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

**Current Affairs, March 2024**

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# 1. POLITY & GOVERNANCE

## PRELIMS

### 1.1 NATIONAL COMMISSION FOR SCHEDULED CASTES (NCSC)

- Recently, the National Commission for Scheduled Castes (NCSC) was recreated by the Union government.

#### Context:

- The National Commission for Scheduled Castes (NCSC) Chairman, Kishor Makwana, has assumed leadership of the organization. The previous Chairman Vijay Sampla resigned, and this appointment took his place.

#### About NATIONAL COMMISSION FOR SCHEDULED CASTES (NCSC):

- In accordance with Article 338 of the Indian Constitution, the National Commission for Scheduled Castes (NCSC) is a constitutional entity.
- Ensuring complete protection of the rights of Scheduled Castes (SCs) is its main objective.
- The Government of India's Ministry of Social Justice and Empowerment oversees the NCSC's operations.
- It was created to safeguard Scheduled Castes and Anglo-Indian groups against exploitation and to advance and defend their cultural, social, educational, and economic interests.

#### Structure

- The Chairperson is one of the five members of the NCSC.
- The NCSC chairperson is chosen by the Indian President.
- The President's hand and seal are sealed on the warrant, which makes the appointment.
- The chairperson, vice-chairperson, and each member are in office for a term of three years beginning on the day they take over.

#### Duties and Functions

- Examine and keep an eye on all issues pertaining to the protections that the Constitution and other laws afford Scheduled Castes.
- Look into specific complaints about Scheduled Castes' rights and protections being violated.
- Take part in and offer advice in the planning process for Scheduled Castes' socioeconomic advancement.
- Provide the President with yearly reports that assess the effectiveness of the measures and offer suggestions.

### 1.2 DIGITAL INTELLIGENCE PLATFORM (DIP)

- The Digital Intelligence Platform (DIP) was recently inaugurated by the Union Minister for Communications.

#### Context:

- For the purpose of preventing spam and fraudulent calls through the Sanchar Saathi portal, the Department of Telecommunications (DoT) launched two initiatives: Chakshu and the Digital Intelligence Platform (DIP).

#### About Digital Intelligence Platform (DIP)

- The Department of Telecommunications (DoT) of India created the Digital Intelligence Platform (DIP), which is a secure and integrated platform.
- Its goal is to improve coordination between different stakeholders, real-time intelligence sharing, and information interchange.

- The DIP seeks to stop financial fraud and cybercrime's abuse of telecom resources.
- It gives citizens the ability to use the Sanchar Saathi portal's Chakshu (चक्षु) feature to proactively report any suspected fraudulent communication.

#### Key Features of DIP:

- Case Recording and Information Exchange: The DIP keeps track of incidents involving fraud and misuse of telecommunications.
- It makes this information available to pertinent parties so they can act in their own spheres of influence.
- Backend Repository for Citizen-Initiated Requests: When citizens submit requests through the Sanchar Sathi portal, the DIP acts as the backend repository.
- These requests deal with telecom resource usage or cyber fraud.
- This repository is a useful tool for stakeholders to handle cases efficiently.

#### Chakshu Platform:

- The government launched the Chakshu platform as a component of the Sanchar Sathi portal.
- To report suspected cyber or telecom fraud, citizens can use Chaksu.
- It improves India's capacity to counteract different cybersecurity threats.

### 1.3 CONSUMER PROTECTION ACT, 2019

The Supreme Court of India has ruled that advertisements for Patanjali Ayurvedic medicines cannot be displayed and issued a contempt notice.

#### Context:

- A misleading advertisement is one that provides a false guarantee or is likely to mislead customers about the type, content, amount, or quality of the good or service, as defined under Section 2(28) of the Consumer Protection Act of 2019.

#### About The Consumer Protection Act :

- India passed the Consumer Protection Act, 2019 as a comprehensive piece of law to protect consumers' rights and interests.

#### Key provisions of the Act:

- According to the Act, a person is considered a consumer if they: Purchase products or services for their own consumption.
- Uses products with the buyer's permission.
- Obtains services or hires them for compensation.
- It also includes consumer representatives and legal heirs.

#### Consumer Rights

- The right to safety is the defense against dangerous products and services.
- Right to Information: Have access to clear, accurate information regarding goods and services.
- Right to Select: Make a selection from a range of products and services.
- Right to Redress: File a complaint about unfair business practices and faulty goods.
- Right to Consumer Education: Acquire knowledge of one's rights and obligations.

#### Injustices in Trade

The Act forbids a number of unfair practices, including:

- False representation includes deceptive advertising and exaggerated claims.
- Unfair contracts: Giving customers unfair terms.
- The sale of products that are defective.
- Monopolistic behavior: restrictive commercial practices.

## Consumer Disputes Redressal

- District, state, and federal Consumer Disputes Redressal Commissions are established under the Act.
- Customers who witness unfair business practices, faulty products, or inadequate services may register complaints.

## MAINS

### 1.4 ELECTORAL TRUST

- Using electoral bonds, two electoral trusts have given corporate donations to political parties.

#### Context:

- The Election Commission made these facts public. While the Supreme Court intervened and ordered that all facts be made public, the electoral bonds scheme allowed contributors to remain completely anonymous; nevertheless, electoral trusts are required to reveal the identities of their donors.

#### About ELECTORAL TRUST:

- A non-profit corporation called an electoral trust was founded with the purpose of methodically gathering voluntarily donated funds from people or businesses. Following registration, these monies are given to Indian political parties.
- Electoral trusts are a concept that seeks to improve political funding transparency by channeling donations through a controlled structure.

#### Purpose and Establishment:

- Electoral trusts act as a middleman between political parties and funders, whether they be people or corporations.
- They were implemented in 2013 with the goal of promoting openness and streamlining the political finance process.

#### Eligibility and Registration:

- A non-profit organization registered under Section 29A of the Representation of People Act, 1951 is required to be an electoral trust.
- It serves as a middleman for obtaining donations and allocating them to political parties.

#### Donation Distribution:

- An Electoral Trust is required to distribute to registered political parties ninety-five percent of the funds it receives within a fiscal year.
- By notifying the Election Commission of India about contributions and beneficiaries, Electoral Trusts stress transparency in contrast to the Electoral Bonds (EB) Scheme, which permitted anonymous payments.

#### Transparency and Reporting:

- Electoral Trusts must provide the Election Commission with contribution reports that include all of their contributors and the political parties they have backed.
- The public can review these reports at their convenience.

### 1.5 One Nation, One Election

- President Droupadi Murmu received the report from the High-level Committee (HLC) on One Nation, One Election early on Thursday, March 14.

#### Context:

- Ram Nath Kovind, a former president, presided over HLC.



### What does "simultaneous elections" mean?

- Holding polls for the Lok Sabha, all state Legislative Assemblies, and urban and rural local bodies (municipalities and panchayats) simultaneously is known as simultaneous elections, or "One Nation, One Election."
- At the moment, each of these elections takes place on its own schedule, determined by the terms of each respective elected body.
- In India, until the fourth general elections of 1967, state assemblies and the Lok Sabha were elected at the same time. But as the nation's coalition governments in the states and the center continued to fall apart and as succeeding central administrations exploited constitutional provisions to overthrow state governments before the end of their mandate, elections began to take place at various points during the year.
- The HLC report states that there are now five to six elections held annually in the nation; this number will rise significantly if elections for municipalities and panchayats are also taken into account.

### What is the need for holding simultaneous elections?

- Regular elections put more strain on the public coffers of the government. These numbers will increase much further if political party spending is included.
- Asynchronous elections impede supply chains, corporate investments, and economic progress by causing uncertainty and instability.
- Citizens suffer as a result of the government apparatus being disrupted by asynchronous elections.
- Regular use of security personnel and government employees has a negative impact on how well they can perform their jobs.
- The Model Code of Conduct (MCC) is frequently imposed, which paralyzes policy and slows down the advancement of development initiatives.
- Elections that are far out cause "voters' fatigue" and make it extremely difficult to guarantee their turnout.

### Important recommendations of HLC

- **CHANGING THE CONSTITUTION:** Two measures should be taken to alter the Constitution to allow for simultaneous elections. Elections for the Lok Sabha and State Assemblies will take place concurrently as the first step. This means that the constitutional amendment won't need state ratification. The second phase would involve timing elections for municipalities and panchayats to coincide with the Lok Sabha and state assemblies. This will ensure that local body elections take place no later than 100 days after the polls for the legislature and state assemblies. Ratification of this will need to come from at least half of the states.
- **SINGLE ELECTORAL ROLL AND ELECTION ID:** The Constitution should be amended to allow the Election Commission of India to create a single electoral roll and election ID in collaboration with the State Election Commissions, with the goal of creating a single electoral roll and electoral photo identity cards for use in elections to all three tiers of government. It is necessary for at least half of the states to ratify these changes.
- **SINGLE ELECTORAL ROLL AND ELECTION ID:** The Constitution should be amended to allow the Election Commission of India to create a single electoral roll and election ID in collaboration with the State Election Commissions, with the goal of creating a single electoral roll and electoral photo identity cards for use in elections to all three tiers of government. It is necessary for at least half of the states to ratify these changes.

## 1.6 Delimitation

- After 2026, the constituency delineations for the Lok Sabha and State Legislative Assemblies are to be determined by means of the First Census.

### Context:

- The COVID-19 pandemic caused an initial delay in the 2021 Census, which was later extended due to Central government delays.

## About Delimitation

- Delimitation is the process of allocating each State's territorial constituency borders and number of seats for the Lok Sabha and Legislative legislatures.
- It also entails figuring out which seats in these houses should be set aside for Scheduled Castes (SC) and Scheduled Tribes (ST).
- It is carried out by the "Delimitation Commission," which was established by a parliamentary statute.
- Under the Acts of 1952, 1962, 1972, and 2002, delimitation commissions were established four times: in 1952, 1963, 1973, and 2002.
- In 1950–51, the President conducted the first delimitation process with assistance from the Election Commission.

## Significance of Delimitation

- In order to maintain the democratic ideal of one citizen, one vote, and one value, delimitation adjusts the number of seats in the Lok Sabha and State Legislative Assemblies in accordance with population trends.
- Delimitation is the process of redrawing the borders of geographical constituencies in order to ensure that seats are distributed fairly among various regions while taking population movements into account. This assists in avoiding the under- or overrepresentation of particular regions.
- In compliance with constitutional provisions, delimitation determines the distribution of reserved seats for Scheduled Castes (SC) and Scheduled Tribes (ST), guaranteeing sufficient political representation for vulnerable populations.
- Delimitation affects federal principles by affecting how states divide their political authority. Maintaining unity among varied regions necessitates striking a balance between federal considerations and population-based representation.
- In the past, population control measures were intended to be encouraged by the seat freezing based on the 1971 Census. But in light of shifting demographics, the upcoming delimitation process begs concerns about the efficacy and ramifications of this approach.

## Issues/Concerns related to Delimitation:

- The difference in representation in the Lok Sabha between the northern and southern regions of India as a result of population.
- The delimitation based only on population ignores the advancements in population control made by the southern states and could result in differences in the federal government's organization. The southern states account for 35% of the nation's GDP even though they only comprise 18% of its total population. Because of their faster rate of population increase, the northern states—which placed less emphasis on population control—are anticipated to gain from the delimitation process.
- There were worries that the southern states might lose funding and parliamentary representation after the 15th Finance Commission based its recommendation on the results of the 2011 Census.

## 1.7 'Unlawful Association'

- The Unlawful Activities (Prevention) Act (UAPA) 1967 has been used by the government to further prohibit "Jamaat-e-Islami Jammu Kashmir" as a "Unlawful Association" for an additional five years.
- This prolongation follows the outfit's February 28, 2019, initial declaration of unlawfulness. Jammu and Kashmir's separatist feelings are a result of Jamaat-e-Islami Jammu Kashmir's support of terrorism and anti-Indian rhetoric.

## What is a 'Unlawful Association'?

- An organization or group that the government has declared unlawful or outlawed because of its involvement in acts that endanger national security, sovereignty, or integrity is referred to as a "Unlawful Association."

## UAPA: What is it?

- India passed the Unlawful Activities (Prevention) Act (UAPA) in 1967 as part of an anti-terrorism law that sought to stop illegal activity and fight terrorism. The Act gives the central government total authority,

enabling it to declare any activity illegal through the publication of an official gazette if the Center so decides.

**Important aspects of UAPA include:**

- Both Indian natives and foreign nationals may be charged under UAPA.
- It will apply to the criminals in the same way even if they commit the crime outside of India, in a foreign country.
- The harshest penalties are life in prison and the death sentence.
- According to the 2019 changes, the Act gives the Director General of the National Investigation Agency (NIA) the authority to authorize the seizure or attachment of property while the agency is conducting an investigation into the matter.
- The Act gives NIA officers at the Inspector rank or higher the authority to look into terrorism matters in addition to those looked into by the state's DSP, ACP, or other officers of a higher rank.
- It also contained the clause identifying a person as a terrorist.

## **1.8 The long road to reforming India's political party system**

**In India, political defections are common:**

- Congress and RJD MLAs of Bihar switched to the BJP, which resulted in their disqualification from office under the anti-defection law. In Andhra Pradesh and Himachal Pradesh, similar instances happened.
- The need for India's anti-defection statute has been called into question by a recent adjudicatory incident in Maharashtra, when groups within the NCP were not dismissed due to intra-party disagreement.
- Better inner-party democratic reforms are required to handle political defections and maintain legislative stability. The Speaker emphasized the difficulties in successfully implementing the anti-defection law.

**Transgressions that pass muster /Challenges with Anti-defection law:**

- Anti-defection law and intra-party dissent: The Speaker's ruling in the NCP split case emphasizes how difficult it is to apply the anti-defection law to intra-party dissent. The Tenth Schedule's punitive clauses cannot apply to intra-party dissent because of the parliamentary majority.
- Laws against desertion and mergers: Since the "split" exception was removed from the Tenth Schedule in 2003, a faction that splits from its original party is not eligible for exemption from disqualification under the current anti-defection statute.
- Currently, mergers are the sole exception that can be made. In order to combine with another political party, a minimum of two thirds of the members must leave their current party.

**Way Forward:**

- Strong democratic structures are necessary. The 255th Report of the Law Commission of India proposed amendments to the Representation of the People Act, 1951, which could require political parties to elect an executive committee in addition to having a constitution. It could also require them to choose candidates to run for office in State or Parliamentary elections, as well as hold regular elections within the party at all levels.
- Requirement for Statutory Regulation: The Law Commission also suggested giving the Election Commission of India the authority to fine or cancel a political party's registration if it disobeyed.

## 1.9 SC ends Immunity for Legislators taking Bribes

### Taking away privilege

A look at the observations made by the seven-judge Bench of the Supreme Court in its unanimous verdict:



- Chief Justice of India DY Chandrachud led a seven-judge Constitution Bench that rendered a landmark decision on criminal prosecution and parliamentary privilege.
- The decision overturned a 1998 decision in the PV Narasimha Rao Case, which protected politicians who accepted bribes from being punished if they later participated in House proceedings or cast votes.

#### Immunity against Bribe: Constitutional Provisions Examined

- Members of Parliament are shielded from legal action pertaining to their votes or speeches in Parliament by Article 105(2).
- Article 194(2): Members of state assemblies are similarly granted protection under this article.

#### THE TIMELINE

■ **April 17, 1998:** A five-judge Constitution Bench held in the Narasimha Rao vs CBI case that lawmakers have immunity against criminal prosecution for any speech made and the vote cast inside the House under Articles 105(2) and 194(2) of the Constitution

■ **February 17, 2014:** Jharkhand HC refuses to quash criminal case against JMM leader Sita Soren for allegedly taking bribe in Rajya Sabha polls in 2012

■ **September 23, 2014:** A two-judge SC Bench places before a larger Bench the plea of JMM leader Sita Soren

■ **March 7, 2019:** A three-judge Bench refers the issue related to immunity of lawmakers to a larger Bench

■ **September 20, 2023:** A five-judge Bench refers the issue and reconsideration of the 1998 verdict to a Bench of seven judges

■ **October 5, 2023:** The seven-judge Bench reserves judgment

■ **March 4, 2024:** Observing that bribery is not protected by parliamentary privileges, the seven-judge Bench overturns five-judge Bench's interpretation in the 1998 verdict in the JMM bribery case

#### Court's Review and Interpretation

- In 1998, the PV Narasimha Rao case resulted in a 3:2 majority decision by the Supreme Court protecting MPs and MLAs from prosecution in cases involving bribery as long as they kept their part of the agreement.
- Judicial Scrutiny of Privilege: The Court reexamined how Articles 105(2) and 194(2) were interpreted, casting doubt on the conventional wisdom regarding parliamentarians' total immunity.
- Historical Context: It was pointed out that, in contrast to the UK's House of Commons, which has long-standing and indisputable rights, India's parliamentary privileges derive from statutory and constitutional sources.

## Key Findings and Interpretations

- Use of the "Necessity Test": The Court used the "necessity test" to evaluate the validity of claims to parliamentary privilege, highlighting the fact that MPs cannot be justified in their employment of bribes.
- Emphasis on Probity: The decision emphasized the value of probity in public life and the ways that corruption undermines democratic values.
- Interpretation of Offense: It made it clear that accepting a bribe is illegal, regardless of what the House member does afterward.

The Supreme Court's decision upholds the idea that no one is above the law, even lawmakers, and marks a dramatic divergence from earlier decisions. The Court upheld the responsibility of the judiciary in examining claims of parliamentary privilege, thus reinforcing the importance of constitutional values and accountability in government.

## 1.10 Hate Speech: Interpreting Section 153A IPC

- The Supreme Court reaffirmed that in order for an act to be considered criminal under Section 153A of the Indian Penal Code (IPC), there must be animosity and discord between two or more communities or groups.
- Politicians are frequently arrested for allegedly using hate speech under section 153 A of the IPC.

### The Indian Penal Code's (IPC) Section 153A

- Promoting animosity between various groups on the basis of religion, race, place of birth, residence, language, etc. is illegal and is covered by Section 153A of the IPC.
- The main goal is to stop the spread of discord or animosity, hostility, or malice among various social groupings.
- It wasn't included in the first penal code when it was passed in 1898.

### Prohibited Acts:

#### The section prohibits several acts:

- Engaging in activities that promote or attempt to promote feelings of enmity or hatred between different religious, racial, linguistic, or regional groups.
- Committing acts prejudicial to the maintenance of harmony between different groups or communities.
- Doing anything that disturbs or disrupts public tranquillity or creates unrest among various groups.

### Essential Elements:

#### To constitute an offence under Section 153A, the following essential elements must be established:

- Promotion of enmity or hatred between different groups.
- Such promotion must be based on religion, race, place of birth, residence, language, etc.
- The intention behind the act must be to disrupt public tranquillity or to create disharmony among groups.

### Penalties:

- Jail Term: If found guilty of violating Section 153A, a person may face a maximum sentence of three years in jail, a fine, or both.
- Both cognizable and non-bailable: The offense is cognizable, and it carries a potential three-year sentence in addition to a fine or neither. Moreover, the offender is tried by a first-class magistrate and the offense is not subject to bail.
- The prosecution bears the burden of proving that the accused's words, deeds, or behavior were intended to incite animosity or hatred between various groups on the grounds mentioned.

## 2. INTERNATIONAL RELATIONS

### PRELIMS

#### 2.1 EURASIAN ECONOMIC UNION (EAEU)

- The five-member Eurasian Economic Union (EAEU), headed by Russia, and India are about to start free trade agreement (FTA) discussions.

##### Context:

- The objective of this proposed agreement is to increase India's exports to the EAEU nations, namely in areas like electronics, engineering items, and agriculture.

##### About Eurasian Economic Union (EAEU or EEU)

- Five post-Soviet nations in Eurasia have united economically to form the Eurasian Economic Union, or EEU for short.
- Armenia, Belarus, Kazakhstan, Kyrgyzstan, and Russia are the members.
- In order to facilitate the free flow of capital, people, products, and services, the EAEU was founded.
- The official goals of the EAEU are to establish a common market akin to those of the European Union (EU).
- The EAEU does not, however, have a common currency with the EU.

#### 2.2 UNITED NATIONS HUMAN RIGHTS COUNCIL (UNHRC)

- The United Nations Human Rights Council's 55th session has begun.

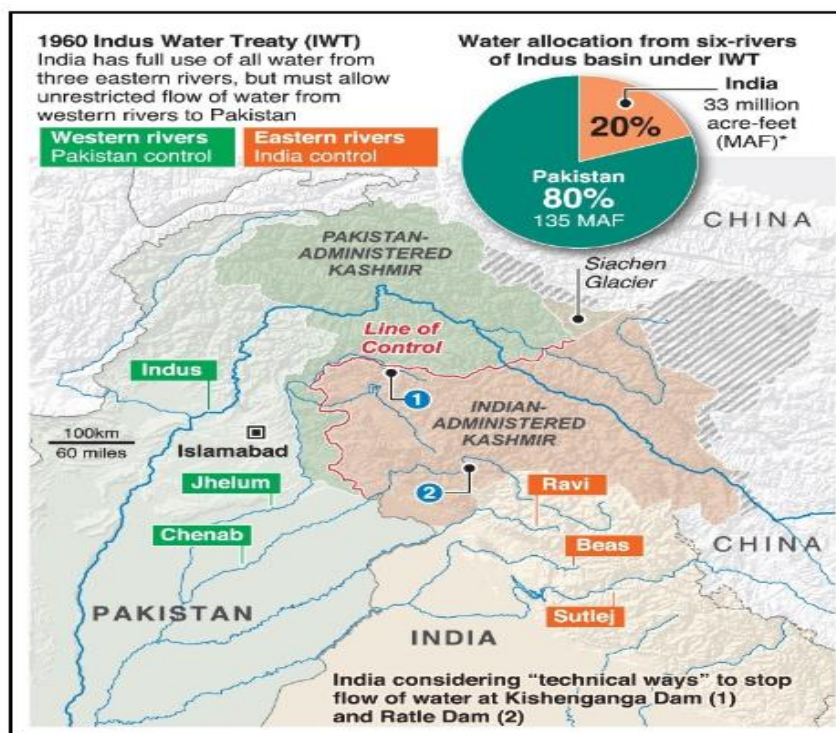
##### Context:

- Representatives from a number of countries are present at the 55th session of the UN Human Rights Council, and they are all giving their knowledge and viewpoints.

##### About UNITED NATIONS HUMAN RIGHTS COUNCIL (UNHRC)

- Within the framework of the UN, the United Nations Human Rights Council (UNHRC) is an intergovernmental organization.
- It is in charge of bolstering global efforts to promote and defend human rights.
- There are 47 Member States that make up the UNHRC.
- With a resounding majority in the General Assembly, India was re-elected to the United Nations Human Rights Council (UNHRC) for the 2022–2024 term. With this re-election, India will have served a record-breaking sixth term on the UNHRC.

## 2.3 India stops Ravi water flow to Pakistan



- After 45 years of waiting, India has finished the Shahpur Kandi Barrage Project, stopping the flow of water into Pakistan from the Ravi river.
- India has exclusive rights to the Ravi River's waters under the 1960 Indus Water Treaty, which allows it to use the resource for regional agriculture.

### What are the possible advantages for India if water from the Ravi River is not sent to Pakistan?

- **Water Security:** Retaining water from the Ravi River helps improve Indian regions' access to water. Pakistan was originally allotted 1,150 cusecs of water, which would now help the Jammu and Kashmir region.
- **Agricultural production:** India can facilitate higher agricultural production and efficiency, encouraging sustainable farming methods and enhancing food security, by guaranteeing access to water from the Ravi River.
- **Financial Prospects:** Regaining authority over the Ravi River's water resources could result in the development of new job possibilities, more commercial activity along the riverbanks that generates income, and better habitat quality that supports biodiversity.
- **Urban Development:** By preventing the Ravi River's water from flowing into Pakistan, India can create more planned urban dwellings and boost its economy by promoting the creation of sustainable urban districts along the riverbanks.
- India may adopt circular economies, encourage the recycling sector, and put into place contemporary waste management methods to preserve ecosystems and use water resources sustainably.

### About Shahpur Kandi Barrage Project

- It is situated close to the boundary between Jammu and Kashmir and Punjab, on the Ravi River in the Pathankot district of Punjab.

### Project Development:

- In 1995, PV Narasimha Rao, the prime minister at the time, lay the cornerstone for the Shahpur Kandi Barrage Project.

- Redoubled efforts are underway to finish the project after the government began optimizing water resources from the Sutlej, Beas, and Ravi rivers for Indian farmers in 2016.
- Ultimately, after 40 years of inaction, Jammu & Kashmir and Punjab inked a deal in 2018 to restart construction on the Shahpur-Kandi dam project.

### **Indus Waters Treaty**

- A 1960 agreement between India and Pakistan was negotiated by the World Bank and is known as the Indus Waters Treaty.
- The treaty gives India ownership of the Eastern Rivers (Ravi, Beas, Sutlej) and Pakistan ownership of the Western Rivers (Indus, Jhelum, Chenab).
- But the pact allows Pakistan to use the Eastern Rivers in limited ways and vice versa.
- The Permanent Indus Commission was established by the treaty to promote communication and the settlement of disputes. It consists of one delegate from each country.
- The treaty made it easier to build dams, link canals, barrages, and tube wells, giving Pakistan the water it had previously been entitled to.
- The 1947 partition that resulted in the partitioning of the water systems made the pact operative.
- Following the 1947 temporary Standstill Agreement's expiration, India began rerouting water running through canals that were headed toward Pakistan.
- India was required under the Inter-Dominion Accord of May 4, 1948, to provide water to sections of the basin inhabited by Pakistan in return for yearly payments.

## **2.4 Indo Pacific Economic Framework (IPEF)**

- India has chosen to participate in at least one of the four cooperative work programs—the one on supporting and boosting carbon-market activities—that were revealed last week under the Indo Pacific Economic Framework (IPEF), which is led by the United States and falls under the "clean energy pillar."

### **Context:**

- On May 23, 2022, U.S. President Joe Biden announced an economic program called the Indo-Pacific Economic Framework for Prosperity (IPEF). The Indo-Pacific region's fourteen founding members of the framework were present when it started, and new states were welcome to join.

### **About Indo Pacific Economic Framework (IPEF):**

- On May 23, 2022, in Tokyo, the United States and other Indo-Pacific partner nations jointly launched IPEF.
- Australia, Brunei, Fiji, India, Indonesia, Japan, Republic of Korea, Malaysia, New Zealand, Philippines, Singapore, Thailand, Vietnam, and the United States are among the 14 partner countries of IPEF.
- In order to promote progress, peace, and prosperity in the region, it aims to deepen economic ties between partner nations.
- Four pillars support the framework's structure: Trade (Pillar I), Supply Chains (Pillar II), the Clean Economy (Pillar III), and the Fair Economy (Pillar IV).
- A shared set of guidelines and standards centered around the four pillars is the goal of the IPEF, which is perceived by many observers as an attempt by the United States to challenge China's expanding influence in the region.

## **2.5 Bilateral Investment Treaties (BITs)**

- In order to increase the amount of foreign direct investments (FDI) coming in, India is negotiating BITs with trade partners.

### **Context:**

- Prior to 2015, India has bilateral investment treaties (BITs) with 83 nations or regions. However, India stopped its BITs with 68 nations or regions and asked to renegotiate using the model 2016 BIT. There are



still six active BITs. The ban was brought on by multiple well-publicized losses in disputes between investors and states.

#### **About Bilateral Investment Treaties (BITs):**

- These are mutually beneficial agreements between two nations to encourage and safeguard private foreign investments on each other's soil.
- India had BIT agreements with 83 nations, of which 74 remained operative as of 2015.
- In 2016, India updated its Model BIT. Since 2015, India has dissolved its previous bilateral investment treaties (BITs) with 77 nations, signed new BITs with just four, and is in negotiations with 37 more.

#### **Key features of Model BIT 2016:**

- An enterprise that has been formed, organized, and run by an investor in good faith and in compliance with the national laws of the nation is referred to as an investment under the "enterprise" definition.
- nondiscriminatory treatment through the use of due process, with each party providing investors and assets with complete security and protection.
- National treatment and safeguards against expropriation since neither party is allowed to directly nationalize or expropriate an investor's investment or use actions that would have the same effect as expropriation.
- Foreign investors should use the Investor-State Dispute Settlement (ISDS) system only after they have exhausted all local remedies, preferably for a five-year term.

#### **Existing issues/concerns with Model BIT:**

- According to experts, India implemented Model BIT 2016 in response to several notifications it had received. Its excessive number of exceptions raises the bar for filing a claim under the BIT and restricts the host state's culpability.
- The requirement that the investor exhaust domestic remedies for a minimum of five years prior to initiating arbitration under the Bilateral Investment Treaty (BIT) is widely regarded as the most controversial aspect of the arbitration mechanism.
- The notion of investment is made more limited by the enterprise-based definition.
- the "fair and equitable treatment" requirement is missing. It has been replaced with safeguards that must meet high thresholds in order to be activated or invoked. Furthermore, the concepts of "legitimate expectation" and the Most-Favorable Nation are also missing.
- It appears that the exclusion of taxation measures from the benefits provided by the Bilateral Investment Treaty (BIT) is a declaration of sovereignty rather than a mechanism designed to safeguard international trade.
- Absence of professionals because there aren't enough judges or attorneys in India with the necessary training and experience. As a result, global legal firms representing India in investment arbitration receive enormous fees.

## **2.6 Navigating the global Waterscape, its challenges**

- The 31st World Water Day is scheduled for March 22, 2024, with the theme "Leveraging water for peace."

#### **Context-**

- In light of the pressures brought on by climate change, the globe must also promote better collaboration over water-sharing.
- About two billion people worldwide still struggle to get clean water, and demand for it is only growing. This shortage jeopardizes not just our basic necessities as humans but also the prosperity and serenity of the entire community.

#### **Using water diplomacy during an extreme period**

- Impact of Climate Crisis: Extreme weather events such as heat waves and floods heighten worries about the impending climate catastrophe. The \$3 trillion Indian economy's agriculture is impacted by the unpredictable monsoons.

- **Need for Greater collaboration:** It is critical to promote collaboration over water sharing and adopt the universal principles of international water law in light of the difficulties posed by climate change.
- **Water diplomacy:** Better water diplomacy, which fosters regional and global peace and stability, depends on efficient shared water governance and sustainable water usage.
- **Collaborative Governance:** Promoting stability and peace in the region, collaborative governance makes sure that countries share water resources fairly.
- **Inclusive Approaches:** To prevent, reduce, and resolve water-related problems, water diplomacy should incorporate academic and civil society networks as well as the cross-border networks of indigenous and local people.
- **Lack of Global Data on Water Quality:** This underscores the need for improved access to basic drinking water services, especially in rural regions, and shows a stark disparity between urban and rural areas.

#### **Addressing rural India's needs-**

- **The primary source of subsistence for 70% of India's rural population is agriculture, and water is necessary for household activities. Globally, 70% of freshwater use is attributed to agriculture.**
- **Water Accessibility:** Health, education, employment, and the fulfillment of fundamental human needs and dignity can all benefit from improved water accessibility in rural areas.
- **Water Investments:** Increasing water investments in rural regions can have a favorable impact on a number of sectors and provide several benefits to communities.
- **AI Technology in Agriculture:** Water conservation initiatives can be supported by the effective application of cutting-edge artificial intelligence (AI) technology in agriculture. Artificial Intelligence has the potential to address crop and food loss, reduce chemical and fertilizer use, and maximize water use for sustainable and fruitful results.

#### **The issue of transboundary waters**

- **Water Pollution:** Communities who depend on transboundary rivers for their water supplies face serious environmental and health threats due to the increasing levels of pollution in these rivers, including the Meghna, Brahmaputra, Ganga, and Indus.
- **Lack of Governance:** To address concerns with fair water distribution, pollution prevention, and sustainable management of shared water resources among adjacent countries, sophisticated cross-border water governance is required.
- **Cooperation Difficulties:** Even though cooperation on transboundary water resources is crucial, many nations struggle to come to agreements and put in place efficient systems for managing shared water resources. Cooperation efforts are hampered by disagreements over infrastructure development, water usage, and environmental effects.
- **Sustainable Development Goals (SDGs):** Achieving the SDGs, especially Goal 6 (Clean Water and Sanitation), requires transboundary water management. The SDG targets pertaining to poverty reduction, environmental sustainability, and water security are impeded by insufficient collaboration and governance frameworks.
- **Peace and Security:** Tensions and disputes between riparian governments can be intensified by a lack of freshwater in transboundary river basins. Stability in the region and the avoidance of conflicts over shared water resources depend on efficient management and collaboration.
- **Ecosystem Services:** Transboundary rivers sustain a variety of ecosystems and offer vital ecosystem services like water filtration, biodiversity habitat, and flow control. The integrity of ecosystems and the services they offer are under risk due to pollution and overexploitation of these waterways.

#### **Suggestive Measures to Resolve Transboundary Water Issues:**

- **Strengthen Governance Structures:** To promote fair water distribution, pollution prevention, and sustainable management of shared water resources, comprehensive frameworks for cross-border water governance should be established. These frameworks may include bilateral or multilateral agreements.
- **Boost Interaction Mechanisms:** Encourage communication and cooperation between riparian states via forums including joint commissions, organizations for river basins, and diplomatic discussions to resolve conflicts and enhance knowledge of the difficulties associated with water management.

- Put integrated water resource management (IWRM) into practice by: To ensure the effective use of transboundary water resources and to promote sustainable development while avoiding adverse effects on communities and ecosystems, adopt integrated water resources management (IWRM) approaches that take social, economic, and environmental concerns into account.
- Enhance Monitoring and Data Sharing: To evaluate water quality, quantity, and usage patterns in transboundary river basins, enhance monitoring systems and data-sharing procedures. Increased openness and information sharing between riparian governments can support cooperative efforts and well-informed decision-making.
- Encourage Community Involvement: Involve civil society organizations, indigenous tribes, and local people in transboundary water management decision-making processes. Grassroots stakeholder empowerment has the potential to improve sustainability, encourage collaboration, and improve accountability.
- Strengthen legal frameworks To effectively govern transboundary water resources, strong legal frameworks must be developed and enforced at both the national and international levels. Laws that are unambiguous and upholdable can serve as a foundation for settling conflicts and guaranteeing adherence to established water management guidelines.

## 2.7 Why are Rohingya refugees risking their lives at sea?

- The tragic circumstances that almost 150 Rohingya migrants were in when their wooden boat capsized off the coast of Indonesia last week have brought attention to this group's precarious predicament.
- The United Nations High Commissioner for Refugees (UNHCR) reports that last year over 4,500 Rohingya refugees embarked on perilous journeys across the Andaman Sea and the Bay of Bengal.

### Who are the Rohingya refugees?

- A Muslim ethnic group known as the Rohingya originates in Arakan, Myanmar (formerly known as Burma). The word "Arakan" is combined with the Rohingya word "ga" or "gya," which means "from." This is how the name "Rohingya" is formed.

### On the Rohingya Crisis:

- Tagged as "illegal immigrants": Although the Rohingya people say they have ancestral ties to the Rakhine State of Myanmar, several countries have denied this and have classified them as illegal immigrants from Bangladesh.
- Different from the majority: Because the Rohingya speak a Bengali dialect rather than the standard Burmese language, they are culturally and spiritually separate from the majority Buddhist population in Myanmar.
- Strict requirements for citizenship: Since 1982, Myanmar has refused to recognize the Rohingya as an ethnic group or grant them citizenship. The 1982 citizenship legislation of Myanmar sets stringent requirements for obtaining citizenship, including proving that one's ancestors lived in Myanmar before to 1823.
- The largest stateless population in the world: As a result, the Rohingya are regarded as the greatest group of stateless people on Earth, devoid of security and basic rights.

### Why did the Rohingya people leave their country?

- Military crackdown: Security personnel in Myanmar have persecuted, abused, and discriminated against people for decades. After a military campaign in 2012 in response to the rape and killing of a Rakhine lady in an area populated primarily by Rohingyas, tensions between the Rohingya community and the Rakhine Buddhist population resulted in a significant number of Rohingyas leaving Myanmar.
- biggest departure: The greatest migration took place in August 2017 as a result of a severe violent wave in Rakhine that forced over 750,000 people to flee to Bangladesh in search of safety.
- UN commission for fact-finding: The violence in 2017 was referred to by the UN as "ethnic cleansing," and the humanitarian situation was deemed "catastrophic." The UN fact-finding panel declared in 2018 that the government of Myanmar intended to commit "genocidal" acts against the Rohingya people.

### **Why they are choosing sea journeys?**

- **Overcrowded Refugee Camp:** There are an estimated 9,60,000 Rohingya living in camps for refugees in Bangladesh, especially in Cox's Bazar, which is close to the Myanmar border and has some of the biggest and densest populations of any refugee camp in the world.
- **Susceptible to weather-related catastrophes and outbreaks:** Because of the unhygienic circumstances, the camps are particularly vulnerable to weather-related disasters and disease outbreaks. There are also security risks, such as gang violence and arson assaults. For instance, in 2023, fighting in Bangladeshi camps claimed the lives of nearly 60 Rohingya.
- **Returning to Myanmar is nearly impossible,** and the circumstances in the relief camps in Bangladesh are getting worse. As a result, more and more Rohingya are risking their lives to traverse the Bay of Bengal and the Andaman Sea by boat.

### **The Rohingya Population in India:**

- There exist communities of Rohingya in the states of Rajasthan, Uttar Pradesh, Haryana, Hyderabad, and Jammu-NCR.
- The Ministry of Home Affairs claims that more than 40,000 Rohingya people live in India. Of them, just 14,000 have refugee ID cards issued by the United Nations High Commissioner for Refugees (UNHCR), which shields them from arbitrary arrest or imprisonment.

### **Indian legal provisions pertaining to "Refugees":**

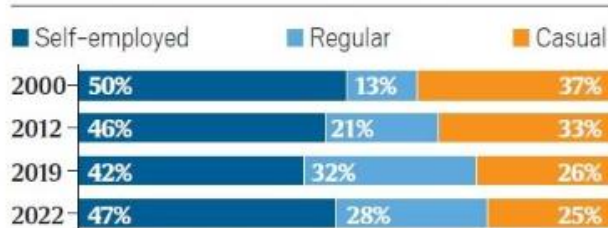
- **No particular law:** There isn't a law in India that was created expressly for refugees. As a result, the government routinely classifies Rohingya refugees with undocumented immigrants and deports them in accordance with the Foreigners Act of 1946 and the Foreigners Order of 1948.
- **Deportation authority:** The Central government is authorized to remove a foreign national under Section 3 of The Foreigners Act, 1946.

# 3. ECONOMY

## PRELIMS

### 3.1 India Employment Landscape: Insights from the ILO-IHD Report 2024

#### STATUS OF EMPLOYMENT OF YOUTHS



Source: IHD-ILO India Employment Report 2024

- The International Labour Organization (ILO) and the Institute of Human Development (IHD) produced the India Employment Report 2024, which states that about 83% of India's unemployed workforce is young.

#### Highlights of the India Employment Report 2024:

##### Dynamics of the Labor Market

- Long-Term Deterioration: Between 2000 and 2018, there was a long-term decline in the labor force participation rate (LFPR), worker population ratio (WPR), and unemployment rate (UR); however, following 2019, there was an improvement.
- Impact of Education: The percentage of youth without jobs who have completed secondary or higher education has nearly doubled, from 35.2% in 2000 to 65.7% in 2022. This suggests that there has been a substantial change in the educational backgrounds of job searchers.

##### Challenges and Insecurities

- Informal Workforce: While the percentage of workers doing regular labor fell after 2018, about 90% of workers are still doing so, which has resulted in widespread concerns about their means of subsistence.
- Contractualization: There has been an increase in contractualization, which exacerbates job insecurity because so few normal workers have long-term contracts.

##### Disparities in Gender and Skill Levels

- Skills Deficit: The report highlights a skills gap among India's youthful workers, noting that a considerable proportion lacks the ability to do fundamental arithmetic operations or digital jobs, even though there is a demographic dividend.
- Gender Gap: India's labor market exhibits significant gender gaps, with low rates of female involvement and high rates of unemployment among young, highly educated women.

### 3.2 AVAANA SUSTAINABILITY FUND (ASF)

- The Green Climate Fund (GCF) has just granted SIDBI a sizeable \$24.5 million investment for its Avaana Sustainability Fund (ASF).

#### Context:

- The largest climate fund globally, the Green Climate Fund (GCF), was created under the auspices of the United Nations Framework Convention on Climate Change. Its goal is to help poor nations combat the effects of climate change by supporting their adaptation and mitigation strategies.

#### **About AVAANA SUSTAINABILITY FUND (ASF):**

- Avaana Sustainability Fund (ASF) is a venture capital fund with a USD 120 million goal that invests in Indian early-stage climate technology startups.
- The Small Industries Development Bank of India (SIDBI) has introduced this fund.
- ASF invests in cutting-edge technology in various important sectors, including sustainable resource management, transportation and supply chains, and sustainable agricultural and food systems, with the goal of facilitating the shift to low-carbon and climate-resilient growth paths.
- Investing in low-carbon and climate-resilient companies, enhancing the leadership of climate and sustainability, creating a positive feedback loop of sourcing and value addition for the broader ecosystem, and emphasizing social, economic, and environmental impact through customized investment strategies across multiple sectors are just a few of ASF's strategies.
- The Green Climate Fund (GCF) has given its approval to the ASF project, which intends to support India's efforts to address climate concerns and promote sustainable solutions.

### **3.3 THE COMPETITION COMMISSION OF INDIA (SETTLEMENT) REGULATIONS 2024**

- The Commitment and Settlement Regulations were recently notified by the Competition Commission of India (CCI).

#### **Context:**

- These rules are essential to simplifying the competition law's commitment and settlement procedures. Settlements are agreements established during ongoing investigations to effectively resolve cases, whereas commitments are proactive suggestions made by accused firms to address competitive concerns.

#### **About THE COMPETITION COMMISSION OF INDIA (SETTLEMENT) REGULATIONS 2024:**

- The Competition Commission of India (CCI) introduced the Settlement Regulations, 2024 in an effort to decrease litigation and expedite market adjustment.
- These rules give businesses a way to resolve disputes while investigations are still ongoing.
- On April 11, 2023, the Competition (Amendment) Act, 2023 was passed, amending the Competition Act, 2002.
- Sections 48A and 48C were added to the Act by the Amendment Act in order to establish a settlement process.
- They outline the process for submitting petitions for settlement and carrying out settlement talks.
- Among other things, the regulations cover the format and substance of the settlement application, the situations in which CCI may reject settlement applications, and how the Settlement Amount is calculated.
- With the help of these laws, businesses should be able to manage inquiries and potential violations of the Act more quickly and easily.

#### **Competition Commission of India (CCI)**

- The Competition Act of 2002 established the Competition Commission of India (CCI), a statutory authority.
- Ensuring a level playing field for firms, preventing anticompetitive practices, and promoting fair competition are its main goals.
- The CCI looks into issues involving mergers, abuses of dominating market positions, and antitrust offenses.

### **3.4 GEOGRAPHICAL INDICATION (GI) TAG**

The Tripuran traditional tribal garment known as risa has been granted the Geographical Indication (GI) designation.

#### **Context:**

- Handwoven risa is mostly worn by women as an upper garment. It can also be used as a stole, a headpiece, or a token of respect. This beautiful fabric has great social and religious significance and is woven with vibrant motifs.

### About Geographical Indication (GI) tag

- A Geographical Indication (GI) tag is a distinguishing mark applied to goods with a particular geographic origin and attributes or a reputation that are primarily attributable to that origin.
- It protects the distinct identity and worth of these things as a kind of intellectual property protection.

### The importance of GI tags

- Authenticity: GI tags guarantee that the well-known product name may only be used by registered, authorized consumers.
- Preserving Tradition: They acknowledge the product's historical origins and safeguard traditional production techniques.
- Encouraging Local Artists: GI tags encourage cultural heritage and assist local craftspeople.

### Governance of GI Tags in India:

- In India, GI tags are governed under the Geographical Indications of Goods (Registration and Protection) Act, 1999.
- India enacted this Act in order to comply with its responsibilities under the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) as a World Trade Organization (WTO) member.
- These tags are issued by the Geographical Indication Registry, which is part of the Ministry of Commerce and Industry's Department of Industry Promotion and Internal Trade.
- The tea from Darjeeling is unique in that it was the first commodity in India to be designated as a Geographical Indication (GI).

## 3.5 Central Emergency Response Fund (CERF)

From the Central Emergency Response Fund (CERF), the UN has allotted US\$100 million to assist underfunded humanitarian crises in seven Middle Eastern, American, and African nations.

### About:

- It was created by the UN General Assembly in 2005 to help vulnerable populations in times of humanitarian crisis quickly and with life-saving supplies. Resources for underfunded emergencies are released twice a year by the CERF, which is overseen by the Emergency Relief Coordinator on behalf of the UN Secretary-General. It tackles vital financing shortages made worse by an increase in international wars, climate-related disasters, and the occurrence of multiple crises. Every year, contributions from foundations, the commercial sector, governments, and individuals replenish the fund. The allocations made by CERF are split into:
  - Quick Reactions: offering emergency assistance in times of urgent emergency
  - Underfunded Emergencies provide assistance to nations dealing with protracted humanitarian crises.

## 3.6 Centre for Fourth Industrial Revolution (C4IR)

- The Center for Fourth Industrial Revolution (C4IR) of the World Economic Forum was officially opened during Hyderabad's BioAsia 2024.
- Goals: It wants to help up-and-coming businesses, provide original ideas, and create 10,000 new jobs in the health technology sector.
- Informatics, healthcare analytics, and real-world evidence are among the focal areas.
- There are ongoing projects such as a data analytics lab, innovation sandbox, and clinical registry.
- The center uses skill-building programs to cultivate talent that is ready for the industry.

### C4IR: What is it?

- The Center for Fourth Industrial Revolution is known by its acronym, C4IR. The establishment of centers dedicated to maximizing the potential of Fourth Industrial Revolution (4IR) technologies and fostering cooperation between industry, government, and academia to solve global opportunities and challenges is an initiative of the World Economic Forum (WEF).

### 3.7 RBI REGULATORY SAND BOX SCHEME

- The Regulatory Sandbox (RS) scheme's guidelines were updated by the Reserve Bank of India.

#### Context:

- Sandbox entities must guarantee compliance with the terms of the Digital Personal Data Protection Act, 2023, according to the updated framework.

#### About Regulatory Sandbox (RS) scheme :

- The Reserve Bank of India (RBI) launched the Regulatory Sandbox (RS) program.
- It entails the live testing of novel financial services or products in a regulated setting under observation, with possible regulatory exceptions made for testing.
- It enables the testing of new financial technologies by regulators, innovators, financial service providers, and consumers, gathering data on advantages and disadvantages.
- The Regulatory Sandbox (RS) aims to increase efficiency, benefit consumers, and encourage responsible innovation in the financial services industry.
- Participants in the RS may include startups, banks, financial institutions, fintech companies, and other organizations that collaborate or assist financial services enterprises.
- The RS period was most recently extended by the RBI from seven to nine months.
- RS plan Participants are required to make sure that the Digital Personal Data Protection Act, 2023, is followed.

### 3.8 T+0 SETTLEMENT

- SEBI just approved the T+0 settlement's beta version rollout, which will begin on March 28.

#### Context:

- The Indian stock markets currently use a T+1 settlement cycle. The action was taken to improve market liquidity.

#### About T+0 SETTLEMENT

- The practice of settling deals on the day they are performed, known as a T+0 settlement, does away with the customary waiting period that comes with T+1, T+2, or T+3 settlements.
- It's similar to getting something right away after buying it online.
- Instead of the present T+1 method, when trades are resolved on the following trading day, investors selling their stocks will receive money on the same day of the sale under this new settlement cycle.
- In 2002, SEBI reduced the settlement cycle from T+5 to T+3, and in 2003, to T+2. In 2021, T+1 was introduced, and it was deployed gradually, with the last phase being finished in January 2023.
- The introduction of T+0 is intended to improve market liquidity and offer a substitute for the current T+1 settlement cycle.
- After three and six months from the implementation date, the Board will assess the work and take shareholder input into account.

### 3.9 National Payments Corporation of India (NPCI)

- One97 Communications Ltd. (OCL) has been granted permission by the National Payments Corporation of India (NPCI) to participate in the Unified Payments Interface (UPI) as a Third-Party Application Provider (TPAP) under the multi-bank paradigm. According to the NPCI, OCL, the parent company of Paytm, would use four banks as PSPs (Payment System Providers): Axis Bank, HDFC Bank, State Bank of India, and YES Bank.



**Context:**

- The UPI platform's owner and operator, NPCI, was instructed by the RBI last month to take OCL's request to become a TPAP under consideration.
- An organization that offers end-user clients UPI-compliant app(s) to enable UPI-based payment transactions is known as a third-party application provider. These apps could be merchant apps, mobile wallets, or any other platform that accepts payments via UPI.

**About National Payments Corporation of India (NPCI)**

- The overarching organization in charge of running India's retail payment and settlement systems is the National Payments Corporation of India (NPCI).
- Under the terms of the Payment and Settlement Systems Act of 2007, it was introduced in 2008 by the Indian Banks' Association (IBA) and the Reserve Bank of India (RBI).
- Under the terms of Section 25 of the Companies Act 1956 (now Section 8 of the Companies Act 2013), it was incorporated as a "Not for Profit" company.
- The Punjab National Bank, Canara Bank, Bank of Baroda, Union Bank of India, Bank of India, ICICI Bank Limited, HDFC Bank Limited, Citibank N. A., and HSBC are the ten primary promoter banks.
- In 2016, the 56 member banks' shareholding was expanded to include more banks from all industry sectors. 2020 saw the introduction of new companies under RBI regulation, including payment banks, small finance banks, and payment service operators.
- The Unified Payments Interface (UPI), Immediate Payment Service (IMPS), National Electronic Funds Transfer (NEFT), Real-Time Gross Settlement (RTGS), Bharat Bill Payment System (BBPS), Aadhaar Enabled Payment System (AePS), National Automated Clearing House (NACH), and RuPay, India's own card payment network, are just a few of the payment solutions and services that NPCI provides.
- One of NPCI's most important projects is the Unified Payments Interface (UPI).

**MAINS****3.10 Income and Wealth Inequality**

- According to a research published by World Inequality Lab, in 2022, the top 0.1 percent in India received about 10 percent of the country's revenue, while the top 0.01 percent got 4.3 percent and the top 0.001 percent earned 2.1 percent.

**Context:**

- The study, which was co-authored by economists Nitin Kumar Bharti, Lucas Chancel, Thomas Piketty, and Anmol Somanchi, claimed that the British Raj, which was led by colonialist forces, was less unequal than the "Billionaire Raj," which is led by "India's modern bourgeoisie."

**Key findings of the report:**

- Following independence, inequality decreased until the early 1980s, at which point it started to rise and has been at an all-time high since the early 2000s.
- In terms of wealth concentration, the increase in top-end inequality has been most noticeable between 2014–15 and 2022–2023.
- By 2022–2023 India's top 1 percent income share is among the highest in the world, surpassing that of South Africa, Brazil, and the United States. The top 1 percent wealth and income shares are at their highest historical levels, at 22.6 percent and 40.1%, respectively.
- Even in the top 1%, wealth is extremely concentrated. In 2022–2023 the wealthiest 1 percent shared 39.5 percent of the total, the top 0.1 percent shared 29 percentage points, the top 0.01 percent shared 22 percentage points, and the top 0.001 percent shared 16 percentage points.
- Beginning in 1991, there was a notable increase in the top 10% of shares, although the bottom 50% and middle 40% of shares decreased at the same time. After remaining unchanged at 11% between 1961 and 1981, the bottom 50% of shares dropped to 8.8% in 1991 and then to 6.9% by 2002.

- Following that, they showed no indications of recovery and continued to remain between 6 and 7 percent for the next 20 years.
- In 1961, the shares of the top 1% and bottom 50% were the same; however, by 2022–2023, the top 1% had increased by more than five times.
- When considering the Indian income tax system through the prism of net wealth, the paper uncovers evidence that suggests it may be regressive.
- To enable the typical Indian, and not just the elites, to effectively benefit from the ongoing wave of globalization, massive public investments in health, education, and nutrition, as well as a restructure of the tax code to account for both income and wealth, are required.

### 3.11 Digitization of Agriculture

- There is a lot of promise for digitizing agriculture to address many of its fundamental issues.

#### Context:

- The G20 Delhi declaration pledged to support farmers and an ecosystem of MSMEs and Agri-Tech start-ups in using digital technologies in an ethical, sustainable, and inclusive manner.

#### About Agriculture's Digitization:

- Digitization of Agriculture is the process of incorporating state-of-the-art digital technology such as artificial intelligence (AI), robotics, unmanned aerial systems, sensors, and communication networks into the agricultural production system.

#### Significance of Digitization of Agriculture:

- It aids in the timely optimization of input resources such as water, pesticides, fertilizers, etc. For example, using AI to agriculture data.
- Because less labor hours and personnel are needed, it improves operational efficiency and lowers farming's production costs. SMAM stands for Sub Mission on Agricultural Mechanization.
- Eliminating middlemen allows for the proper price for the produce to be achieved, enhancing profitability. For example, e-NAM.
- It helps farmers make scientific decisions, which lessens the stress of crop failure or loss, low yield, pest assault, etc.
- Better agriculture governance is achieved by utilizing national agricultural data for the benefit of both farmers and citizens. NeGP-A stands for National e-Governance Plan in Agriculture.
- By encouraging female-centric inventions that allow women to participate in agricultural activities on par with men, it closes the gender gap. Example: Mobile App PM-KISAN.

#### Issues/Challenges in the Digitization of Agriculture in India:

- Farmers who lack digital literacy are reluctant to experiment with new agricultural technologies. The trust in digital modes has been impacted by the recent rise in mobile-device-based digital fraud cases.
- Lack of knowledge about the government's programs and subsidies for using digital technology.
- A small or marginal farmer finds it challenging to obtain them at first due to the large capital requirements.
- The issue of fragmented landholdings poses a significant challenge to digitization since it hinders technology's ability to scale. The average size of operating holdings declined from 2.28 hectares in 1970–71 to 1.08 hectares in 2015–16, according to the most recent Agriculture Census.
- Fear of losing one's job since automation would need less laborers to complete the task.
- Lack of infrastructure in rural locations, such as internet, electricity, and machine repair facilities.
- The products that are currently on the market have limitations such as a user-friendly interface, insufficient farm and farmer-level datasets, and a lack of material in regional languages.

### 3.12 WTO's 13th Ministerial Conference: A Path Forward for Global Trade

- 166 member nations participated in the World Trade Organization's (WTO) 13th Ministerial Conference (MC13), which took place in Abu Dhabi, United Arab Emirates, from February 26 to March 2.
- The ministerial declaration that outlined a reform agenda to strengthen the WTO's role in regulating global trade and promoting smooth cross-border commerce was adopted at the end of the meeting.

#### Key Decisions at MC13

- Dispute Settlement System: By 2024, member nations want to have a fully operational dispute settlement system in place.
- Special and Differential Treatment (S&DT): The focus was on maximizing the application of S&DT provisions in order to assist developing and least developed nations' (LDCs') development goals.

#### Challenges to Multilateral Trading Order

- Growing Protectionism: Developed economies have demonstrated a tendency toward protectionist policies in response to mounting domestic pressures, upending the dominant globalized trade paradigm.

#### Supply Chain Disruptions:

- Global supply chains have been hampered by ongoing conflicts and sanctions, thus it is necessary to reevaluate trade norms to assure their resilience and effectiveness.
- Development Disparities: There are still issues with how countries should be treated fairly, and efforts are being made to lessen the differences between wealthier countries and least developed countries.

#### India's Approach

- India argued in favor of a resolution pertaining to the Public Stockholding (PSH) program, which is essential to guaranteeing food security. Millions of participants can receive subsidized food grains through the program's procurement and distribution.
- Fisheries Subsidies: India put up regulations to control fisheries subsidies, promoting the provision of aid to underprivileged fishermen in national seas and the reduction of subsidies for commercial fishing in international waters.
- E-commerce Customs taxes: Citing the need to protect revenue collection in the context of digital trade, India pushed for the lifting of the moratorium on customs taxes for cross-border e-commerce.

#### Outcomes

- Agriculture: After decades of talks, MC13 saw the creation of a document addressing agricultural issues, which was a major turning point.
- Fisheries: There has been progress toward agreement on laws pertaining to fisheries, and completion is anticipated by the middle of the year.
- E-commerce Duties: Several emerging economies were disappointed when the exemption from customs duties for e-commerce transactions was only extended for an extra two years, despite efforts.

### 3.13 India-EFTA Trade Pact: A Game-Changer in Economic Cooperation

#### Power of four

India's gains from the proposed FTA with the 4-nation EFTA will mostly flow from the \$100-bn investment promised by the bloc

■ Goods exports may gain minimally due to insignificant existing tariffs, GTRI says

■ Tariffs in Switzerland, Iceland, Norway and Liechtenstein are already zero or very low



■ Low scope for raising market access for goods in EFTA could be a concern as India had a trade deficit of \$18.58 bn in CY23

- India and the European Free Trade Association (EFTA), which is made up of Iceland, Liechtenstein, Norway, and Switzerland, have signed a historic Free Trade Agreement (FTA).
- The agreement, which aims to bring in an incredible \$100 billion in investment over a 15-year period, is a major step toward diversifying imports and developing strong commercial relationships with important European countries.

### Why was this FTA revived?

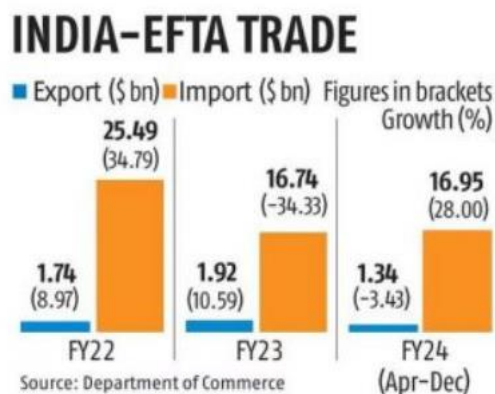
- Resumption of Talks: The trade agreement is finalized following a 16-year break during which negotiations were halted by disagreements between the parties.
- Strategic Realignment: Resuming talks and coming to an agreement were made possible in large part by changing geopolitical factors and shared objectives in lowering reliance on China.

### Key Decisions

- Investment Commitments: As a sign of their shared dedication to each other's prosperity and progress, EFTA nations have committed to investing \$100 billion in India with the goal of creating one million employment there in 15 years.
- Market Access: With provisions for tariff discounts and non-discriminatory treatment of service providers, the agreement guarantees improved market access for both commodities and services.
- Sectoral Focus: Due to their potential for expansion and cooperation, priority industries such as pharmaceuticals, chemicals, minerals, and services are given special consideration.

### Key Highlights of the Trade Pact

- Agreement Scope: To promote improved bilateral economic relations, the agreement includes tariff reductions for pharmaceuticals, chemical products, minerals, and other important industries.
- Binding Commitments: As part of the agreement, EFTA states are required to expand their foreign direct investment (FDI) into India by \$50 billion in the first ten years and an extra \$50 billion in the next five.
- Mechanisms for Investment Facilitation: The agreement specifies procedures to guarantee accountability and transparency while easing private sector investment flows into EFTA nations.
- Rebalancing Concessions: To ensure accountability and adherence to agreed-upon terms, provisions are in place to revoke tariff concessions if the anticipated investment commitments are not realized.
- Market Access Promises: With pledges by EFTA countries to guarantee nondiscrimination and market access, the agreement creates opportunities for Indian service providers, especially in the audio-visual services sector.
- Facilitation of Visas: To increase prospects for Indian service providers, EFTA nations have established visa categories for independent professionals and intra-corporate transferees.
- Tariff Reduction: Under the terms of the agreement, EFTA enterprises that export industrial items to India, such as chemicals, machinery, medicines, and watches, will no longer be subject to tariffs.



### Significance of the FTA's Timing

- Election-related Concerns: As many nations, including India, prepare for elections, there may be less time available to negotiate free trade agreements (FTAs). With supply chains moving away from China on a global scale, now is the time to seize the opportunity.

- **Geopolitical Opportunity:** Delays in promoting investment flows and global integration may cause India to lose out on geopolitical benefits as investors look to other locations.
- **Reducing Trade Deficits:** India aims to reduce trade deficits that are common with numerous trading partners, such as ASEAN countries. Previous free trade agreements (FTAs) allowed access to intermediate goods; nevertheless, India's comparatively high average tariffs hurt its position and gave FTA partners privileged market access.

### **Challenges in India-EFTA Trade**

- **Agreement Restricted Tariff Benefits:** The potential profits for Indian products exports, notably in the industrial and agricultural sectors, are limited by the zero or low tariffs now in place in EFTA nations.
- **Trade Deficit:** India's large trade deficit with the European Free Trade Association (EFTA)—which is mostly caused by imports of gold and other precious metals—raises questions about the unbalanced nature of trade relations.
- **Limitations on Market Access:** Trade expansion initiatives face difficulties because there is little room for expanding market access for Indian goods in the EFTA.
- **Competition from Other Nations:** Vietnam and Mexico, two nations that may compete with India's EFTA investment pledges, could have an effect on the country's capacity to draw in foreign capital.

### **Opportunities in India-EFTA Trade Agreement**

- **Investment Inflow:** Over a 15-year period, commitments totaling \$100 billion in investment present substantial economic potential, including the creation of jobs and sectoral expansion.
- **Development of the Services industry:** The agreement may strengthen India's services industry, increasing its competitiveness and promoting economic expansion.
- **Benefits to the Sector:** A rise in investment could lessen reliance on Chinese imports by helping important industries including engineering, pharma, chemicals, and food processing.
- **Joint Ventures:** Through joint ventures, collaboration in designated industries may promote talent development, product diversification, and technology transfer.

## **3.14 NUCFDC: Umbrella Body for Urban Co-op Banks established**

An important step forward in the growth of urban cooperative banking was taken with the official opening of the National Urban Cooperative Finance and Development Corporation Limited (NUCFDC) by the Union Home Minister and Minister of Cooperation.

### **About NUCFDC**

- **Regulatory permission:** The RBI has granted NUCFDC regulatory permission, enabling it to operate as an NBFC and function as the leading organization in the urban cooperative banking industry.
- **Furthermore,** NUCFDC has been designated as a Self-Regulatory Organization (SRO) for the industry, enabling it to supervise and control a range of urban cooperative banking activities.
- **Capital Enhancement:** In order to better support and strengthen Urban Cooperative Banks (UCBs), NUCFDC wants to increase the amount of capital it has on hand. Its goal is to reach a capitalization level of Rs. 300 crores.

### **Functions of NUCFDC**

- **Use of Funds:** The organization plans to use its capital resources to support UCBs' financial capacities, including the creation of a shared technology infrastructure that will improve service delivery and cut expenses.
- **All-inclusive Support:** In addition to giving money and financial liquidity, NUCFDC will set up a cooperative technological platform that will be available to all UCBs, allowing them to grow their service offerings profitably and efficiently.
- **Advisory Services:** In order to help UCBs with matters like fund management, regulatory compliance, and strategic planning, NUCFDC will also provide advisory and consultancy services to them.

## About Urban Cooperative Banks (UCBs)

- Origins: Cooperative credit societies, which provide financial services to members of particular community groups, are the source of UCBs.
- Regulations: To maintain financial stability, UCBs are subject to strict prudential regulations and guidelines that are enforced by the RBI under the Banking Regulation Act of 1949.
- Operational Classification: Based on their geographic reach, UCBs are divided into urban and rural cooperative banks. The RBI, Central Registrar of Cooperative Societies (CRCS), and State Registrars of Cooperative Societies (RCS) oversee their operations.
- Historical Development: The origins of UCBs can be traced to the founding of the first Cooperative Credit Society of Haryana in 1904, and they have undergone institutional and legal changes throughout the years.

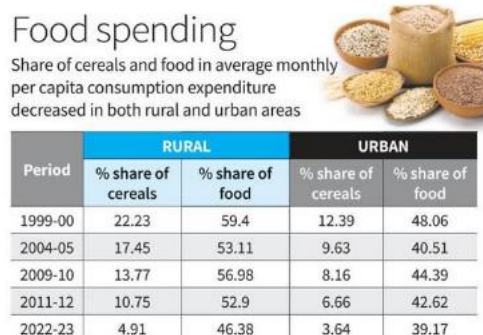
## UCB Reform

- The Narasimham Committee Report (1998) recommends more regulatory actions to improve UCBs' capitalization, governance, and operational effectiveness.
- Committee on Structural Recommendations (2021): A committee that the RBI created in 2021 suggested creating a four-tier structure for UCBs in order to optimize their operations and provide efficient regulatory supervision according to deposit size tiers:
- Tier 1 includes all UCBs for units and salary earners (regardless of deposit amount), and all other UCBs with deposits up to Rs 100 crore.
- Tier 3: UCBs of deposits between Rs 1,000 crore and Rs 10,000 crore; Tier 4: UCBs of deposits above Rs 10,000 crore; Tier 2: UCBs of deposits between Rs 100 crore and Rs 1,000 crore.

## Challenges UCBs Face

- Money Constraints: Because of legislative limitations on dividend payments and a lack of external funding sources, UCBs have trouble raising money.
- Diversification Obstacles: The financial stability and growth potential of UCBs are jeopardized by their lack of operational diversification and reliance on member contributions for capital infusion.
- Funding Alternatives: UCBs continue to have limited access to other funding sources, which calls for creative solutions to meet their liquidity needs.
- Dynamics of Profit Distribution: UCBs' muted profit distribution incentives affect their appeal to investors and impede their growth trajectory.
- Solvency Pressures: UCBs' solvency and liquidity positions may be strained by expansion plans and acquisitions, which calls for careful risk management procedures and strategic planning.

## 3.15 All India Household Consumption Expenditure Survey



- The general results of the All India Household Consumption Expenditure Survey, which was carried out between August 2022 and July 2023, were recently released by the government.

## About All India Household Consumption Expenditure Survey (CES):

- The National Statistical Office (NSO) conducts the quinquennial (every five years) CES survey.
- Its purpose is to gather data on the consumption spending habits of rural and urban households nationwide.

- This exercise's data collection shows the average amount spent on products (food and non-food) and services.
- Together with the distribution of homes and individuals throughout the MPCE classes, it aids in the estimation of household Monthly Per Capita Consumer Expenditure (MPCE).

#### Key findings:

- An rise of 33.5% to ₹3,510 was observed in monthly per capita consumption expenditure in the urban area.
- Rural: Showed a 40.42% increase to ₹2,008 between 2011 and 2012.

#### Changes in Spending Habits:

- Food Spending: reduced over 2011–12, going from 52.9% to 46.4% in rural families and from 42.6% to 39.2% in urban households.
- Consequences: Because food prices have less weight in retail inflation estimates, there may be an effect.
- Social Welfare Benefits Inclusion: Items obtained through programs such as PM Garib Kalyan Ann Yojana are calculated separately.
- Computers, cellphones, bicycles, and clothes are among the items included.
- Adjusted Monthly Per Capita Expenditure (without free healthcare and education services): ₹3,544 for urban areas and ₹2,054 for rural areas.
- Socioeconomic Inequalities: Lower 5 percent: Urban: ₹2,001; Rural: ₹1,373.
- Top 5%: Urban: ₹20,824; Rural: ₹10,501.

#### State-by-state analysis

- Highest MPCE: ₹7,731 in rural Sikkim; ₹12,105 in urban Sikkim.
- Chhattisgarh: Urban: ₹4,483; Rural: ₹2,466 is the lowest MPCE.

#### Major Shifts Includes:

**Expert view**  
Niti Aayog CEO presents his take on consumption trends



■ Inequality between rural and urban India declining; Gini coefficient will drop too

■ Rural economy is not weak; growth is broad-based, not 'limited to a few'

■ Share of food spending down sharply; retail inflation may be overstated

■ Suggests lower weightage for food in the Consumer Price Index

■ Expects an impact on GDP growth calculations for the economy

**B.V.R. Subrahmanyam**

- Widespread Development: Rural-Urban Interactions The CEO of Niti Aayog, B.V.R. Subrahmanyam, emphasizes that India's growth narrative is "broad-based," with rural incomes and spending exceeding metropolitan levels.
- Narrowing Divide: From 91% in 2004–05 to 71% in 2022–23, the urban–rural consumption gap shows a declining level of inequality.

#### Changes in Patterns of Consumption:

- Food Spending: For the first time, the amount that rural households spend on food has dropped below 50% of their overall spending. Spending on consumer durables and services has increased, but spending on essentials like cereals and pulses has decreased.
- Income Growth: Increasing spending on appliances like TVs, refrigerators, and cell phones points to higher earnings and changing lifestyles.

### Changing Poverty Metrics:

- Estimates of Poverty: Mr. Subrahmanyam states that poverty levels are expected to be less than 5% based on MPCE norms. Unofficial estimates show that poverty has decreased, almost completely eliminated as a result of various assistance programs.
- Inclusive Growth: Ayushman Bharat and free public education are two government programs that have helped millions escape poverty and demonstrate a multifaceted approach to reducing poverty.

### 3.16 How to bring about White Revolution 2.0

- According to the government's most recent Household Consumption Expenditure Survey (HCES) for 2022–2023, milk is the food item that Indians spend the most money on, both in rural and urban areas.

#### Key facts as per survey-

- At Rs 314 a month, the average rural Indian person's consumption of milk and dairy products was higher than that of vegetables (Rs 203), cereals (Rs 185), eggs, fish, and meat (Rs 185), fruits (Rs 140), edible oil (Rs 136), spices (Rs 113), and pulses (Rs 76).
- The HCES data for urban India shows the following: edible oil (Rs 153), spices (Rs 138), milk (Rs 466), fruits (Rs 246), vegetables (Rs 245), grains (Rs 235), eggs, fish & meat (Rs 231), and pulses (Rs 90).

#### The challenges as per the latest Household Consumption Expenditure Survey (HCES)-

- Growing Milk Prices: The all-India modal price of milk has increased from Rs 42 to Rs 60 per litre during the last five years, with a significant increase from Rs 52 to Rs 60 in just the last year. The rising trend in milk costs is a financial problem for households.
- Inflationary pressures: These forces are thought to have affected consumer demand, which is why milk prices have increased. Increased costs could cause consumers to cut back on their use or switch to other goods, which would hurt the dairy industry's earnings.
- Increasing Input Costs: Feed, fodder, and raw materials/ingredients have become much more expensive. In order to offset these higher input costs, dairy companies are forced to boost the procurement prices they pay to farmers. Because milk and dairy products are now more expensive at retail, consumers are ultimately the ones who foot the bill for these cost increases.
- Transfer to Customers: Dairies pass on higher procurement prices to customers in an effort to offset the impact of growing input costs, which results in further price increases for milk products. This pass-through method makes things more expensive for customers who are already struggling with rising costs.
- Effect on Agriculture: Farmers may initially profit from higher procurement prices, but if input costs keep rising, they may find it difficult to maintain their dairy farming businesses.

#### How can that be achieved?

- Utilizing technology for Sex-Sorted Semen (SS): The likelihood of female calves being produced is increased to over 90% when sex-sorted semen is used, as opposed to the 50:50 ratio when conventional semen is used. By guaranteeing a larger percentage of milk-producing cows in the future, this method raises dairy herd production.
- Increased Adoption: Farmers are being aggressively encouraged to utilize sex-sorted semen by dairy cooperatives such as Amul. Amul carried out 2.86 lakh artificial inseminations (AIs) utilizing sex-sorted semen in 2022–2023; this accounted for 20.5% of the total 13.91 lakh AIs performed. By 2024–2025, the cooperative wants to increase this share to 30%.
- Enhanced Conception Rate: About one-third of artificial inseminations with semen that has been sorted according to sex result in pregnancy. This high incidence of conception, along with the certainty of female calves, makes breeding more effective and produces a greater number of milk-producing cows.
- Long-term Impact: Dairy farmers can expect a larger output of milk-producing cows in subsequent generations by boosting the amount of female calves delivered through sex-sorted semen technology. By increasing the efficiency of milk production, this proactive strategy guarantees the dairy industry's growth and sustainability.



- **Cooperative Initiatives:** Farmers' adoption of cutting-edge breeding technology is greatly aided by dairy cooperatives. Cooperatives help to improve the genetic potential of dairy herds and increase total productivity through programs like Amul's targeted usage of sex-sorted semen.

#### **Taking to farmer/ significance of Breeding Centre-**

- **Creation of a Bovine Breeding Center:** In March 2020, Amul opened a Bovine Breeding Center in Mogar, Gujarat, with the goal of producing a superior nucleus herd of bulls and cows for the use of embryo transfer (ET) and artificial insemination (AI) technology.
- **The center's main goal** is to generate superior semen and in vitro-fertilized embryos that are kept at extremely low temperatures for use in artificial intelligence (AI) or to be injected into farm animals.
- **Breeds and Milk Yield:** The center has generated a range of breeds, with differing capacity for milk yield ranging from 3,000 to 12,000 liters per year. These include exotic breeds (such as Holstein-Friesian and Jersey), as well as crossbred HF-Gir and HF-Sahiwal.
- **Use of Male and Female Genetics:** The center makes use of sex-sorted semen and AI to capitalize on male genetics, while IVF-ET technology is mostly used to take use of donor cows' female genetics.
- **Farmers' Adoption:** Amul has made IVF-ET technology available to farmers, and the company has documented successful pregnancies and calvings. The Gujarat Co-operative Milk Marketing Federation's member unions have welcomed these developments as well, and farmers such as Bhavnaben Chaudhary have benefited from improved milk outputs and financial gains due to the use of superior breeds obtained through IVF-ET.
- **Favoritism for Particular Breeds:** Despite lower yields, farmers such as Bhavnaben Chaudhary favour breeds like Kankrej due to their higher fat and solids-not-fat content, which guarantees better pricing and reduced expenses for feeding and upkeep.

#### **Animal nutrition/ lowering the cost of producing milk at the farm-gate**

- **Reduction of Feeding Expenses:** High-yielding, high-protein green fodder grasses must be cultivated in order to minimize animal feeding expenses. As a result, there is less need for costly compound cow feed and concentrates made of oil meal. Reducing the cost of milk production at the farm gate would undoubtedly have to be the main goal of White Revolution 2.0.
- **Total Mixed Ration (TMR) Plant Introduction:** At Sarsa in Anand, Amul is building a 30-tonne-per-day TMR factory. TMR will give animals ready-to-eat mashed nourishment in the form of concentrates, green and dry feed, vitamins, and mineral mixes.
- **Advantages of TMR:** Farmers will save money by not having to buy, store, or handle the labor-intensive task of mixing forage with cattle feed. It provides an easy-to-use and economical way to feed animals.
- **Obtaining Fodder:** According to the proposal, fodder will be obtained via farmer producer organizations (FPOs), whose members will grow silage for the TMR plant and cultivate oat grass, hybrid napier, maize, or jowar.
- **Focus on High-Yielding Grasses:** In order to preserve the wellbeing and output of dairy cattle, farmers will concentrate on growing high-yielding grass species that are high in protein.

### **3.17 RBI finalises Omnibus Framework for SROs in regulated entities**

- On Thursday, the Reserve Bank of India (RBI) announced that the Omnibus Framework for its Regulated Entities' recognition of Self-Regulatory Organizations (SRO) had been finalized.

#### **The key features of the Self-Regulatory Organization (SRO)-**

- **Omnibus Framework:** To recognize Self-Regulatory Organizations (SROs) for regulated entities, the RBI has completed the omnibus framework. This framework includes general guidelines including goals, roles, qualifications, rules of governance, application procedure, and other prerequisites for recognition.
- **Guidelines Particular to a Sector:** For every industry in which an SRO is to be established, sector-specific recommendations will be released independently by the Reserve Bank's corresponding departments. This guarantees that the SROs meet the particular demands and specifications of their corresponding industries.

- **Draft Framework and Public Consultation:** Following a public comment period on a draft framework for SROs, the omnibus framework was finalized after considering the feedback received. This suggests that the SRO structure was developed through consultation.
- **Credibility and Responsibilities:** Under the regulator's supervision, SROs are supposed to conduct themselves with impartiality, credibility, and responsibility. In order to support the wholesome and long-term growth of the industries they serve, they seek to enhance regulatory compliance.
- **Transparency and Independence:** To increase public trust in the industry's integrity, SROs are expected to conduct their business with independence, professionalism, and transparency. Adherence to the highest governance standards is a need for a successful SRO.

#### **The significance of Self-Regulatory Organizations (SROs)-**

- **Improved Regulatory Compliance:** By establishing and upholding industry best practices and standards, SROs help their member organizations comply with regulations more effectively. SROs assist regulated entities in maintaining compliance with pertinent laws and regulations by establishing clear rules and overseeing adherence to them.
- **sector Integrity and Public Confidence:** SROs are essential to preserving and strengthening public confidence in the sector. SROs aid in the development of trust among stakeholders, such as clients, investors, and regulatory bodies, by encouraging openness, professionalism, and moral behavior.
- **Tailored Regulation:** SROs are able to create industry-specific rules and guidelines that are adapted to the particular demands and features of their respective fields. Because of their versatility, SROs are able to efficiently address difficulties unique to each industry, which results in more efficient regulation.
- **Effective Self-Regulation:** By working together to create and implement norms and regulations, SROs empower industry players to engage in self-regulation. Traditional government regulation may not always be as responsive or flexible as this strategy since SROs are able to react swiftly to new threats and changes in the market.
- **Decreased Regulatory Burden:** By assuming some regulatory responsibilities, SROs can assist in reducing the regulatory load on government agencies. Regulators can concentrate their efforts on supervising wider market activity and managing systemic risks by assigning SROs duties including rule-making, monitoring, and enforcement.
- **Innovation and Growth:** By establishing a favorable regulatory environment, SROs can promote innovation and growth within their respective industries. SROs can promote innovation while making sure it complies with legal requirements and consumer protection standards by offering advice on cutting-edge technologies and business models.

### **3.18 RBI updates the Framework related to Regulatory Sandbox scheme**

The RBI recently announced major revisions to the rules pertaining to the Regulatory Sandbox (RS) plan.

#### **What is the Regulatory Sandbox (RS) scheme?**

- Under the Regulatory Sandbox (RS) program, new financial services or products are tested in real time in a regulated setting with possible regulatory relaxations for testing.
- It enables the testing of new financial technologies by regulators, innovators, financial service providers, and consumers, gathering data on advantages and disadvantages.
- It makes it easier to create policies that are conducive to innovation, which makes it possible to provide affordable financial products.
- It permits Regulatory Environments that are Dynamic and Adjustable to New Technologies.

#### **What is the objective behind this decision of RBI?**

- By making this decision, RBI hopes to guarantee adherence to regulations governing the security of digital personal data and promote responsible innovation in financial services.
- With the adoption of this new framework, on-tap suggestions will be possible. The previous structure involved RBI presenting difficulties to a group of technology firms and asking them to come up with answers within a given amount of time.

- Second, by making this choice, the RBI has demonstrated its continued commitment to fostering technological advancement and innovation in the financial industry.
- For instance, the Paytm Payments Bank recently hindered innovation because it disregarded RBI regulations.

#### **Key Highlights of the RBI's Updated guidelines on Regulatory Sandbox scheme:**

- **Framework Alignment with Digital Personal Data Protection Act:** Sandbox entities must guarantee compliance with the terms of the Digital Personal Data Protection Act, 2023, according to the amended framework.
- **Wide Variety of Target candidates:** Fintech companies, including startups, banks, financial institutions, any other business, Limited Liability Partnerships (LLPs), and partnership entities that collaborate with or support financial services companies, are the target candidates for entry into the RS.
- **Compliance with Digital Personal Data Protection Norms:** In accordance with the revised standards, participating entities must follow the rules for digital personal data protection.
- **The Regulatory Sandbox Framework's beginnings:** In August 2019, the RBI released the "Enabling Framework for Regulatory Sandbox" following extensive stakeholder engagements.

#### **What is the Significance of Regulatory Sandbox?**

- **Learning by doing:** RS gives regulators concrete data about the advantages and dangers of developing technology, empowering them to make well-informed judgments.
- **Testing viability:** RS makes it possible to evaluate a product's viability without launching it widely, allowing for changes prior to a wider market launch.
- **Financial inclusion:** RS can accelerate technological adoption and innovation, which will increase financial reach and inclusion.
- **Evidence-based decision-making:** RS lessens the need for regulatory decision-making to rely on industry consultations.
- **Better results for customers:** RS results in a wider selection of products, lower prices, and easier access to financial services.

#### **What are the challenges along with Regulatory Sandbox scheme?**

- **Time and flexibility:** Time-bound phases might help innovators overcome limitations they may encounter during the sandbox process.
- **Customized permissions:** The hazards connected with making subjective decisions can be mitigated by transparent application processing and well-defined decision-making guidelines.
- **Legal waivers:** No legal waivers are offered by the RBI or its RS.
- **Regulatory clearances:** In order to be widely applied, successful sandbox experiments may still need regulatory approvals.
- **Legal concerns:** By guaranteeing clarity on culpability for risks, transparency and unambiguous criteria in the RS framework helps mitigate legal issues like as consumer damages.

### 3.19 Analysis of Centre's Capital Expenditure and Fiscal Deficit

#### Spending squeeze

Govt. shrinks January capital expenditure by a sharp 40.5% to ₹47,600 crore containing 10-month fiscal deficit at 64% of RE

- Overall fiscal deficit stood at ₹11 lakh crore by January
- Full-year capex likely to undershoot by at least ₹50,000 crore: ICRA's Nayar
- Less than 70% of planned expenditure met at agriculture, consumer affairs ministries: BoB's Sabnavis



- Decline in Capital Expenditure: The Center's capital expenditures for January amounted to ₹47,600 crore, a substantial 40.5% decrease from ₹80,000 crore the year before.
- Expanding Fiscal Deficit: As of the end of January, the fiscal deficit had risen to 64% of the updated projections for 2023–2024. The administration appears on track to fulfill the revised deficit target of 5.8% of GDP for the year, notwithstanding obstacles in spending.

#### Fiscal Deficit: What Is It?

- The difference between total Consolidated Fund of India disbursements and total receipts—exclusive of debt repayment—during a fiscal year is known as the fiscal deficit.
- Method: Total government spending (capital and revenue spending) minus total government income (revenue receipts plus loan recovery plus other receipts) equals the fiscal deficit.

#### Reasons behind Fiscal Deficit

##### Decline in Income

- Reduced tax collection: Problems with the implementation of the GST, tax evasion, and economic stagnation.
- Effects of the pandemic-related closure of economic sectors: closure of businesses, which results in a drop in tax income.
- The government's unmet goals for disinvestment: Lower capital receipts as a result of disinvestment targets not being met.

##### Rise in Expenditure

- Factors contributing to high inflation: High rates of inflation raise the cost of borrowing and imports.
- The value of investing in social infrastructure a focus on social infrastructure to promote employment and inclusive growth.
- Volatilities in the external markets that impact Indian spending: India's reliance on imports exposes it to changes in the outside market.
- Subsidies and other ineffective spending: These necessary but ineffective spending increases the strain on the budget.

##### Rise in Borrowings

- Market borrowing is required to implement policy: borrowing to fund policy initiatives like UDAY, agriculture loan exemptions, and bank recapitalization.

#### The Effects of the Fiscal Deficit

- A vicious cycle of borrowing and repaying debts: Repaying loans continuously puts borrowers in debt.
- Inflation is the result of increased borrowing, which raises interest rates.

- Decreased private sector borrowing: When the government borrows, the private sector has fewer options to borrow.
- Private investment is discouraged by inflation and a lack of funding, among other factors.
- Credit rating downgrade risk: High borrowing makes a credit rating downgrade more likely.
- Boundaries Revenue Spending: Growing fiscal deficit has an impact on government benefits like dearness alleviation and allowance.
- Foreign Dependency: Borrowing more money from outside sources exposes oneself to more external fiscal policies and increases dependence.

#### **Measures for Control: FRBM Act, 2003**

- In order to promote long-term macroeconomic stability, the FRBM Act seeks to establish intergenerational equity in fiscal management as well as budgetary discipline.
- Goals: By March 31, 2009, keep the fiscal deficit at 3% of GDP or less.
- Eliminate the revenue shortfall entirely.
- By 2011, cut liabilities to half of GDP as projected.
- Forbid taking out direct loans from the RBI to pay down the deficit.
- Escape Clause: Under certain conditions, such as those relating to national security, disaster relief, agricultural collapse, or structural reforms, the Center may surpass yearly fiscal deficit targets under Section 4(2) of the Act.
- Evaluate Committee: To evaluate the FRBM Act, NK Singh formed a committee in May 2016. Targeting a budget deficit of 3% of GDP until March 31, 2020, then cutting it to 2.8% in 2020–21, and then to 2.5% by 2023, were among the recommendations.
- Current Goals: As of March 31, 2021, the FRBM Act's most recent clauses limit the fiscal deficit to 3% of GDP.
- Among other requirements, the debt of the central government must not surpass forty percent of GDP by 2024–2025.

## 4. SCIENCE AND TECHNOLOGY

### PRELIMS

#### 4.1 GLOBAL METHANE TRACKER 2024

- The Global Methane Tracker 2024 was just released by the International Energy Agency (IEA).

##### Context:

- The US and EU are leading the Global Methane Pledge, which seeks to reduce methane emissions by 30% by 2030.

##### About Global Methane Tracker

- The International Energy Agency (IEA) publishes the Global Methane Tracker every year.
- It offers the most up-to-date information on methane emissions from the energy industry, including data from satellite data collection, measurement projects, and fresh scientific studies.

##### Key Highlights of the 2024 Report:

- With 120 million tonnes (Mt) of methane emissions from gasoline use in 2023, it was almost the largest amount ever. This represents a marginal rise over 2022.
- Another 10 million tons of emissions were caused by bioenergy, a sustainable energy source produced from the waste of plants and animals.
- Just ten countries accounted for about 80 million tons of the 120 million tons of methane that was emitted into the sky.
- In terms of methane emissions from oil and gas operations, the United States was in the lead, closely followed by Russia.
- China was the leader in coal-related emissions.
- In order to meet the 1.5°C global warming target set forth in the Paris Agreement, a 75% reduction in methane emissions from fossil fuels must occur by 2030.
- According to the IEA's assessment, achieving this objective would cost roughly \$170 billion, or less than 5% of the money made by the fossil fuel sector in 2023.

##### About the International Energy Agency (IEA):

- Within the framework of the Organisation for Economic Co-operation and Development (OECD), the IEA is an independent intergovernmental organisation.
- It was developed in reaction to the 1973–1974 oil crisis, in which the vulnerability of industrialized nations to reliance on oil imports was revealed by an oil embargo imposed by major producers, driving prices to all-time highs.

#### 4.2 Rhodamine B

- Following investigation confirming the presence of Rhodamine-B, Tamil Nadu banned the sale of cotton candy and candy floss on February 17. Subsequently, the Karnataka government outlawed the use of hazardous coloring chemicals in Gobi Manchurian and cotton candy.

##### Context:

- Rhodamine B can lead to numerous health issues, including cancer, when consumed over an extended period of time, even in modest doses.

### About Rhodamine B:-

- A fluorescent dye called rhodamine-B is utilized in the leather, textile, and cosmetics sectors. You get vibrant blues, greens, and pinks from it.
- Regrettably, it is utilized as a food coloring agent not only for cotton candy but also for other confections, manchurian dishes, pakodas, and sauces for Chinese cuisine.
- In order to make colored delicacies like cotton candy appear more enticing and appealing to young people, rhodamine-B is sometimes added to them.
- Research has demonstrated that Rhodamine-B can result in cell death. It can harm the brainstem and cerebellum tissue when used repeatedly. Recent research indicates that it harms the liver and kidneys and raises the risk of stomach tumors. It is a carcinogen and hazardous to human health.
- Certain food flavors and colors have received approval from the FSSAI as safe to eat.

## 4.3 Vanadium

- Vanadium, a vital mineral, was found by Geological Survey of India (GSI) researchers in Gujarat's Gulf of Khambhat.

### Context:

- Vanadium is contained in over 55 different minerals, although it is rarely found in its pure form naturally, which makes manufacture expensive. It has been discovered in the Gulf of Khambhat in a mineral known as titanomagnetite, which is created when molten lava cools quickly.

### About Vanadium:

- It is a transition metal that has the atomic number 23 and the symbol "V" as its chemical symbol.
- With a rank of 22 in the upper continental crust, it is a plentiful element in the earth's crust.
- The Indian government has designated it as one of the 30 essential minerals.
- Though it can be found in roughly 65 distinct minerals, such as magnetite, vanadinite, carnotite, and patronite, it is an uncommon free element in nature.
- Spectroscopic analysis of the Sun's beams and the occasional star's light can reveal its presence.

### Vanadium Applications:

- It is a component of vanadium redox flow batteries, a kind of rechargeable battery that is employed in renewable energy systems for large-scale energy storage.
- It gives steel more strength, hardness, and heat resistance when employed as an alloying element in the manufacturing of steel. Cast iron gains 10–25% more strength when 0.15% vanadium is added.
- Its constituents are employed as catalysts in the synthesis of polymers, chemicals, and other materials.

## 4.4 Biosimilars

- An Indian pharmaceutical company is testing a biosimilar version of the medicine Pertuzumab, which was developed by the Swiss corporation Roche to treat breast cancer, in clinical trials.

### Context:

- The Indian company had to purchase Roche's products for their clinical investigations because comparator clinical trials must be carried out in relation to a "reference product," which is the product in this instance. Roche has raised concerns about how and where the Indian company obtained the "reference products" for its clinical trials. Roche is a company that presumably maintains a tight eye on the sales of its expensive pharmaceuticals, which are subject to strict storage regulations.

### About Biosimilars:-

- Biosimilars are comparable versions of the biologicals medication class.
- Among the ailments that biological medicines have opened up new avenues for treating are diabetes, autoimmune disorders, and cancer.

- Biologics, as their name implies, are products of the biological world, derived from human, plant, animal, bacterial, and other microorganism elements. They undergo a stringent, strictly regulated production process and are typically protected by patents.
- Highly complex molecules with an inherent degree of micro-variability, biologics are grown rather than produced. Biosimilars cannot be exact replicas of reference biologics due to this diversity in their structure. Biosimilars, on the other hand, imitate the reference biologic's active component.

### **Biosimilars vs. Generic Medications**

- Although generic and biosimilar drugs are frequently contrasted, there are some significant distinctions.
- The active ingredient in generic pharmaceuticals (those that aren't biologics) is an exact replica of the active ingredient in name-brand drugs, produced using a simple, repeatable manufacturing process.
- On the other hand, while biosimilars cannot be exact replicas of biologics due to their unpredictability, they do have the same projected advantages and hazards as well as the same mode of action.
- Like generics, biosimilars allow patients access to less expensive medications, which frequently increases treatment accessibility and enhances patient quality of life.

## **4.5 'FY' ALGAE**

'Fy' algae has been observed in Yellowstone National Park recently.

### **Context:**

- In the west of the country is the Yellowstone National Park. Founded on March 1, 1872, it is the first national park in the history of the planet.

### **About 'FY' ALGAE**

- Fy algae are made of fungi.
- It is a member of the flavolapis strain of Fusarium and is registered under the trademark "Fy."
- Scientist Mark Kozubal of NASA made the discovery in 2009.
- Since "Fy" algae is an extremophilic organism, it can survive in harsh environments with high temperatures and high acidity.
- Among its many amazing qualities is its capacity to decompose different materials and turn them into food.
- Its potential as a source of packaged proteins for space missions has been acknowledged by scientists.
- This high-protein microorganism might be used in protein powders, dairy alternatives, and plant-based burgers.
- You can cultivate 'Fy' algae by feeding it a basic solution of sugar, salts, and water. As the growth medium, regular metal catering trays are utilized.
- It is said that a tray of this algae contains 35 chickens' worth of protein.

## **4.6 OCEANSAT-3**

- The phytoplankton bloom that supports the marine ecology is revealed by ISRO's Oceansat-3.

### **Context:**

- From April to December 2023, the satellite image showed the seasonal browning and greening of continents together with the dynamic motions of oceanic chlorophyll blooms. The tiny, photosynthetic creatures known as phytoplankton comprise the base of the marine food chain. As primary producers, they are essential to the ecosystems of Earth because they use photosynthesis to transform sunlight into chemical energy.

### **About OCEANSAT-3**

- The Indian Space Research Organization (ISRO) launched Oceansat-3, also known as Earth Observing Satellite 6 (EOS-6), an amazing oceanographical Earth monitoring mission.



- The launch of Oceansat-3 took place on November 26, 2022.
- It is the third satellite in the Oceansat series and is a component of India's ocean observation program.
- The satellite is planned to stay in operation till 2027.

**Oceansat-3 has a number of sensors to monitor different factors.**

- The Ocean Colour Monitor (OCM-3) collects data on ocean colour and uses it to provide information on the dispersion of phytoplankton and other biological processes.
- Ku-band Scatterometer (SCAT-3): Offers worldwide surface wind speed and direction data at high resolution.
- Variations in sea surface temperature (SST) are measured by the Sea Surface Temperature Monitor (SSTM).

**Oceansat-3's data is crucial for:**

- Oceanography is the study of marine ecosystems, upwelling zones, and ocean currents.
- Climatology: Studying patterns and variations in the climate.
- meteorology: improving the forecasting of cyclones.
- Fisheries: Determining possible areas for fishing.

**Continuity and Enhancement:**

- The frequency of measurements is increased by Oceansat-3 working with Oceansat-2: Ocean color measurements are now accessible every 24 hours, while wind vector measurements are provided every 12 hours.

#### 4.7 INTERNATIONAL ASTRONOMICAL UNION (IAU)

- The Chandrayaan-3 landing site name, Shiva Shakti, has been accepted by the International Astronomical Union (IAU).

**Context:**

- According to the statement, the name's origin is a "compound word from Indian mythology that depicts masculine (Shiva) and feminine (Shakti) duality of nature; landing site of Vikram Lander in Chandrayaan-3."

**About International Astronomical Union (IAU)**

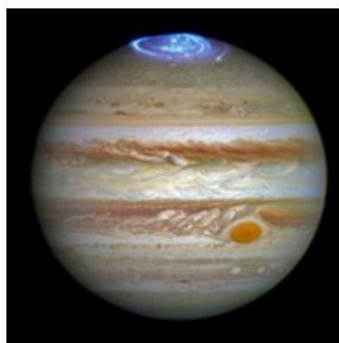
- The International Astronomical Union (IAU) is a prominent organization that oversees global professional astronomy operations.
- It was the first of many international associations for the promotion of particular scientific fields when it was founded in 1919.
- The IAU has its headquarters in Paris, France.
- Its goal is to use international cooperation to advance and defend astronomy science in all of its facets, including research, development, communication, and education.
- The IAU is composed of numerous commissions, working groups, and divisions that each represent a different aspect of astronomy education, research, and other endeavors.
- It is the only organization with professional recognition for astronomical body naming, and it only assigns names based on discoverer's privilege, merit, or historical significance.
- Every three years, the IAU has a general assembly when astronomers from all over the world gather to debate research, new collaborative projects, and other topics of importance to the profession.
- The IAU also strives to advance astronomy-related public outreach, education, and research.

#### 4.8 JUNO SPACECRAFT

- NASA has released a picture of Jupiter's Great Red Spot taken by the Juno satellite.

##### Context:

- Greater than the actual size of Earth, the Great Red Spot is a massive anticyclonic storm. Scientists have been observing it since the 17th century, and it remains an intriguing area of research. We now have unrivaled views of this famous feature thanks to Juno's trip to Jupiter, which has helped us solve more of its secrets.



- A spacecraft orbiting Jupiter is NASA's Juno mission.
- Lockheed Martin constructed it, and NASA's Jet Propulsion Laboratory runs it.
- As part of the New Frontiers program, the spacecraft was launched on August 5, 2011, from Cape Canaveral Air Force Station.
- On July 5, 2016, Juno arrived in Jupiter's polar orbit following a five-year, 1,740-million-mile voyage.
- Measuring Jupiter's composition, gravitational field, magnetic field, and polar magnetosphere is the goal of the probe.
- It also seeks to look for hints regarding the planet's formation, such as the presence of water in the deep atmosphere, the mass distribution, and the depths of its winds.
- In order to learn more about the gas giant Jupiter and the beginnings of our solar system, Juno is the first spacecraft to look beneath its thick clouds.
- The agency's most distant planetary orbiter is still doing research as it enters an extended mission phase.
- With this extension, Juno will be tasked with exploring the entire Jovian system, including Jupiter, its moons, and rings. Two of Jupiter's most interesting moons, Europa and Io, will also be the locations of future meetings.

#### 4.9 Nuclear waste

- India recently completed the long-delayed loading of the prototype fast breeder reactor (PFBR) vessel.

##### Context:

- A challenging issue arises with the widespread usage of nuclear power: waste management.

##### About Nuclear Waste:-

- Neutrons attack the nuclei of some elemental atoms in a fission reactor. One such nucleus destabilizes and fragments upon absorbing a neutron, producing several elemental nuclei as well as some energy.
- For instance, the nucleus of uranium-235 (U-235) can fission to produce barium-144, krypton-89, and three neutrons when it absorbs a neutron. The "debris" (barium-144 and krypton-89) are classified as nuclear waste if they are composed of components incapable of fission.
- Nuclear reactor fuel must finally be emptied since it becomes irradiated during loading. It is referred to as expended fuel at this point.

- The radioactive elements created when uranium is transformed into heavier elements after neutron absorption and subsequent radioactive decays, as well as all the radioactive fission products created when each nucleus splits apart to produce energy, are found in spent fuel.
- The biggest problem is handling the spent fuel, which must be kept submerged since it is radioactive and hot. It can be moved to dry barrels for longer-term storage when it has cooled.
- Every nation that has had a nuclear power program for a long time has a sizable stockpile of spent fuel. As of 2015, the United States possessed 69,682 tonnes, Canada 54,000 tonnes, and Russia 21,362 tonnes.
- They must be kept apart from humans for lengthier lengths of time than anatomically modern Homo sapiens have been on the earth, with storage periods of up to a few millennia depending on radiation levels.

#### **How is nuclear waste dealt with?**

- Spent fuel can be transferred to dry-cask storage, where it is housed inside sizable steel cylinders and encircled by an inert atmosphere after cooling in the spent-fuel pool for at least a year.
- The cylinders are put within bigger steel or concrete chambers after being sealed shut.
- An further method of handling spent fuel is reprocessing, which refers to the methods used to remove fissile from non-fissile particles in spent fuel. The material is chemically processed in this instance to separate the residual fissile material from the non-fissile material. Reprocessing facilities require expert people and protections because spent fuel poses such a risk. Although they are more expensive, these facilities provide the benefit of greater fuel economy.

### **4.10 REUSABLE LAUNCH VEHICLE PUSHPAK**

- Soon, ISRO intends to carry out the Reusable Launch Vehicle (RLV) Pushpak's second landing test.

#### **Context:**

- The goal of this continuing research and development is to lower the cost of space launches while advancing India's space exploration programs. The Reusable Launch Vehicle Autonomous Landing Mission (RLV LEX), carried out by ISRO in 2023, was a success.

#### **About REUSABLE LAUNCH VEHICLE PUSHPAK:**

- The Indian Space Research Organization (ISRO) has created a winged technology demonstrator called the Reusable Launch Vehicle (RLV) Pushpak.
- Its goal is to investigate and validate technologies that are necessary to develop a launch vehicle that is totally reusable.

#### **Background and Purpose:**

- A component of ISRO's endeavors to create a launch vehicle that is entirely reusable is the RLV Pushpak.
- Its main objective is to make space more affordable.
- By 2035, ISRO hopes to construct a space station, and RLV technology is essential to reaching this goal.

#### **Technological Advancements:**

- Pseudolite systems, local instrumentation, and sensor systems are used in accurate navigation.
- Accurate altitude data is provided via the Ka-band Radar Altimeter.
- Native Landing Gear: Engineered for rapid, autonomous, accurate landings.
- Controlled descent is ensured by the brake parachute system and aerofoil honeycomb fins.

### **4.11 GEO HERITAGE SITE PANDAVULLA GUTTA**

- Telangana's Pandavulla Gutta has been classified as a unique Geo-heritage site.

**Context:**

- An area of notable geological significance that is recognized for its distinctive geological features, historical significance, or cultural significance is known as a geo-heritage site. These websites offer perceptions into the natural processes, evolution, and history of the Earth.

**About GEO HERITAGE SITE PANDAVULLA GUTTA**

- Pandavula Gutta, sometimes called Pandavula Guttalu, is a noteworthy hill in Telangana, India's Warangal district.
- Because the Hindu epic tells the story of how the Pandavas sought refuge there during their exile, it has religious and historical significance.
- Recognized as Telangana's only designated Geo-heritage site, this location is older than the Himalayan ranges.
- It was found in 1990 and has a long history that stretches back to the Mesolithic and Medieval periods. It predates the Himalayas.
- Paleolithic cave paintings cover Pandavula Gutta, offering a unique window into the creative abilities of past humans. These murals, which may be seen on solitary boulders, walls, and ceilings, include animals including bison, antelope, tigers, and leopards.

# 5. ENVIRONMENT & ECOLOGY

## PRELIMS

### 5.1 GLOBAL E-WASTE MONITOR (GEM) 2024 REPORT

- Recently, the Fourth Global E-waste Monitor (GEM) 2024 was made public.

#### Context:

- The report offers important new information about the global problem of electronic trash.

#### About E- Waste:

- Old, discarded, or nearing the end of their useful lives are referred to as "e-waste," or electronic garbage.
- It includes a broad variety of electrical and electronic equipment, together with all of its parts, consumables, and spares. If e-waste is not properly handled, disposed of, and recycled, it can be harmful to the environment and human health.
- The UN Institute for Training and Research (UNITAR) and the International Telecommunication Union (ITU) collaborated to create the 2024 Global E-waste Monitor (GEM).

#### The Global E-waste Monitor 2024's highlights

##### Trends in E-waste Generation:

- Global e-waste creation increased from 34 billion kilos to 62 billion kilograms between 2010 and 2022.
- It is anticipated that this increasing tendency would continue, with an estimated 82 billion kg by 2030.
- Regretfully, only 13.8 billion kg of this electronic garbage were properly gathered and recycled in a way that did not harm the environment.

##### A number of factors lead to the rise in e-waste:

- Technological Progress: Shorter product lifecycles result from rapid developments.
- Increased Rates of Consumption: We are becoming more and more dependent on electronics.
- Restricted Repair Options: A lot of electronics are made to be obsolete.
- Expanding Electronification: Our lives are becoming more and more digital.
- Inadequate Management of E-waste Infrastructure: Inadequate recycling and disposal systems.

##### Informal Recycling Sector:

- A large amount of e-waste is managed by the unofficial sector internationally.
- This is applicable to low-income and lower-middle-income countries alike, as well as high- and upper-middle-income nations.
- Reliance on unofficial channels is fueled by the absence of a formal infrastructure for managing e-waste.

##### Regional Differences:

- With a 42.8% recorded formal collection and recycling rate, Europe is the leader in this area.
- Africa, on the other hand, produces less e-waste than other continents, yet it still has difficulties with its recycling rate of less than 1%.
- Despite producing a large amount of the world's e-waste, Asia, especially India, has achieved only modest progress in managing e-waste.

### 5.2 TRAFFIC (Trade Records Analysis of Flora and Fauna in Commerce)

- According to a TRAFFIC and WWF-India investigation conducted between January 2010 and December 2022, about 65% of the illegal traffic in shark body parts originated in Tamilnadu.

**Context:**

- A major challenge to wildlife conservation is the illegal commerce in wildlife species.

**About TRAFFIC:-**

- The Wildlife Trade Monitoring Network, or TRAFFIC (Trade Records Analysis of Flora and Fauna in Commerce), is an international non-governmental organization that keeps an eye on the trade in wild plants and animals.
- TRAFFIC works to combat the unsustainable illegal wildlife trafficking while promoting sustainable legal wildlife commerce and biodiversity preservation.
- The Kunming-Montreal Global Biodiversity Framework's long-term vision, which TRAFFIC is based on, envisions a world in harmony with nature where, by 2050, biodiversity will be valued, conserved, restored, and wisely used, maintaining ecosystem services, sustaining a healthy planet, and providing benefits that are necessary for everyone.
- It began as a specialized committee of the International Union for Conservation of Nature's (IUCN) Species Survival Commission in 1976 and developed into a strategic partnership between the WWF and the IUCN.
- TRAFFIC is a component of the David Attenborough Building-based Cambridge Conservation Initiative, a center that unites Cambridge University with other global NGOs that promote sustainability and environmental preservation.

### 5.3 Kaveri and Tungabhadra Rivers

- As rivers carry less and less water, there have been reports of acute water scarcity in some areas of Karnataka.

**Context:**

- Due to the failure of the south-west monsoon, the majority of the parched Kalayana Karnataka region's areas that depend on the Krishna and Tungabhadra rivers are preparing for a disaster.

**About Kaveri River:**

- The Cauvery River, also known as the Kaveri, is referred to as "the Ganga of the South," or "Dakshin Bharat ki Ganga."
- In the Brahmagiri mountain, close to Cherangala village in Kodagu (Coorg), Karnataka, is where the Cauvery River rises.
- It passes through the Tamil Nadu and Karnataka states before descending the Eastern Ghats in a sequence of magnificent falls.
- The river splits into numerous distributaries south of Cuddalore, Tamil Nadu, before draining into the Bay of Bengal. This creates a huge delta known as the "garden of southern India."
- Its borders are as follows: on the west, they are the Western Ghats; on the east and south, they are the Eastern Ghats; and on the north, they are the ridges dividing the Pennar and Krishna basins from it.

**About Tungabhadra River**

- The Tungabhadra River originates in Karnataka, passes through Andhra Pradesh for the majority of its course, and finally joins the Krishna River close to Murvakonda in Andhra Pradesh.
- The Tunga, which is roughly 147 km long, and the Bhadra, which is about 178 km long, are the two streams from which the river Tungabhadra gets its name.
- In a height of 1458 meters, the Tunga and Bhadra originate in Gangamoola in Varaha Parvatha in the Western Ghats.
- The river flows for approximately 531 kilometers after the two streams meet in Shimoga, where it meets the Krishna River in Sangamaleshwaram, Andhra Pradesh. It flows through 382 km of Karnataka, 58 km of which it forms the border with Andhra Pradesh, and the remaining 91 km of which it flows through Andhra Pradesh.
- The Sangameswaram Temple, a sacred pilgrimage site, is situated where the Krishna and Tungabhadra rivers converge.

## 5.4 Hangul



- The endangered hangul's mating cries show a historic population increase.

### Context:

- The preceding autumn was considered to have been one of the healthiest rutting or mating seasons by hangul, the extremely shy and sensitive mammal of Kashmir. It is Jammu & Kashmir's official animal.

### About Hangul:

- It is Jammu & Kashmir's official animal.
- The Kashmir stag, also known as hangul, is a subspecies of red deer native to Central Asia that is found only in Kashmir and its environs.
- The subspecies, which is currently dispersed around 141 square kilometers of the Dachigam National Park, is fighting for survival in its final stronghold.
- In the distant Himachal Pradesh state's Chamba district and the highlands of Kashmir, the Hangul language was formerly widely spoken.
- According to a 2019 survey that involved collaring the hangul, the species is no longer restricted inside Dachigam National Park. The ancient migratory path that once led from Tulail in the Gurez Valley through the Sind Valley has now been used by the endangered subspecies. The early 1900s are when the corridor was last known to be in use.
- The second home of Hanguls, according to conservation status, is Tral Wildlife Sanctuary, where 14 of the 289 Hanguls are found as of 2023, while the remaining 275 are found in Dachigam National Park. The Red List of the IUCN: Critically Endangered.

## 5.5 NANO UREA

- In a recent press conference, the union minister of chemicals and fertilizers said that India will switch from consuming 2.5 million tonnes of conventional urea to nano urea in FY24.

### Context:

- This is consistent with India's objective of producing enough urea on its own by 2025.

### About UREA:

- Because of its low cost and high nitrogen content, urea plays a vital role in Indian agriculture.
- The most significant nitrogenous fertilizer in the nation is urea.
- Overuse of urea causes soil acidification, greenhouse gas emissions, nitrate leaching, water contamination, and biodiversity loss.
- To address a number of issues with traditional urea fertilizers in agriculture, nano urea has been developed.

### **Nano Urea**

- A fertiliser based on nanotechnology called Nano Urea is used to provide plants enough nitrogen.

### **Development and Approval:**

- Indian Farmers Fertilizer Cooperative Limited (IFFCO) is the company that invented and patented Nano Urea.
- The only nano fertilizer listed in the Fertilizer Control Order (FCO) and approved by the Indian government is this one.

### **Advantages:**

- **Energy-Efficient Production:** A low-carbon, environmentally benign, and energy-efficient process is used to make nano urea.
- **Enhanced Nutrient Availability:** It increases crop nutrient availability by over 80%, leading to increased nutrient utilization efficiency.
- **Increased Crop Productivity:** It is anticipated that nano urea will increase crop yields, soil health, and produce's nutritional value.

## **5.6 Sustainable & Inclusive Development of Natural Rubber Sector (SIDNRS) Scheme**

- For the upcoming two fiscal years (2024–2025 and 2025–2026), the financial assistance for the rubber sector under the "Sustainable & Inclusive Development of Natural Rubber Sector (SIDNRS)" has increased by 23%, from Rs 576.41 crore to Rs 708.69 crore.

### **Context:**

- This occurs in the midst of a natural rubber shortage that has led to an increase in the import of natural rubber from Southeast Asian nations like Vietnam and Malaysia.

### **Sustainable & Inclusive Development of Natural Rubber Sector (SIDNRS) Scheme:**

- Launched in FY 2017–18, it is an initiative by the Indian government to support the equitable and sustainable growth of the country's natural rubber industry.
- The Ministry of Commerce's statutory Rubber Board is in charge of carrying it out.

### **Objectives:**

- To improve the productivity and quality of natural rubber production.
- To promote the adoption of sustainable rubber production practices.
- To improve the income and livelihoods of rubber growers.
- To create employment opportunities in the rubber sector.
- To promote the development of the rubber-based industry.

### **Components of the Scheme:**

- Rubber growers receive financial support to replace their aging, unproductive rubber trees with high-yielding, disease-resistant cultivars.
- Rubber growers received financial support to intercrop rubber with other crops like cocoa, bananas, and pineapple. Rubber growers can increase their revenue and preserve moisture in their land by intercropping.
- Rubber growers receive extension services and training on the best methods for producing, processing, and selling rubber.
- Infrastructure improvements in rubber-growing areas, including roads, water collection structures, and processing units, received financial support.
- The development and growth of rubber-based sectors, including the production of tires, shoes, and latex processing facilities, were given financial support.



## 5.7 INDIAN LEOPARD

- A recent estimate states that the number of leopards in India increased from 12,582 in 2018 to 13,874 in 2022, an increase of 8%.

### Context:

- The Indian Leopard is classified in CITES Appendix I and is protected in Schedule I of the Indian Wildlife (Protection) Act, 1972. The IUCN Red List categorization for it is Near Threatened.

### Findings:

- The estimated number of leopards in India is 13,874 (ranging from 12,616 to 15,132).
- Compared to the 12,852 people in the comparable region that was sampled in 2018, this population is steady.
- With the exception of areas like the Himalayas and semi-arid regions that are not tiger habitat, the estimate encompasses 70% of leopard habitat.

### Regional Trends:

- The leopard population in Central India is either constant or slightly increasing (2018: 8,071, 2022: 8,820).
- The Gangetic Plains and Shivalik Hills saw a decrease (2018: 1,253, 2022: 1,109).
- Overall Growth Rate: The sampled area in India had an annual growth rate of 1.08%.
- Highest Growth Rate: At 1.5 percent, the Eastern Ghats and Central India had the highest growth rate.

### State-wise Distribution:

- With 3,907 individuals, Madhya Pradesh has the biggest number of leopards in the nation (2018: 3,421).
- Maharashtra: With 1,985 leopards (2018: 1,690), comes in second.
- Karnataka: With 1,879 leopards (2018: 1,783), it is ranked third.
- Tiger Reserves: The largest populations of leopards are found in Panna (Madhya Pradesh), Satpura (Madhya Pradesh), and Nagarajunasagar Srisailam (Andhra Pradesh).

### State-wise Trends:

- Madhya Pradesh: Saw the biggest rise, with 486 more leopards than before.
- Arunachal Pradesh: With an astounding 282% growth, led in terms of percentages.
- There were declines observed in Goa, Bihar, Telangana, Kerala, Chhattisgarh, Uttarakhand, and Odisha.
- The number of leopards in Odisha fell by 192, or 25%, between 2018 and 2022.
- While the number of tigers in Uttarakhand increased significantly, that of leopards declined.

## 5.8 Dark Sky Reserve

- Dr. Jitendra Singh, Minister of State (Independent charge) for Science and Technology, declared that India will create its first Dark Sky Reserve by the end of 2022 in the chilly Ladakh desert.

### Context:

- India is now in the midst of submitting its IDSA nomination. The first Dark Sky Reserve in the nation is being established under the direction of the Ladakh Union Territory government.

### About Dark Sky Reserve

- A Dark Sky Reserve is a piece of land, either public or private, that has been carefully developed to reduce light pollution and offers a unique nighttime atmosphere and starry evenings.
- These reserves "consist of a core area meeting minimum criteria for sky quality and natural darkness, and a peripheral area that supports dark sky preservation in the core," according to the International Dark Sky Association (IDSA).

### How does a site become a 'Dark Sky Reserve'?

- A site may be nominated by people or organizations to the International Dark Sky Association (IDSA) for certification. International Dark Sky parks, communities, reserves, sanctuaries, and Urban Night Sky Places are the five types that have been designated.
- According to the IDSA, 195 locations were designated as International Dark Sky Places worldwide between January 2022 and 2001.
- Only a piece of land that is either publicly or privately owned, partially or fully accessible to the public year-round, legally protected for scientific, natural, educational, cultural, heritage, and/or public enjoyment purposes, and whose core area offers an exceptional dark sky resource in comparison to surrounding communities and cities—as well as offering prescribed night sky brightness—will be considered a dark sky place by the IDSA.

### What made Ladakh the project's chosen location?

- The Hanle Dark Sky Reserve (HDSR) will rise within the Changthang Wildlife Sanctuary to a height of 4,500 meters above sea level.
- Approximately 3,000 meters above sea level, Ladakh is a distinct icy desert featuring steep mountainous landscapes. Much of the UT is extremely livable due to its long and harsh winters, which can see minimum temperatures as low as minus 40 degrees Celsius.
- The region is ideal for long-term astronomical observatories and black sky locations due to its aridity, low vegetation, high elevation, and broad, sparsely populated areas.
- However, the main goal of the suggested Dark Sky Reserve is to encourage environmentally responsible and sustainable astronomy tourism. Here, scientific techniques will be applied to protect the night sky from light pollution, which is only going to get worse.

## 5.9 DESERT STAR DUNES

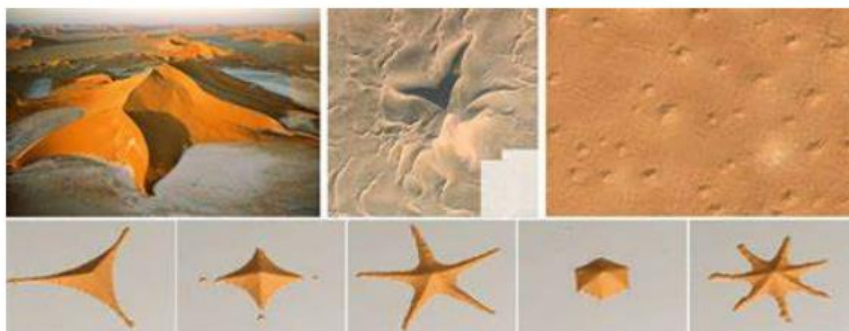
- For the first time, the age of one of the biggest and most intricate varieties of star-shaped sand dunes on Earth has been determined.

### Context:

- One of the biggest and most intricate kinds of sand dunes on Earth are star dunes. It had never been possible for experts to date their formation. Researchers have now found that the Lala Lallia dune in Morocco developed 13,000 years ago.

### About sand dune:

- A sand dune is a build-up of sand grains that becomes shaped into a ridge or mound as a result of gravity and wind.
- Star dunes, sometimes known as pyramid dunes, are hundreds of meters high and are named for their unique formations.



- From above, star dunes have a similar appearance to stars.
- Massive sand dunes called "star dunes" are distinguished by arms extending from a central peak.
- In contemporary deserts all throughout the world, including sand seas in Africa, Arabia, China, and North America, star dunes are a common sight.

### Dynamic Movement:

- Star dunes change and transform with time; they are not static.
- The opposing winds that change direction create star dunes.
- The star dunes of the Sahara are moving across the desert at an astonishing rate of almost 50 cm every year.
- Because of this ongoing rearrangement process, star dunes never collapse like other types of dunes.

## MAINS

### 5.10 Ethanol 100 or E100

- "ETHANOL 100" was introduced by Union Ministers of Housing and Urban Affairs and Petroleum & Natural Gas, Shri Hardeep Singh Puri.

#### Context:

- Fuel made with ETHANOL 100 has the power to revolutionize the transportation industry and lessen our reliance on fossil fuels.

#### About Ethanol 100 OR E100:

- It is a myth that E100 fuel is made entirely of ethanol.
- E100 fuel is composed of 93–93.5 percent ethanol, 5 percent gasoline, and 1.5 percent co-solvent, or binder, as per the standards.
- E100 is currently priced at Rs 94.72/litre in Delhi, Rs 104.21/litre in Maharashtra, and Rs 100.75/litre in Chennai, the same as petrol. But since ethanol is less expensive, E100 will undoubtedly be less expensive than gasoline or diesel as the fuel becomes more widely used.
- Furthermore, the government's eagerness to support biofuels that aid in the replacement of imported crude oil is likely to make them more competitive when compared to conventional fuels.
- Since agricultural feedstock is used to make ethanol, farmers stand to gain financially from the decarbonization of the economy.
- Any car with a flex fuel engine can run on E100 fuel. A automobile with a flex fuel engine can be powered by multiple fuels. It has an internal combustion engine (ICE) that allows customers to choose the fuel they want to use at the point of sale. It can run on gasoline, ethanol, or methanol.
- With its reduced emissions of pollutants and greenhouse gases, ETHANOL 100 presents itself as a greener and cleaner option that can help fight climate change and improve air quality.
- ETHANOL100's high octane rating (usually between 100 and 105) makes it the perfect fuel for high-performance engines because it maximizes power output and efficiency while reducing environmental effect.

### 5.11 Rising sea surface temperature

- In February 2024, the average worldwide sea surface temperature (SST), or the temperature of the water at the ocean's surface, was 21.06 degrees Celsius, the highest recorded value in a dataset dating back to 1979.

#### Context:

- August 2023 saw the previous record, which stood at 20.98 degrees Celsius.

#### Why are the oceans getting warmer?

- High concentrations of greenhouse gases (GHGs) have been emitted into the atmosphere by human activity, such as burning fossil fuels, since the start of the Industrial Revolution in the 19th century. Among the well-known GHGs that basically trap heat in the atmosphere and cause global warming are carbon dioxide, methane, nitrous oxide, and ozone. The average worldwide temperature has therefore increased by at least 1.2 degrees Celsius since pre-industrial times.

- Remarkably, the oceans have absorbed about 90% of the excess heat trapped by greenhouse gases, contributing to their gradual warming over time.
- The rise in ocean temperatures is the result of many variables. For example, the equatorial Pacific Ocean's anomalous warming of surface waters is known as El Niño, a weather pattern that has contributed to both ocean warming and rising world surface temperatures.
- Weaker-than-average winds have also resulted in less dust drifting off the Sahara Desert lately. Usually, the dust lowers ocean temperatures by creating a "giant umbrella that shades" the Atlantic Ocean.

#### **Why are rising sea surface temperatures a cause of worry?**

- Increased ocean temperatures may have effects on marine ecosystems that are permanent. The natural division of an ocean's water into horizontal strata based on density, with warmer, lighter, less salted, and nutrient-poor water layering on top of heavier, colder, saltier, and nutrient-rich water, is known as ocean stratification, and it is exacerbated by warmer waters. Typically, winds, tides, currents, and ocean ecosystems combine these strata.
- On the other hand, the increased warmth has hindered the ability of water layers to combine. The viability of marine life is threatened as a result of the oceans' reduced ability to absorb carbon dioxide from the atmosphere and the oxygen that is absorbed's inability to appropriately mix with the cooler ocean waters below.
- Additionally, nutrients cannot go from below to the ocean's surface. The single-celled plants known as phytoplankton, which constitute the foundation of many marine food webs and flourish at the ocean's surface, may be in danger as a result of this. Zooplankton feeds on phytoplankton, which is then devoured by fish, crabs, and sea stars, among other marine creatures. Thus, marine ecosystems may collapse if the phytoplankton population drastically declines.
- Marine heat waves (MHWs), which happen when the surface temperature of a specific area of the sea increases to three or four degrees Celsius above the usual temperature for at least five days, are caused by warmer oceans.

### **5.12 Bangalore Water Crisis**

- For the past two days, Bengaluru's severe drinking water issue has made headlines across the globe.

#### **Context:**

- According to the chief minister of Karnataka, Bengaluru experiences a daily water scarcity of 500 million litres, or roughly one-fifth of the city's total daily demand.

#### **Causes of the current water crisis:**

- **Monsoon:** Karnataka recorded rainfall during the monsoon of previous year that was 18% less than average. The state did not receive much rain, not even during the post-monsoon season. Karnataka receives the majority of its yearly rainfall during the monsoon, just like the majority of other regions in the nation. Water stress in the monsoon months is usually often the result of insufficient rainfall.
- The comparatively low amount of water in reservoirs has been another direct effect of the low rainfall.
- Only 26% of the water in the Karnataka reservoirs is now being held, according to the most recent statistics available from the Central Water Commission.
- **Aquifers:** The aquifer system in South India is extremely distinct. It's quite stony. There is not much water stored in the aquifers. Both their emptying and recharging processes happen swiftly. This means that in the event of a protracted dry season, groundwater supplies cannot be sustained for very long.
- The aquifers in northern India, on the other hand, have a far greater capacity to hold water. This explains why there hasn't been the same kind of water scarcity in Bihar or Uttar Pradesh, which received even less rainfall than Karnataka in 2017.

#### **Dealing with Shortage**

- Climate change, systematic lake destruction, uncontrolled building, and obstructions to the natural subsurface water flow all have an impact on Bengaluru's water availability. However, these don't appear to

be the direct causes of this specific persistent scarcity. This one is mostly related to the seasonal variations in rainfall and the state's incapacity to build resilience against these kinds of unpredictabilities.

- States must plan ahead and build the capacity to handle the interruptions.
- The secret is to value water. This resource isn't free. Wastage needs to be avoided while low or optimal consumption needs to be encouraged.

### 5.13 CARBON CAPTURE AND STORAGE (CCS)

Germany, a major emitter of greenhouse gases, has chosen to allow enterprises to capture their carbon emissions and store them underground at offshore sites, which is a substantial change from their earlier position.

#### Context:

- Germany wants to achieve carbon neutrality by 2045, but reducing emissions from industries like cement manufacturing will not be easy. Today, carbon capture and storage are considered a stopgap measure until more environmentally friendly technologies are developed.

#### About Carbon Capture and Storage (CCS):

- One of the most important strategies in the fight against climate change is carbon capture and storage, or CCS.
- Capturing carbon dioxide (CO<sub>2</sub>) emissions from power plants and industrial operations is known as carbon capture and storage, or CCS.
- Carbon dioxide sequestration (CCS) stops CO<sub>2</sub> from ever escaping into the environment, in contrast to carbon dioxide removal (CDR), which extracts CO<sub>2</sub> from the atmosphere.
- Preventing a substantial amount of CO<sub>2</sub> from entering the atmosphere and causing climate change and global warming is the aim of carbon capture and storage (CCS).

#### Advantages

- Cutting Greenhouse Gas Emissions: Carbon capture and storage (CCS) keeps carbon dioxide (CO<sub>2</sub>) emissions from power plants and industrial activities out of the atmosphere.
- Carbon Capture and Storage (CCS) lowers the total concentration of greenhouse gasses by storing CO<sub>2</sub> underground.
- Maintaining Fossil Fuel Use: CCS minimizes the environmental impact of fossil fuel use while allowing us to continue utilizing them.
- By cutting emissions from the infrastructure now fueled by fossil fuels, it offers a transition to cleaner energy sources.
- Applications in Industry: CCS can be used in industries such as chemical, steel, and cement manufacture.
- These industries frequently produce large amounts of CO<sub>2</sub>, and CCS provides a means of reducing those emissions.
- Establishing Carbon Sinks: By permanently storing CO<sub>2</sub> below the surface, underground storage facilities serve as carbon sinks.
- Storage locations that are properly maintained can trap pollution for centuries.
- Moving Toward Clean Energy: As we move in the direction of renewable energy sources, CCS offers a transition plan.
- It buys renewable technologies some time to develop and become commercially viable.

### 5.14 BUREAU OF ENERGY EFFICIENCY (BEE)

- The Bureau of Energy Efficiency recently commemorated its 22nd Foundation Day in New Delhi.

#### Context:

- It was established in March 2002 in accordance with the 2001 Energy Conservation Act.

### **About Bureau of Energy Efficiency:-**

- The Government of India's Ministry of Power oversees the statutory Bureau of Energy Efficiency (BEE).
- The agency's main goal is to promote energy conservation in India through the creation of policies and initiatives that support energy efficiency.
- BEE emphasizes market principles and self-regulation to improve energy efficiency in a variety of industries.

### **Key Initiatives of BEE**

- **Standards & Labeling Program:** BEE gives customers information about energy-efficient equipment and appliances so they can make wise decisions.
- **Energy Conservation Building Code:** BEE encourages the design and construction of buildings using energy-efficient methods.
- **Perform, Achieve, and Trade (PAT):** This initiative pushes energy-intensive businesses to meet predetermined energy-saving goals.
- **Energy Efficiency in Big Industry:** To improve energy efficiency, BEE works with big companies.
- **Energy Efficiency in Small and Medium-Sized Industries:** BEE collaborates with small and medium-sized businesses to increase energy efficiency, much like it does with major industries.
- **State-Level Energy Efficiency Initiatives:** BEE backs state-level efforts to encourage energy efficiency. The Bureau of Energy Efficiency (BEE) in India announced the State Energy Efficiency Index 2023. States are ranked and evaluated by this index according to their energy-efficiency initiatives, regulations, and programs.
- **consumption Side Management (DSM):** BEE concentrates on using a variety of tactics to control energy consumption.

## **5.15 CITY-SPECIFIC ZERO CARBON ACTION PLAN (ZCBAP)**

Nagpur has hosted the debut of India's first city-specific Zero Carbon Buildings Action Plan (ZCBAP).

### **Context:**

- The plan seeks to contribute towards India's net-zero emission goal by 2070.

### **About CITY-SPECIFIC ZERO CARBON ACTION PLAN (ZCBAP)**

- Achieving net-zero carbon emissions from buildings by 2050 is the goal of Nagpur's Zero Carbon Buildings Action Plan (ZCBAP).
- India's climate goals and international obligations are in line with this project of the Nagpur Municipal Corporation (NMC) and the Nagpur Smart and Sustainable City Development Corporation Limited (NSSCDCL).
- The ZCBAP focuses on renovating Nagpur's buildings to achieve net-zero emission targets. In doing so, it advances India's larger goal of having net-zero emissions by 2070.
- The plan covers a wide range of building types, with a particular emphasis on decarbonization and sustainable development, including public buildings, affordable housing, commercial structures, and residential buildings.
- It targets a large amount of Nagpur's energy consumption and emissions and addresses the reduction of greenhouse gas emissions through factors linked to building materials, design, construction, management, and even deconstruction.

# 6. SECURITY & DEFENCE

## PRELIMS

### 6.1 AGNI-5 MISSILE WITH MIRV TECHNOLOGY

- From Dr. A P J Abdul Kalam Island off the coast of Odisha, India recently carried out the first successful flight test of the locally manufactured Agni-5 missile with Multiple Independently Targetable Re-entry Vehicle (MIRV) technology.

#### Context:

- The flight test was carried out as a part of "Mission Divyastra" in India.

#### About Agni-V:

- Under India's Integrated Guided Missile Development Programme (IGMDP), the Agni-V is a sophisticated surface-to-surface ballistic missile.
- The Defence Research and Development Organisation (DRDO) of India is the entity responsible for the in-house development of the Agni-V intercontinental ballistic missile (ICBM).
- Being a fire-and-forget missile, once shot, it cannot be halted without the assistance of an interceptor missile and doesn't need any additional guidance.
- With a range of more than 5000 kilometers, the missile may reach targets that are farther away.
- It has a warhead capacity of roughly 1500 kg.
- The foundation of India's nuclear launch capabilities is the Agni series of missiles, which consists of the Agni-1 through Agni-5 models.
- Since 2012, several successful tests of Agni-V have been conducted.

#### Multiple Independently Targetable Re-entry Vehicle (MIRV) Technology

- Multiple Independently Targetable Re-entry Vehicle, or MIRV, technology is installed on the most recent version of the Agni missile.
- A single missile can drop multiple warheads at various locations or at the same site but at a different time interval thanks to MIRV technology.
- This technology allows the missile to hit numerous targets at once, greatly increasing its effectiveness.
- The primary goal of Agni-V's MIRV capability is to address China's challenges.
- These missiles can be fired from a submarine operating from the sea or the land.

#### Global Context:

- There are currently very few nations with missiles fitted with MIRV.
- The United States, Russia, China, France, and the United Kingdom are some of these nations.
- There are rumors that Israel may already have or be constructing a missile system similar to the one that Pakistan is creating.

### 6.2 EXERCISE SAMUDRA LAKSAMANA

Exercise Samudra Laksamana is being conducted at/off Visakhapatnam from February 28 to March 2.

#### Context:

- Strategically significant, Exercise Samudra Laksamana strengthens the long-standing alliance between the Indian and Royal Malaysian Navies.

#### About SAMUDRA LAKSAMANA EXERCISE:

- This is a combined naval drill involving the fleets of Malaysia and India.

- The exercise has been undertaken three times; the first time was in 2019.
- The Royal Malaysian Ship KD Lekir and the Indian Naval Ship Kiltan are taking part in the third event.
- Both harbor phase and sea phase are present.
- The crews of both ships will engage in a variety of professional activities while in port, including sporting events, subject matter expert exchanges on subjects of shared interest, and more.

### 6.3 METHANESAT

The MethaneSAT satellite, owned by the Environmental Defence Fund, was launched by SpaceX on a Falcon 9 rocket.

#### Context:

- The dependable and reusable Falcon 9 rocket is employed for a number of missions. American aerospace business SpaceX was established in 2002 and is based in Hawthorne, California. Its audacious mission was to transform space technology and make it possible for people to live on other planets.

#### About MethaneSAT:

- In an effort to slow down climate change, MethaneSAT is an Earth observation satellite that tracks and analyzes methane emissions worldwide.
- MethaneSAT, LLC, a fully owned subsidiary of the Environmental Defence Fund (EDF), developed MethaneSAT.
- This important climate program was developed in collaboration with Harvard University, the Smithsonian Astrophysical Observatory, and the New Zealand Space Agency by the US-based nonprofit environmental advocacy organization The EDF.
- MethaneSAT aims to supply high-resolution global data on methane emissions from gas and oil plants.
- MethaneSAT will have the capacity to calculate emissions over whole basins.
- MethaneSAT seeks to mitigate climate change by accurately and precisely detecting and tracking methane emissions.
- Notably, it will usher in a new era of climate openness and accountability by making its data freely accessible online.
- It is intended to identify and quantify methane emissions from human sources anywhere in the world, providing governments and businesses with new tools to monitor, measure, and cut back on these emissions.

#### Methane

- Strong greenhouse gas methane is a major contributor to the climate catastrophe.
- Over a similar amount of time, methane warms the earth more than 80 times faster than a similar volume of atmospheric carbon dioxide (CO<sub>2</sub>). Even though it doesn't get as much attention as CO<sub>2</sub>, its impacts are significant and quick.

#### Methane's sources:

- Biological Sources: Microbes called methanogens, which live in low- or no-oxygen settings, create methane. These consist of submerged paddy fields, wetlands, and landfills with inadequate ventilation.
- Agriculture: About 32% of the methane emissions caused by humans come from livestock emissions (from manure and gas escapes). Methane emissions from rice farming in flooded areas also contribute to human-linked emissions, making for an additional 8% of emissions.

#### Health Impacts:

- Methane pollution has been connected to harmful health outcomes like asthma, heart disease, and birth defects. It is frequently associated with harmful compounds like benzene.

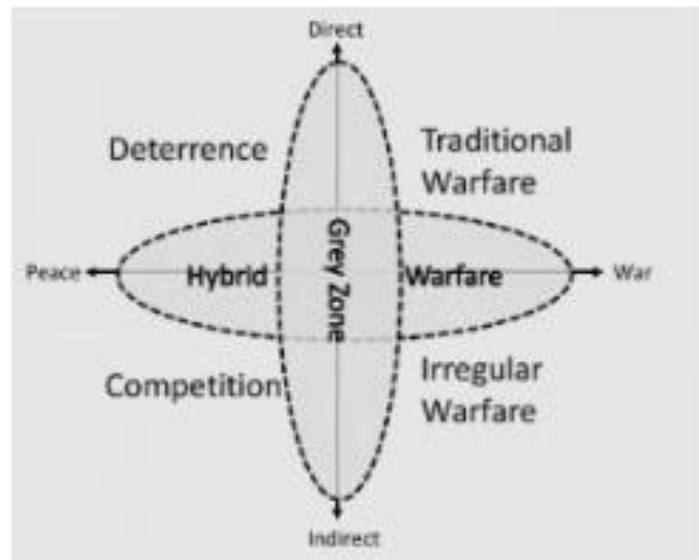


### Global Methane Pledge:

- The Global Methane Pledge, which was signed by over 105 nations, calls for a 30% reduction in methane emissions from 2020 levels by 2030.
- This project tries to rectify the world community's long-standing disregard for methane while also shedding attention on its role in global warming.

## MAINS

### 6.4 Grey Zone Warfare: Navigating the Space between Peace and Conflict



- The term "grey zone warfare," which refers to the difficult area between overt combat and peace, has acquired significance in modern international relations.
- This subtle kind of warfare includes a range of actions meant to further national goals without engaging in direct combat.

#### Grey Zone Warfare: What Is It?

- Middle Ground: The term "grey zone" refers to a vague area wherein actions make it difficult to distinguish between acts of peace and violence.
- Diverse Tactics: These include a broad range of actions, such as cyberattacks, disinformation operations, economic coercion, proxy wars, and territorial aggressiveness, to name a few.

#### Historical Context and Rationale

- Cold War Legacy: The use of gray zone measures to prevent catastrophic escalation was prompted by the conditions of the Cold War era, which was characterized by nuclear deterrence between superpowers.
- Resourceful Adversaries: When confronted with stronger opponents, countries often turn to gray area strategies to further their objectives without starting a full-scale war.

#### Grey Zone Warfare Examples:

- China Sea in the South Conflicts: Grey zone warfare is best shown by China's forceful actions in the South China Sea, such as its territorial claims and establishment of maritime militias. Conflicts with nations such as the Philippines highlight how divisive these strategies are.
- Taiwan Strait Tensions: The employment of "grey zone" tactics to apply pressure without inciting open warfare is highlighted by Chinese military movements close to Taiwan and Taiwan's concerns of growing Chinese military activity.
- US-China Economic Rivalry: The US and China engage in gray-zone competition outside of the military sphere as evidenced by economic penalties, trade tariffs, and maritime reconnaissance initiatives.

**Reasons and Goals**

- Covert Intentions: By avoiding direct conflict and preserving plausible deniability, grey zone tactics help to achieve strategic goals.
- Escalation Management: To make crisis management operations more difficult, adversaries try to take advantage of weaknesses and intensify tensions in a number of ways.

**Problems and Solutions**

- Complexity of Response: Since activities in grey zone warfare are frequently subtle and varied, it can be difficult to formulate effective answers.

Danger of Over-Escalation: Strategies like luring opponents into escalation can have unforeseen repercussions and raise tensions, which calls for prudent crisis management.

# 7. SOCIAL ISSUES

## PRELIMS

### 7.1 PRADHAN MANTRI ANUSUCHIT JAATI ABHYUDAY YOJANA (PM-AJAY)

- 34 residential dormitories across several states and federal institutes were officially opened and the foundation stone placed by the Ministry of Social Justice and Empowerment (under PM-AJAY).

#### Context:

- These hostels are especially made to meet the needs of students from Other Backward Classes (OBC) and Scheduled Castes (SC) for housing. With this effort, we hope to empower these neglected people, foster education, and provide a conducive living environment.

#### About PRADHAN MANTRI ANUSUCHIT JAATI ABHYUDAY YOJANA (PM-AJAY):

- India's Pradhan Mantri Anusuchit Jaati Abhyuday Yojana (PM-AJAY) aims to improve education, lessen poverty, and give underprivileged populations more influence.

#### PM-AJAY is a comprehensive scheme that amalgamates three centrally sponsored schemes:

- The Pradhan Mantri Adarsh Gram Yojana (PMAGY) aims to reduce inequities by creating "Adarsh Grams" that provide basic services to all segments of society.
- Strives to establish a setting in which each person can reach their greatest potential.
- Provide the services and infrastructure required for a dignified existence.
- Through comprehensive livelihood programs, the Special Central Assistance to Scheduled Castes Sub Plan (SCA to SCSP) seeks to enhance income.
- Enhances socioeconomic development metrics by guaranteeing sufficient infrastructure in villages governed by SC.
- Where necessary, offers residential schools to encourage SC enrollment in educational institutions.
- The Babu Jagjivan Ram Chhatrawas Yojana (BJRCY) aims to build dormitories for students belonging to Scheduled Caste, particularly those who come from isolated and rural locations.
- Offers housing and assistance to SC students who are pursuing education.

## MAINS

### 7.2 Have India's health centres really 'collapsed'?

In India, public health centers have long been associated with scandal and viewed as emblems of structural breakdown. There has long been debate about the efficacy of basic healthcare in India, with proposals for improving these services through government commitment to cost, accessibility, and high-quality care.

#### Health Centres in India

- Primary Health Centers (PHCs), commonly referred to as Public Health Centers (HCs), are essential to the population's access to comprehensive healthcare services.
- After the PHC concept was presented in a presentation to the World Health Organization's (WHO) Executive Board in January 1975, the first PHC was founded in India.
- With the 1978 International Conference on PHC held in Alma Ata, Kazakhstan, the concept of PHCs received even more traction.
- They are an essential part of the healthcare system, and these institutes' Medical Officers are expected to be MBBS graduates.
- With 23,391 PHCs and 145,894 sub-centers, India has an extensive public health infrastructure that serves a sizable portion of the population.

- A sizable amount of outpatient care, including services for non-communicable diseases, mother and child health, is covered by PHCs.

### The Value of Health Centers

- **Foundational Role:** Serving millions of people with primary care, health centers are the backbone of India's public health system.
- **Access and Affordability:** They strive to provide accessible and cheap healthcare, especially in rural regions, and have around two lakh centers nationwide.
- **Impact on Equity:** Well-run health centers can lessen social and health disparities, lowering the need for expensive private healthcare and keeping households from going bankrupt from medical bills.

### Unveiling the Reality

- **Evidence of Progress:** Although at a gradual rate, surveys carried out in five states show a tendency of increasing the quality and consumption of health care over time.
- Eighty-three percent of people in Himachal Pradesh are served by operational health centers.
- There has been a significant increase in Chhattisgarh's public healthcare system in terms of buildings, medications, and staffing.
- Bihar is trailing behind, with poor quality health centers and several sub-centers that are nonexistent or inactive.
- **Interventions in Policy:** Incremental advances have been made possible by increased health spending, state-specific programs, and efforts like the National Rural Health Mission.
- The Union Budget's allocation to health spending grew significantly.
- The National Health Mission's portion decreased from 69% to 44% as funding for the Ayushman Bharat initiative and newly constructed AIIMS hospitals increased.
- Patient use of public health facilities increased steadily after COVID-19, a sign of rising systemic trust.

### Challenges and Gaps

- **Underutilization:** In spite of advancements, health centers continue to confront issues like high employee turnover, a dearth of services, and subpar facilities.
- **Deficiencies:** Medical personnel report erratic financial transactions, a dearth of transportation and restroom facilities, and a shortage of medication and testing supplies.
- **Social Discrimination:** Gender and caste relations affect healthcare quality and access, hence sustaining disparities. Doctors from higher castes have negative ideas toward underprivileged populations, and Dalit ANMs are treated disrespectfully by upper caste families.
- **Gender Disparities:** Although women, especially frontline healthcare providers, are vital in rural health settings, they frequently experience discrimination and neglect.

India's health centers are resilient and full of potential despite their many difficulties. Through focusing on primary healthcare and addressing structural deficiencies, the country may leverage the transformative power of these centers to attain universal access to fair and affordable healthcare.

## 7.3 Caste-based Discrimination and Ethics

- Significant moral and constitutional issues are brought up by the Patan District Collector's recent order, which requires that all ration cards be transferred from a Dalit-run Fair Price Shop (FPS) in Kanosan village to a nearby community.

### Context:

- In response to the claimed social boycott by the Thakor community, Patan District Collector Arvind Vijayan, via an order dated September 12, moved the ration cards of all 436 homes in Kanosan to the nearby Edla FPS. When the bulk of the non-Dalit villagers of Kanosan village stopped purchasing their monthly ration from the FPS, which is operated by a Dalit FPS vendor, this directive was issued.

**About Fair Price Shop (FPS):**

- It is an Indian retail establishment that is controlled or administered by the government.
- Providing the general people with needs such as food grains, edible oils, sugar, and other items at fair or subsidized rates is the main goal of fair-price stores.
- Usually, these stores are a part of government assistance initiatives designed to guarantee food security and lessen the financial strain on low-income households.

**The incident's ethical components include:**

- Discrimination based on caste that results in the transfer of ration cards is the main ethical problem in this case.
- It is possible to view the district collector's order to transfer ration cards as a duty neglect. Public servants should behave impartially and in the best interests of all citizens, according to the ethical concept of integrity.
- An important ethical concern is the psychological pain that a victim of caste-based discrimination experiences, which might result in a suicide attempt and physical harm. The moral precepts of empathy, compassion, and the obligation to safeguard people's welfare become crucial.
- The National Food Security Act and the SC/ST Act are two examples of the legislative frameworks that the organizers of the Right to Food Campaign demand be used. Respecting the constitution and maintaining the rule of law are moral precepts that ought to be followed.
- One of the main ethical concerns is the transgression of the prescribed norms concerning the empowerment of marginalized communities. It is important to uphold the moral precepts of equality, justice, equity, and nondiscrimination.
- It is brought up how the upper caste homes and the district collector have a moral obligation to deal with the fallout from their deeds.

**Actions that could be taken in similar situations:**

- To dispel the illusions of caste stigma and discrimination, a model of the Mid-Day Meals Scheme execution where high dignitaries enjoy the cooked food can be implemented.
- To properly combat the caste-based discrimination and social boycott, further legal action must be taken. establishing a deterrent effect by connecting such incorrect actions to bureaucrats' Annual Confidential Reports.
- Concerns regarding the impact on the Dalit FPS dealer's livelihoods and finances are raised by the upcoming revocation of their license.
- The government's Chief Minister's Office or High Courts are urged by the Right to Food Campaign to take Suo Motu notice of the discriminatory ration card transfers. Maintaining the rule of law and fundamental principles requires such action.
- For underprivileged communities, FPSs are vital in guaranteeing food security and access to necessities. It is essential to support inclusion and economic well-being by empowering FPSs democratically.

## 8. MISCELLANEOUS

### 8.1 MARITIME ANTI-PIRACY ACT

- The Indian Navy's efficiency during its 100-day campaign, dubbed "Operation Sankalp," was greatly enhanced, in the opinion of Navy Chief Admiral R. Hari Kumar, by the Maritime Anti-Piracy Act.

#### Context:

- "Operation Sankalp" covered Somalia's east coast as well as the Gulf of Aden and the North Arabian Sea.

#### About MARITIME ANTI-PIRACY ACT

- One important piece of legislation that India passed to combat the threat of piracy on the high seas is the Maritime Anti-Piracy Act, 2022.
- On January 31, 2023, this Act was passed, and on February 22, 2023, it became operative.
- Its goal is to implement the United Nations Convention on the Law of the Sea, which addresses topics connected to the suppression of piracy on the high seas.
- Anyone found guilty of piracy, including those who attempt, abet, or collaborate to commit piracy, will be punished under the legislation.
- The Indian Navy and Coast Guard are able to board, apprehend, and detain pirates who are operating in the Exclusive Economic Zone (EEZ), the high seas, and other areas thanks to the Maritime Anti Piracy Act.
- The offenders may be sentenced to life in jail, a fine, or both by Indian courts. Nevertheless, in cases where India has extraditable treaties with foreign nations, the Act also views the offense as extraditable. Since 2017, extradition of Somalian pirates has been permitted by an agreement between India and Somalia.

### 8.2 INDIAN NETWORK FOR FISHERY AND ANIMAL ANTIMICROBIAL RESISTANCE (INFAAR)

- The Indian Network for Fishery and Animal Antimicrobial Resistance (INFAAR) for 2019–22 report was the subject of an analytical report produced by the FAO lately.

#### Context:

- According to the research, there was minimal resistance to several less frequently used antibiotics (such chloramphenicol) in the animal and fishery sectors.

#### About INDIAN NETWORK FOR FISHERY AND ANIMAL ANTIMICROBIAL RESISTANCE (INFAAR):

- With technical assistance from the Food and Agriculture Organization (FAO) and the US Agency for International Development (USAID), the Indian Council of Agricultural Research (ICAR) established the Indian Network for Fishery and Animal Antimicrobial Resistance (INFAAR), a network of laboratories.
- It is devoted to monitoring antimicrobial resistance (AMR) in the livestock and fishery industries.
- Through an organized nationwide surveillance effort, the network seeks to document antimicrobial resistance (AMR) in various industrial systems, characterize the dissemination of resistance genes and bacterial strains, spot resistance patterns, and produce conjectures regarding the origins and reservoirs of resistant bacteria.
- In order to assess baseline data and provide insights into AMR trends in cattle, poultry, and fisheries, INFAAR also compiles surveillance data.
- This facilitates comprehension of the effects of the actions necessary to reduce antibiotic resistance.
- Antimicrobial drugs are used frequently in medicine and animal health, and their environmental persistence contributes to the emergence of antimicrobial resistance (AMR).
- AMR arises and spreads because more than half of the antibiotics used in fish and animals are eliminated as waste.

### 8.3 Anthropocene

- A proposal to designate a specific date as the start of the Anthropocene was rejected by an expert commission.

#### Context:

- The SQS-AWG is a commission tasked with identifying time intervals within the most recent geologic time span. Members of the group have been investigating the possibility of officially designating the Anthropocene as the newest epoch, succeeding the Holocene. The plan was rejected by the topical experts' commission on March 4, 2024, with a majority vote against it.

#### About Anthropocene:

- The geologic time scale is a hierarchical sequence of shorter time intervals that make up Earth's history. These divisions are referred to as eons, eras, periods, epochs, and ages, in decreasing order of duration of time.
- The strata, or layers of rock on Earth, and the fossils that can be found inside them are used to classify these units. Scientists have learned that particular creatures are typical of particular regions of the geologic record by studying these fossils. Stratigraphy is the study of this relationships.
- Referred to officially as the Holocene, the current period started 11,700 years ago following the conclusion of the last major ice age.
- The Anthropocene Epoch, on the other hand, is an unofficial measure of geologic time that denotes the most recent epoch in Earth's history during which human activity began to significantly alter the planet's climate and ecosystems.
- The Greek terms anthropo, which means "man," and cene, which means "new," are the source of the term Anthropocene. Biologist Eugene Storer and chemist Paul Crutzen created and popularized the term.
- Though the name has not been officially accepted, scientists continue to disagree about whether the Anthropocene is distinct from the Holocene.
- If human activity has altered the Earth system to the extent that it is reflected in the rock layers, then this is the main question that scientists must resolve before classifying the Anthropocene as an epoch.

### 8.4 Gulbadan Begum

- "Vagabond Princess: The Great Adventures of Gulbadan" is the title of a book on Gulbadan Begum written by historian Ruby Lal.

#### Context:

- She is among the most well-known female Mughal emperors.

#### About Gulbadan Begum:

- The daughter of the Mughal Empire's founder, Emperor Babur, was Gulbadan Begum (1523–1603), a Mughal princess.
- Her most well-known work is Humayun-Nama, which she authored at her nephew Emperor Akbar's request and which chronicles the life of her half-brother, Emperor Humayun.
- Since his aunt had known and interacted with three Mughal emperors, Akbar asked her to write the book. Unlike other historical portrayals of the period, her book is not political.
- It tells the story of the empire while it was developing and includes specifics about daily life in the royal palace.
- Gulbadan wrote in straightforward Persian, eschewing the sophisticated vocabulary of more well-known authors. In the same style, her father Babur had composed Babur-nama.
- The first and only female historian of the Mughal era is Gulbadan.
- There are references to Gulbadan Begum throughout Abu'l Fazl's Akbarnama.

## 8.5 Women in constituent assembly of India

- On Women's Day, let us remember the inspiring tales of women leaders.

### Context:

- The popular narratives and the gendered writing of our history still portray men as the only creators of our Constitution, even after seven decades of independence. But among the 299 members of the Constituent Assembly was a vibrant group of fifteen women who had all experienced caste oppression, child marriage, patriarchy, and widowhood.

### Women in constituent assembly of India :

- The women who were members of the Constituent Assembly were: Annie Mascarene, Sarojini Naidu, Renuka Ray, Rajkumari Amrit Kaur, Annie Banerjee, Dakshayani Velayudhan, Begum Aizaz Rasul, Durgabai Deshmukh, Hansa Mehta, Kamla Chaudhary, Leela Roy, Malati Choudhury, Purnima Banerjee, and Annie Mascarene.
- Annie Mascarene: She battled for the inclusion of the princely state of Travancore in the newly independent India and was the first woman to serve as a minister and in the legislative assembly in Travancore (which was formerly a princely state before becoming a part of Kerala).
- Hansa Jivraj Mehta: Throughout her life, she stayed dedicated to women's problems and, as a tool for equality and justice in the Constituent Assembly, she made compelling arguments against reservations for women.
- Dakshayani Velayudhan was severely discriminated against by the upper caste communities in Cochin and Travancore despite being born into the Pulaya community in Kerala.
- Amrit Kaur: She had a significant influence on the development of independent India as well as the independence war. In 1930, Kaur became involved with Gandhi in the Civil Disobedience campaign. Additionally, Kaur was the first female health minister.
- Ammu Swaminathan: In 1917, she and Annie Besant founded the Women's India Association to address the social and economic issues facing women laborers. This was the beginning of her political involvement.
- Durgabai Deshmukh: Known as the "Mother of Social Work," Durgabai Deshmukh was a major force behind social reform and strict nation-building. In 1937, she founded the Andhra Mahila Sabha, which grew into a social welfare and educational organization.
- Begum Aizaz Rasul fought for minority rights in a secular state as the only Muslim woman member of the Constituent Assembly. She was against communally divided electorates and reservations.

## 8.6 Self-Driving Cars and Ethical Dilemmas

- A criminal case and several lawsuits were brought about by tragic Tesla accidents.

### Context:

- With machines becoming more and more autonomous, the problem has gotten worse.

### About Self-Driving Cars:

- It's a car that can sense its surroundings and run on its own without assistance from a human.
- It is not necessary for a human passenger to take over the wheel of the car at any point, nor is it necessary for them to be inside the car at all.
- It can perform all the tasks performed by a skilled human driver and travel anywhere a regular car can.
- It can perform all the tasks performed by a skilled human driver and travel anywhere a regular car can.
- Whether it would be moral to give the driver control at the last second is one of the main ethical conundrums with self-driving cars. This will call into question not only the morality of drivers but also that of self-driving automobiles.
- Algorithms are used to program robots, such as those that operate autonomous vehicles. As a result, they will probably always adhere to established guidelines or patterns.



- The question of who should decide on the morality of self-driving automobiles is up for debate. One could argue that nobody has the authority to judge the morality of self-driving cars. The driver of the vehicle must make the final decision.
- There are many who contend that in the event of a collision, a self-driving car should be able to make an unbiased choice. They must not treat people differently on the basis of their gender, age, or any other factor. Always choose the course of action that will have the least negative effects.
- The possibility of a cybercriminal breaking into the car's system to steal confidential information or do other crimes is always present.

## 8.7 AGNIPATH SCHEME

- At INS Chilka in Odisha, the third batch of Agniveers' Passing Out Parade (POP) took place.

### Context:

- Within the Indian Armed Forces, Agniveers are a unique unit established through the Agnipath recruitment program.

### About AGNIPATH SCHEME

- The Indian government launched the Agnipath Scheme, a short-service personnel model, to recruit soldiers for the Army, Navy, and Air Force.
- It is a Ministry of Defence transformative program.

### Objective and Eligibility:

- The program seeks to give young people who are motivated and patriotic the chance to enlist in the military.
- With the exception of commissioned officers, it applies to employees below officer grades.

### Recruitment and Duration:

- Under this program, between 45,000 and 50,000 soldiers—also known as "Agniveers"—are enlisted each year.
- These recruits are there for a four-year fixed-term contract.
- Only 25% of the batch will remain under perpetual commission for an extra 15 years after the first four years.

### Benefits for Agniveers:

- Agniveers receive a one-time "Seva Nidhi" package worth Rs 11.71 lakhs, including accrued interest, upon fulfilling the four-year service requirement.
- Throughout their employment, they are additionally covered by a life insurance policy worth Rs. 48 lakhs.
- The reimbursement in the event of death surpasses one crore rupees and includes the amount for the unexpired term.
- The government offers bridging courses and skill certificates to help rehabilitate troops who leave the service after four years.

### Challenges and Concerns:

- Employment Prospects: Following their four years of service, agnavers may encounter difficulties finding new positions.
- No Pension Benefit: Agniveers are not eligible for pension benefits, in contrast to regular servicemen.

## 8.8 NATIONAL INTERNET EXCHANGE OF INDIA (NIXI)

- The BhashaNet portal has been successfully launched by the National Internet Exchange of India (NIXI) and the Ministry of Electronics and Information Technology (MeitY) at the Universal Acceptance (UA) Day event.

**Context:**

- The BhashaNet portal aims to create a multilingual internet where localized email addresses and website names work together effortlessly around the globe.

**About NATIONAL INTERNET EXCHANGE OF INDIA (NIXI)**

- The National Internet Exchange of India (NIXI) is a non-profit organization that was founded in 2003.
- The Companies Act of 2013 created the National Internet Exchange of India (NIXI), a statutory organization.

**Purpose and Function:**

- The purpose of NIXI is to improve Internet Service Protocols (ISPs) usage in India.
- Instead of routing domestic internet traffic abroad, NIXI facilitates routing it within the country. This results in better service quality (reduced latency) and lower bandwidth charges for ISPs by saving on international bandwidth.
- It aims to increase internet penetration and adoption in India by managing and enabling the internet ecosystem for the masses.

## 8.9 UN WORLD HAPPINESS REPORT 2024

- The UN World Happiness Report 2024 was just made available.

**Context:**

- One well-known publication that rates happiness levels across nations is the World Happiness Report. It is predicated on survey information gathered from participants who assess their own life.

**About UN WORLD HAPPINESS REPORT 2024:**

- The United Nations General Assembly launched the report in 2011 when it passed a resolution requesting that member nations gauge their citizens' level of happiness and use the results to inform public policy.
- 2012 saw the publication of the first World Happiness Report, which served as the basis for the UN High-Level Meeting on Happiness and Well-Being.

**Finland's Unwavering Contentment:**

- For seven years running, Finland has maintained its position as the happiest nation in the world.
- The top rankings are still dominated by Nordic countries, with Finland closely followed by Denmark, Iceland, and Sweden.
- Afghanistan continued to rank lowest among the 143 nations surveyed, with persistent humanitarian challenges resulting from the Taliban's 2020 takeover of the country.
- India remains at 126th place in the world happiness index, where it was ranked last year.

## 8.10 E V Ramaswamy Naicker or Periyar

- The chief minister of Tamil Nadu, M K Stalin, has defended Carnatic singer T M Krishna during a dispute about the Music Academy of Madras' decision to award Krishna the Sangita Kalanidhi title. Political and public interest in the issue has grown, especially in light of criticisms leveled at social reformer Periyar.

**Context:**

- Periyar is now regarded as Thanthai Periyar, the paternal figure of contemporary Tamil Nadu, having transcended not just the political division but also the boundaries of religion and caste.

**About Periyar**

- Periyar, who was born in 1879, is well-known for spearheading the Self Respect Movement, which sought to provide social equality for individuals subjected to the caste system.

- Periyar began his political career as an employee of Congress. He and Gandhi clashed over the issue of separate meals for Brahmin and non-Brahmin pupils at Gurukkulam, a nationalist leader V V S Iyer's school in Cheranmahadevi, close to Tirunelveli, which is supported by the Congress.
- Periyar objected to Iyer's provision of separate eating for Brahmin pupils at their request. Gandhi offered a middle ground, saying he would rather respect someone's scruples than assume that it is wrong for someone to refuse to eat with another.
- Periyar left the party in 1925 after failing to persuade the Congress to share his viewpoint. He then joined the Self Respect Movement and the Justice Party, which attacked the dominance of Brahmins in society, particularly in the bureaucracy.
- Ten years prior, the Justice Party had pushed for non-Brahmins to be given reservations in the bureaucracy and had even ordered its implementation when it took over the Madras Presidency.
- He spearheaded the Self Respect Movement, which supported women's rights to property and divorce as well as non-ritualistic marriages. He pleaded with people to stop mentioning caste and to stop adding the suffix "caste" to their names. In the 1930s, he introduced inter-dining at public conferences, serving food prepared by Dalits.
- During the Vaikom Satyagraha of 1924, a large-scale protest demanding that people from lower castes be allowed to use the public walkway in front of the well-known Vaikom shrine, Periyar's renown grew beyond of the Tamil region.
- Along with his spouse, Periyar participated in the agitation and was twice detained. Later on, he would be known as Vaikom Veerar, or the Vaikom Hero.
- He recreated the Tamil identity as an ideal of equality that was pure before the caste system was introduced. He maintained that the Tamil region was not native to caste.
- The Dravidian Movement evolved under him into an anti-caste and pro-Tamil national identity movement.
- Periyar founded Dravidar Kazhagam in the 1940s, advocating for an autonomous Dravida Nadu made up of speakers of Tamil, Malayalam, Telugu, and Kannada.

# 9. MAPPING

## 9.1 GIBRALTAR ARC

- According to a modeling study, in roughly 20 million years, a dormant subduction zone beneath the Gibraltar Strait (the Gibraltar Arc) may become active and migrate into the Atlantic Ocean, perhaps generating the Atlantic "Ring of Fire."

### Context:

- A possible waking of the Gibraltar arc might have a major effect on how the Atlantic Ocean is arranged over millions of years.



### About GIBRALTAR ARC:

- Beneath the Gibraltar Strait is a geological feature called the Gibraltar Arc, sometimes referred to as the Gibraltar Subduction Zone.
- The Atlantic Ocean and the Mediterranean Sea are separated by the narrow Strait of Gibraltar.
- It acts as Africa's and Europe's natural border.
- The Eurasian Plate and the African Plate tectonic plates converge in this region.
- In this region, the African Plate is presently subducting beneath the Eurasian Plate.

- Mountain ranges, seismic activity, and volcanic eruptions are all results of subduction—the sliding of one tectonic plate beneath another.
- The dynamic border where these enormous pressures form the Earth's crust is represented by the Gibraltar Arc.

## 9.2 Mudumalai Tiger Reserve

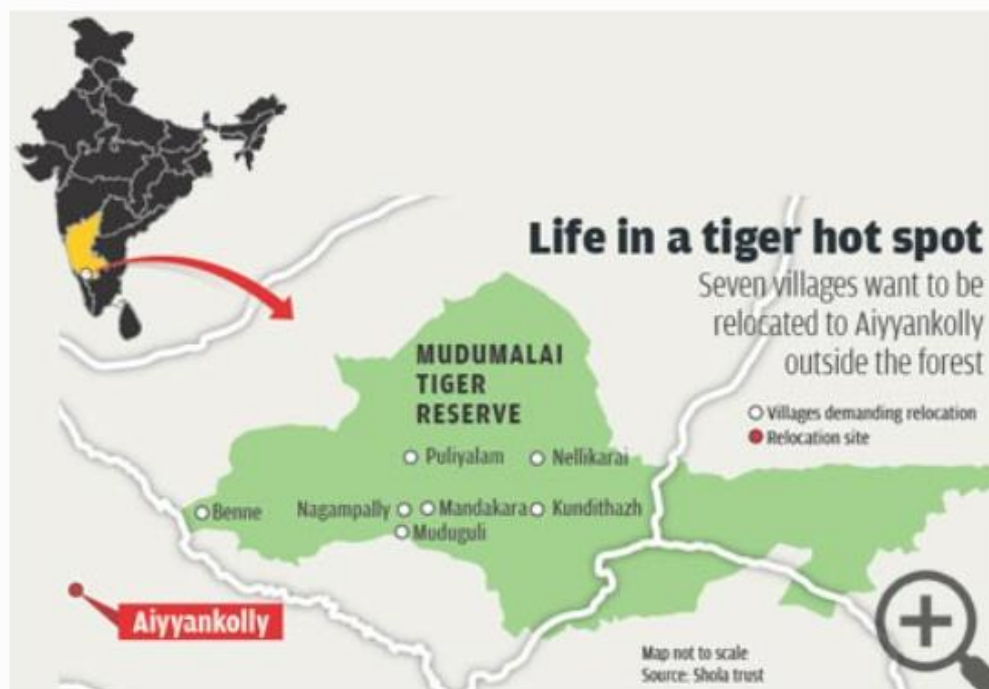
- In Mudumalai Tiger Reserve, the first-ever herpetofaunal survey identified 82 species of amphibians and reptiles. It was carried out in February and covered the forest ranges of Kargudi, Nilakottai, and Theppakadu.
- The survey's objectives were to assess the region's richness and support conservation initiatives. It helped shape conservation programs tailored to individual species, such as the mugger crocodile and Indian rock python.

### About Mudumalai Tiger Reserve

- The Mudumalai Tiger Reserve is situated in Tamil Nadu's Nilgiris District, at the intersection of three states: Kerala, Karnataka, and Tamil Nadu. It is a component of India's first biosphere reserve, Nilgiri Biosphere Reserve. The tall grasses of the reserve are known as "elephant grass."

### Herpetofaunal survey: what is it?

- An organized investigation aimed at recording and evaluating the variety, range, abundance, and ecology of amphibians and reptiles in a particular region is known as a herpetofaunal survey.



## 9.3 Black Sea

In the most recent naval assault on Moscow's fleet in the vital waterway, Ukraine said on Tuesday that its forces had damaged a Russian military patrol ship in the Black Sea close to the annexation of Crimea.

### Context:

- A crucial theater of the two-year conflict between Russia and Ukraine has been the Black Sea.



### About Black Sea

- Located east of the Balkans, south of the East European Plain, west of the Caucasus, and north of Anatolia, the Black Sea is a peripheral Mediterranean sea that separates Europe and Asia.
- Bulgaria, Georgia, Romania, Russia, Turkey, and Ukraine are its neighbors.
- The Danube, Dnieper, and Dniester are the main rivers that supply the Black Sea.
- It is connected to the little Sea of Marmara by the Bosphorus Strait, while the Dardanelles Strait connects it to the Aegean Sea. The Kerch Strait connects the Black Sea to the Sea of Azov to the north.
- Water normally flows in both ways simultaneously via the Bosphorus and Dardanelles, together known as the Turkish Straits, even though the net flow of water through them is out of the Black Sea: Beneath the less dense, fresher water that emerges from the Black Sea, denser, more salinized water from the Aegean flows into the Black Sea.
- This produces a substantial and long-lasting layer of anoxic deep water that does not mix or drain. Ancient shipwrecks discovered in the Black Sea have been preserved because of this anoxic layer.

## 9.4 GREAT LAKES

- The amount of ice in the Great Lakes has recently dropped to historically low levels.

### Context:

- The warmer winter weather and above-average surface water temperatures meant that the lakes were noticeably devoid of ice. The Arctic ecology is affected by the thinning ice cover, which also affects the supply of freshwater for local Indigenous groups, businesses, and threatened and endangered animals that depend on lake ecosystems for survival.



### About Great Lakes

- The east-central heartland of North America is home to a chain of sizable, interconnected freshwater lakes known as the Great Lakes.
- The Saint Lawrence River links these stunning lakes to the Atlantic Ocean.
- Lake Superior, Lake Michigan, Lake Huron, Lake Erie, and Lake Ontario are the five Great Lakes.
- Usually, they are located on or close to the US-Canada border.

### Impact of on the Environment:

- There have been record lows in ice cover over the Great Lakes, and these changes could have a big effect on the environment:

### Infrastructure Damage and Coastal Erosion:

- Coastal locations in the Great Lakes are less shielded from powerful winter storms and waves due to lower ice levels.
- Increased coastal erosion can have an impact on shorelines, beaches, and lakefront homes when there is no ice.
- Eroded beaches can cause serious flooding and issues with excessive sedimentation.

### Hazardous Weather and Lake Effects:

- Weather patterns and lake effects are impacted by the reduction in ice cover.
- More dangerous weather patterns, including as storms, strong winds, and lake-effect snow, might result from iceless winters.
- The region's infrastructure and safety are both impacted by these developments.

### Algae Blooms and Water Quality:

- The regulation of water temperature and nutrient cycle is influenced by ice cover.
- Lakes that have less ice can warm up earlier in the spring by absorbing sunlight more quickly.
- According to some biologists, this might result in bigger and earlier blooms of blue-green algae.

## 9.5 Spratly Islands & Second Thomas Shoal

- After Chinese vessels attempted to obstruct a Philippine mission to replenish their troops on the disputed reef, tensions in the South China Sea are on the rise.



### Context:

- Global attention in the hotspot has increased following a recent incident in which the Philippines claimed that China Coast Guard ships caused two collisions with their boats, water cannoning one of them. The Philippine ships were taking part in a normal mission to supply troops stationed at Second Thomas Shoal on the grounded navy warship BRP Sierra Madre with food.

### About Spratly Islands:-

- A contested archipelago in the South China Sea is called the Spratly Islands.
- The archipelago is located off the shores of Malaysia, southern Vietnam, and the Philippines. It is made up of islands, islets, cays, and more than 100 reefs.
- Although the islands are mostly deserted, they provide excellent fishing and might have vast quantities of natural gas and oil.
- While Brunei and Malaysia only claim a portion of the Spratly Islands, China, the Philippines, Taiwan (ROC), and Vietnam assert sovereignty over the entire group.
- China bases its assertion of sovereignty over the majority of the South China Sea on the contentious and historical Nine-dash line.
- The legitimacy of China's claims and actions in the South China Sea was contested by the Philippines in a 2013 lawsuit it filed with the Permanent Court of Arbitration in The Hague.
- China's claims of historical rights to the South China Sea (SCS) are unfounded legally, according to a ruling by the Permanent Court of Arbitration (PCA) in The Hague, Netherlands.

### About Second Thomas shoal

- In the South China Sea's Spratly Islands is a submerged reef known as Second Thomas Shoal.
- It is a disputed area that multiple countries claim. The BRP Sierra Madre, which was purposefully grounded on the reef in 1999 and has since been periodically restocked, is home to Philippine Navy soldiers.

## 9.6 Sela Tunnel

- The strategically important Sela Tunnel in Arunachal Pradesh was officially opened by Prime Minister Narendra Modi on Saturday.



### Context:

- India has reportedly freed up thousands of soldiers to fortify its disputed border with China, according to a report by Bloomberg. China has responded by stating that increasing the number of troops stationed at the border will not reduce tensions.



## About Sela Tunnel

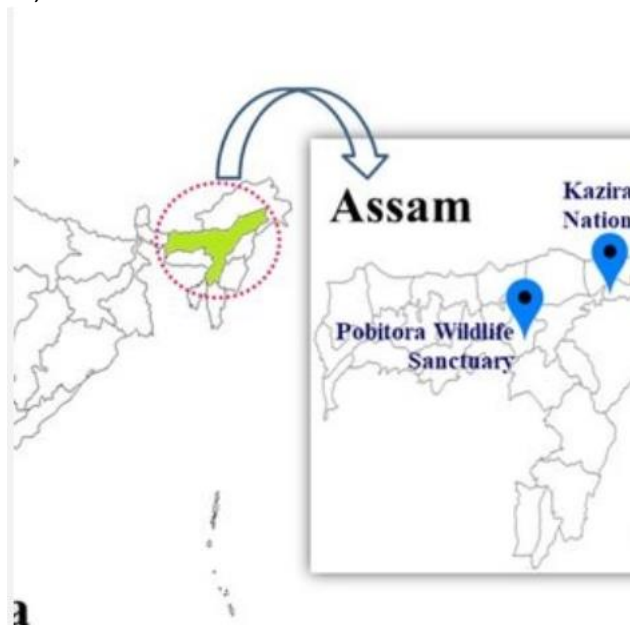
- Modi laid the project's foundation in February 2019 and estimated its cost at Rs 825 crore; however, a number of factors, notably the Covid-19 outbreak, caused the project's completion to be delayed.
- Situated at an elevation of 13,000 feet, Tawang, in Arunachal Pradesh, will have all-weather access thanks to the Sela Tunnel.
- The Sela Tunnel project, with its two tunnels and 8.780 km of approach road, is strategically significant. The project will be around 12 km long in total, including the approach, connection roads, and tunnels.
- The two tunnels are 1.5 km long with an escape tube for emergencies, and the first is a single-tube tunnel of 980 meters.
- At 13,000 feet, the tunnel will be the longest bi-lane tunnel in the world, according to an official. It will cross the Sela-Charbela mountain and be built using the New Austrian Tunneling Method (NATM).
- On the route that links Tawang, Arunachal Pradesh, with Tezpur, Assam, a tunnel has been constructed. Because of its close proximity to the Line of Actual Control (LAC), it is considered strategically crucial and will allow all-weather communication to the Tawang region.
- It has been dug down beneath the 13,800-foot (4,200-meter) Sela Pass, which separates the Tawang district from the rest of Arunachal Pradesh and is frequently closed because of landslides and winter.

## 9.7 Pobitora Wildlife Sanctuary

- The Pobitora Wildlife Sanctuary, located roughly 48 km east of Guwahati, is a prime home for one-horned rhinos. On March 10, the Assam Cabinet voted to de-notify this area.

### Context:

- According to environmental campaigners, this decision is the first of its sort for any protected region in the nation and was made 26 years after Pobitora was designated as a wildlife sanctuary by the Assam Forest Department on March 17, 1998.



### About Pobitora Wildlife Sanctuary

- Pobitora Wildlife Sanctuary is a wildlife sanctuary located in the Morigaon district of Assam, India, on the southern bank of the Brahmaputra.
- The refuge is home to the world's largest population of one-horned rhinos.
- Sightings of the Greater One Horned Rhinoceros, Wild Water Buffalo, Monitor Lizard, Wild Boar, and other animals can be found in the Grasslands of Pobitora.
- Pobitora is also notable for being the original population of the Indian Rhinoceros Vision, 2020 (IRV). Manas National Park received eight rhinos that were relocated from Pobitora Wild Life Sanctuary.

- Pobitora is also notable for being the original population of the Indian Rhinoceros Vision, 2020 (IRV). Manas National Park received eight rhinos that were relocated from Pobitora Wild Life Sanctuary.

## 9.8 SABROOM LAND PORT

- The 3rd Land Port at Sabroom in South Tripura was just essentially opened by Prime Minister Narendra Modi.

### Context:

- Apart from the newly constructed Land Port at Sabroom, the Prime Minister also officially opened eleven projects in Tripura.



### About SABROOM LAND PORT :

- Situated strategically near the international border with Bangladesh, in the South Tripura district of the Indian state of Tripura, lies the Sabroom Land Port.
- It is essential for establishing a connection between Bangladesh and India and promoting cross-border trade.
- The Maitree bridge over the River Feni connects Sabroom directly to the port of Chittagong, Bangladesh; the projected land port is situated around 75 km away.
- The land port has amenities such a warehouse, cargo administration facility, and passenger terminal building.
- It seeks to improve trade and connectivity between Southeast Asia and India.

## 9.9 Democratic Republic of the Congo

- The conflict between the Congolese army and the M23 rebel group, which is supported by Rwanda, intensified during the previous few weeks, resulting in hundreds of thousands of deaths and displacements.

### Context:

- Millions of people's access to food is in jeopardy as a result of the escalating hostilities between Rwanda and Congo, wherein Rwanda is suspected of aiding the rebels.

## About Democratic Republic of the Congo



- Africa's Democratic Republic of the Congo is one of its nations. The DRC is the second-largest nation in Africa in terms of land area. The nation is landlocked save for a 25-mile (40-kilometer) stretch of coastline that faces the Atlantic Ocean.
- It bears the name of the Congo River, which traverses the nation. Kinshasa is the capital and largest city of Rwanda.
- In order to differentiate it from the other Congo republic, which is officially known as the Republic of the Congo but is frequently referred to as Congo (Brazzaville), the country is frequently referred to by its abbreviation, the DRC, or as Congo (Kinshasa), with the capital appended parenthetically.
- The South Atlantic Ocean, Zambia, Angola, Tanzania (across Lake Tanganyika), Rwanda, Burundi, South Sudan, Uganda, Rwanda, Burundi, and the Republic of the Congo border the nation.
- Although the Democratic Republic of the Congo has abundant natural resources—it contains large reserves of industrial diamonds, cobalt, and copper, for example—it has also endured decades of colonial and economic exploitation, political instability, a lack of infrastructure, and corruption.

### Congo River

- Formerly called the Zaire River, the Congo River is the third-largest river in the world by flow volume, behind the Amazon and Ganges rivers. It is the second-longest river in Africa, only surpassed by the Nile.
- With measured depths of about 220 meters, it is the deepest river in the world. The only significant river to cross the equator twice is this one.
- The Congo rainforest, the second-largest rainforest in the world, is traversed by the river and its tributaries. The Atlantic Ocean is the drainage basin.

## 9.10 DARIEN GAP

- The Darien Gap, a thick jungle that crosses southern Panama and northern Colombia, has grown to be a dangerous entry point for migrants traveling to the US to seek refuge.



## Context

- The road is particularly dangerous due to the area's controlled by criminal groups and its difficult topography of wet, swampy rainforest.

## About Darien Gap

- The Darién Gap, or "Tapón del Darién" in Spanish, is a section of the Isthmus of Darién in Central America that connects the American continents.
- It is located in the northern region of Colombia's Chocó Department and the Darién Province of Panama. It is made up of mountains, a dense forest, and a sizable watershed.
- The only land route that links Central and South America is the Darién Gap.
- To get to the US border, migrants—mostly from Venezuela and Haiti—hike through a deep jungle.

## Key features of the Darién Gap include:

- Population: The Embera-Wounaan and Guna people live in the Darién Gap. The Cueva people lived there until they went extinct in 1535 as a result of the Spanish invasion of Panama.
- Geography: The Atrato River's river delta, which forms a level marshland at least 80 km (50 mi) wide, dominates the geography of the Darién Gap on the Colombian side. In sharp contrast, the Panamanian side is a hilly rainforest.
- Roads: There isn't even a rudimentary road that crosses the Darién. Interrupting the Pan-American Highway is the "Gap."

## 9.11 GULF OF TONKIN

- Vietnam requests that China honor the delimitation agreement for the Gulf of Tonkin.

### Context:

- The borders of the Gulf of Tonkin's continental shelf, exclusive economic zones, and territorial seas were established by a delimitation agreement signed in 2000.



### About GULF OF TONKIN:

- Due to China's unilateral enlargement of its territorial boundaries, the Gulf of Tonkin, which has historically been characterized by friendly relations between Vietnam and China, is currently facing a new maritime dispute.
- Off the beaches of Tonkin (northern Vietnam) and South China lies the Gulf of Tonkin, a gulf in the northwest of the South China Sea.
- It functions as a crucial canal that links the Gulf of Tonkin in Vietnam with the South China Sea's Beibu Gulf.

## 9.12 OPERATION INDRAVATI

Operation Indravati was recently initiated by India.

### Context:

- An admirable attempt to protect the security and welfare of its inhabitants in the middle of the Haitian crisis is India's Operation Indravati.



**About OPERATION INDRAVATI:**

- India started Operation Indravati as a means of evacuating its citizens from Haiti during the unrest there.
- The operation has the name of India's Indravati River.
- Because of the increasing anarchy and violence in Haiti, the goal of this operation is to relocate Indians to the neighboring Dominican Republic.

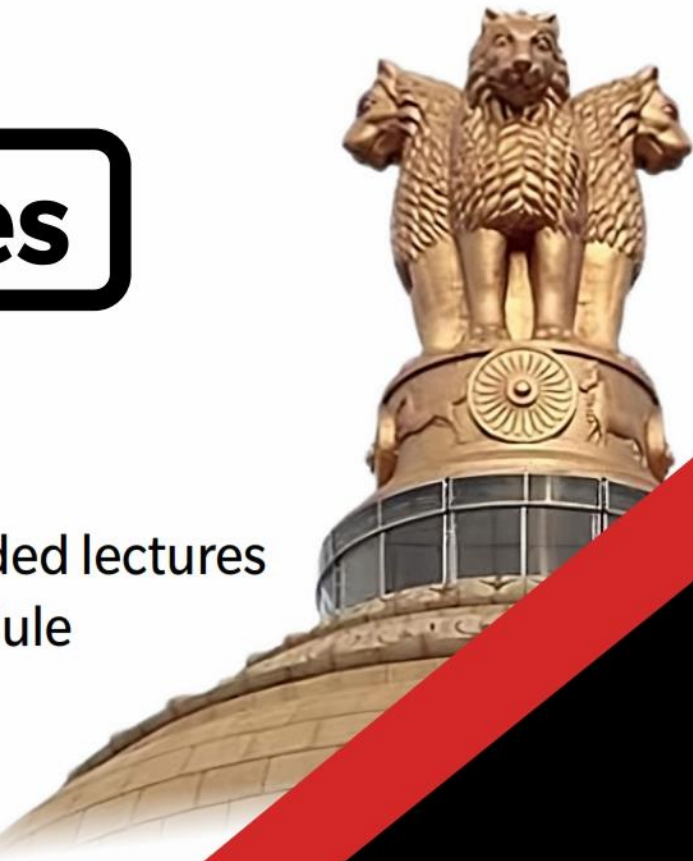
**Haiti**

- Haiti, a Caribbean nation that shares the Dominican Republic's island of Hispaniola, has been struggling with political unrest and rampant gang violence.
- Since President Jovenel Moise's killing in July 2021, Haiti has been experiencing a crisis.
- Following the void in leadership, Prime Minister Ariel Henry—who has garnered backing from other countries—took office.
- But efforts to create a political transition have fallen flat, and in an attempt to compel Henry's departure, a number of armed organizations have coordinated coordinated attacks on strategic locations.



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