scavenging:

- The Act of Manual Scavenging refers to manually cleaning, carrying, and disposing of, or handling in any manner, human excreta in an insanitary latrine.
- In 2013, the definition of manual scavengers was also broadened to include people employed to clean septic tanks, ditches, or railway tracks.

#### Status of manual scavenging:

- As per 2011 Census of India, there were over 740,000 households in the country where manual scavenging was still being practiced.
- This practice is often associated with the caste system in India, where people from lower castes, such as Dalits, are forced to engage in manual scavenging.
- According to the National Commission for Safai Karamcharis, a total of 482 manual scavengers died while cleaning sewers and septic tanks across India between 2016 and 2019.
- The Safai Karamchari Andolan, an advocacy group working to eradicate manual scavenging, estimates that there are still around 1.8 million manual scavengers in India.
- 233 people died due to accidents while undertaking hazardous cleaning of sewer and septic tanks from 2019 to 2022.
- Haryana had the highest number of deaths at 13, followed by Maharashtra with 12 and Tamil Nadu with 10.

#### Reasons for the Prevalence of Manual Scavenging:

##### Indifferent Attitude:

- A number of independent surveys have talked about the continued reluctance on the part of state governments to admit that the practice prevails under their watch.

##### Social Issue:

- The practice is driven by caste, class and income divides.
- It is linked to India's caste system where so-called lower castes are expected to perform this job.

- In 1993, India banned the employment of people as manual scavengers (The Employment of Manual Scavengers and Construction of Dry Latrines (Prohibition) Act, 1993), however, the stigma and discrimination associated with it still linger on.
- This makes it difficult for liberated manual scavengers to secure alternative livelihoods.

#### **Issues due to Outsourcing:**

- Many times, local bodies outsource sewer-cleaning tasks to private contractors. However, many of them unreliable operators do not maintain proper rolls of sanitation workers.
- In case after case of workers being asphyxiated to death, these contractors have denied any association with the deceased.

#### **Issues associated with manual scavenging:**

- Manual scavenging is a “dehumanizing practice” which has been carried on in the country with a background of historical injustice and indignity suffered by the manual scavengers.
- It constitutes problems that encompass domains of health and occupation, human rights and social justice, gender and caste, and human dignity.
- Manual scavenging and deaths of people trapped in flooded sewer lines continue to be a reality though the practice was banned.
- The workers were made to work in the most hazardous way.
- There was not enough protective gear and tech support and they continue to do it manually.
- Other issues are Poverty and Caste-discrimination.

#### **Constitutional provisions against manual scavenging in India:**

- Human dignity is an inalienable right, which forms a part of the fundamental right to life (Article 21– Maneka Gandhi vs. Union of India) as per the Constitution of India.
- The following is a list of provisions under the Indian Constitution, which is supposed to cater to the rights of equality, respect, and dignity before the law.
- Article 14 is about equality before the law, which should not be denied to any individual in India.
- Article 15 provides that no discrimination be permitted based on the place of birth of a person, race, religion, caste, and sex. Manual scavengers, however, face discrimination because of their caste all their lives.
- Article 16 of the Indian Constitution, in matters of public employment guarantees equal opportunity to all its citizens.
- Article 17 has provision for the abolition of untouchability, it is guaranteed under this constitutional provision to all.
- Article 19(1) (g) gives every citizen the right to practice any profession or to carry on any occupation, trade or business of their choosing.
- Article 21 guarantees the protection of life and personal liberty to all the citizens living in India.
- Apart from these, some other rights, which safeguard the manual scavengers as SC or ST, under the Indian Constitution, are Article 46 and Article 338.

#### **Supreme Court’s Judgements:**

- The apex court itself had reinforced the prohibition and directed the rehabilitation of people, traditionally and otherwise, employed as manual scavengers in its judgment in Safai Karamchari Andolan and Others vs. Union of India.
- The judgment had called for their “rehabilitation based on the principles of justice and transformation”.

- Initiatives taken by the Govt.
- NAMASTE scheme: 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 a ₹100-crore allocation for the NAMASTE scheme and no allocation for the rehabilitation scheme.
- Manual scavenging as defined under Section 2 (1) (g) of the “Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013 (MS Act, 2013)” is prohibited with effect from 6.12.2013.
- No person or agency can engage or employ any person for manual scavenging from the above date.
- Any person or agency who engages any person for manual scavenging in violation of the provisions of the MS Act, 2013 is punishable under Section 8 of the above Act, with imprisonment upto 2 years or fine upto Rs. One Lakh or both.
- Under Swachhta Udyami Yojana of National Safai Karamcharis Finance and Development Corporation, concessional loans are provided to safai karamcharis, manual scavengers, their dependants, the Urban Local Bodies, and other agencies responsible for cleaning, for procurement of sanitation related instruments/vehicles.
- A short-duration training programme (RPL) is organised for the sanitation workers wherein they are trained in safe and mechanised cleaning practices.

## 7.4 National food safety index

Kerala has secured the first position in the recently released national food safety index.

### About the national food safety index:-

- The first State Food Safety Index was published in 2018-19.
- It was announced on the first-ever World Food Safety Day on 7th June 2019.
- World Food Safety Day: The World Health Organization (WHO) and the Food and Agriculture Organization of the United Nations (FAO) jointly facilitate the observance of World Food Safety Day. (UPSC CSE: WHO)
- Objective of Food safety index: creating a competitive and positive change in the food safety ecosystem in the country.
- Developed by: FSSAI (Food Safety and Standards Authority of India) (UPSC CSE: FSSAI)
- The Parameters include Human Resources and Institutional Data, Compliance, Food Testing – Infrastructure and Surveillance, Training & Capacity Building and Consumer Empowerment. (UPSC CSE: Food Security)
- The food safety index, at the national level, is determined based on enforcement activities.
- These include food safety checks, sample collection, sample examination prosecution cases, number of NABL-recognised food safety labs in the State etc.

### Food Safety and Standards Authority of India (FSSAI)

- It is an autonomous statutory body established under the Food Safety and Standards Act, 2006 (FSS Act).
- Ministry: Ministry of Health & Family Welfare
- Headquarters: Delhi
- FSSAI is responsible for protecting and promoting public health through the regulation and supervision of food safety.
- Composition: The FSSAI comprises of a Chairperson and twenty-two members. One-third of the members are to be



- The Central Government appoints the Chairperson of FSSAI.

#### Functions:-

- Framing of regulations to lay down the standards and guidelines of food safety.
- Granting FSSAI food safety license and certification for food businesses.
- Laying down procedures and guidelines for laboratories in food businesses.
- To provide suggestions to the government in framing the policies.
- To collect data regarding contaminants in food products, identification of emerging risks and introduction of the rapid alert system.
- Promote general awareness about food safety and food standards.

### 7.5 National Institutional Ranking Framework (NIRF) Ranking 2023: Is the ranking system of colleges flawed?

The National Institutional Ranking Framework (NIRF) Ranking 2023 was announced recently, showcasing the excellence and achievements of various educational institutions in India.

#### About National Institutional Ranking Framework (NIRF) Ranking:

- The NIRF is a methodology to rank institutions across the country based on various parameters.
- NIRF was approved by the Ministry of Education (Erstwhile Ministry of Human Resource Development) and launched on 29th September 2015.
- It is the first-ever effort by the government to rank Higher Education Institutions (HEIs) in the country.
- Parameters for NIRF Ranking: The weightage for each parameter varies depending on the category of the institution.
- NIRF ranks institutes by their total score and it uses five indicators to determine this score — ‘Teaching, Learning & Resources’ (30% weightage); ‘Research and Professional Practice’ (30%); ‘Graduation Outcomes’ (20%); ‘Outreach and Inclusivity’ (10%); and ‘Perception’ (10%).

#### Major Highlights of NIRF Ranking 2023:

- The Indian Institute of Technology (IIT), Madras secured the top spot in the overall ranking for the fifth consecutive year, while the Indian Institute of Science (IISc), Bengaluru was ranked as the best university.
- Three Distinct Additions of 2023 Edition of India Rankings:
- Introduction of a new subject namely Agriculture & Allied Sectors
- Expansion of scope of “Architecture” to “Architecture and Planning” to include institutions imparting courses in Urban and Town Planning.
- Integration of the “Innovation” ranking previously executed by the Atal Ranking of Institutions on Innovation Achievements (ARIIA) into the India Rankings to reduce the burden on institutions of providing similar data to two different agencies.

#### Significance:

- India specific ranking: India specific ranking system would reduce the dependence on the international agency ranking which does not take exclusivity and gives ranking.
- Transparency: Verifiable data would help in setting up as transparent ranking system
- Status of institutions: As it included both public and private institutions it provides the actual status of higher educational institutions in the country so that students could make informed choices.

- Improve competitiveness: This will help state as well as institutional for self-check and correcting themselves.
- Thus promoting excellence.
- It is a step towards bringing the Indian institutes on a global platform.

### **Criticisms of the ranking framework:**

#### **Insufficient quality parameters:**

- The quality of an institution is a function of several inputs and the above indicators alone may not be sufficient.
- For example., how can we include the skills that an institution/university imparts to its students as one of the important ingredients?
- Should the financial health and size of the institution not be a criterion? etc.

#### **One-size-fits-all approach:**

- The diversity in the Indian education system is large. There are fresh as well as old institutions offering degrees/diplomas/certifications.
- There is also technology vs social sciences institutions, multi-disciplinary vs single discipline, private vs public, research-based, innovation-based, language-based or even special-purpose institutions/universities.
- NIRF seems to be committing the same sin that the global rankings systems were once accused of — a one-size-fits-all approach.

#### **Ranking Vs accreditation:**

- Another glaring oversight is the disconnect that exists between the ranking and accreditation.
- Several universities have earned a National Assessment and Accreditation Council (NAAC) A grade but figure poorly in the ranking system.

#### **Lack of international faculty:**

- The world over, ranking educational institutes is a matter of debate and research. There are at least 20 global ranking agencies that measure quality on various parameters.
- Two factors that are absent and differentiate us from the global ranking systems are our lack of international faculty and students and the inadequacy of our research to connect with the industry.

#### **Suggestive measures:**

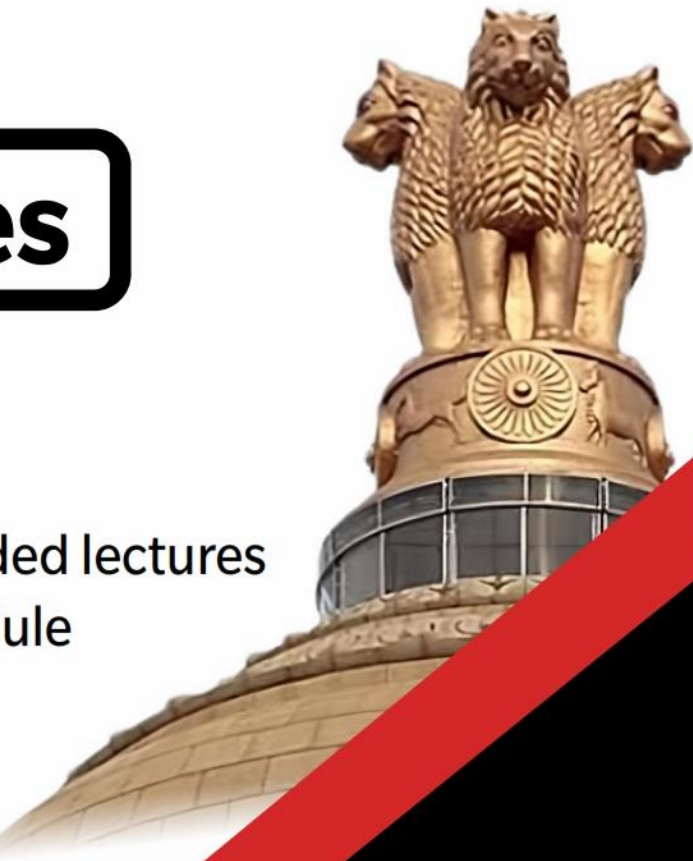
- Normalisation of performance index: Normalisation would help as there is huge resource gap between state funded and private institutions.
- Separate scheme: A separate scheme for central, state and private institutions might be better, and private industries would be voluntarily made to compete with the state funded institutions.
- Measures like extensive cross-examination of data, systematic and monitored surveys, inclusion of state representatives in the NIRF team would help obtaining a comprehensive ranking.

#### **Way Forward:**

- Thus, no matter how rigorous the methods, university rankings invariably involve some level of ambiguity. The NIRF's emphasis on rankings can lead to unhealthy competition between universities, fostering a culture that puts metrics in front of the thing they are trying to measure: excellence in education and research.

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