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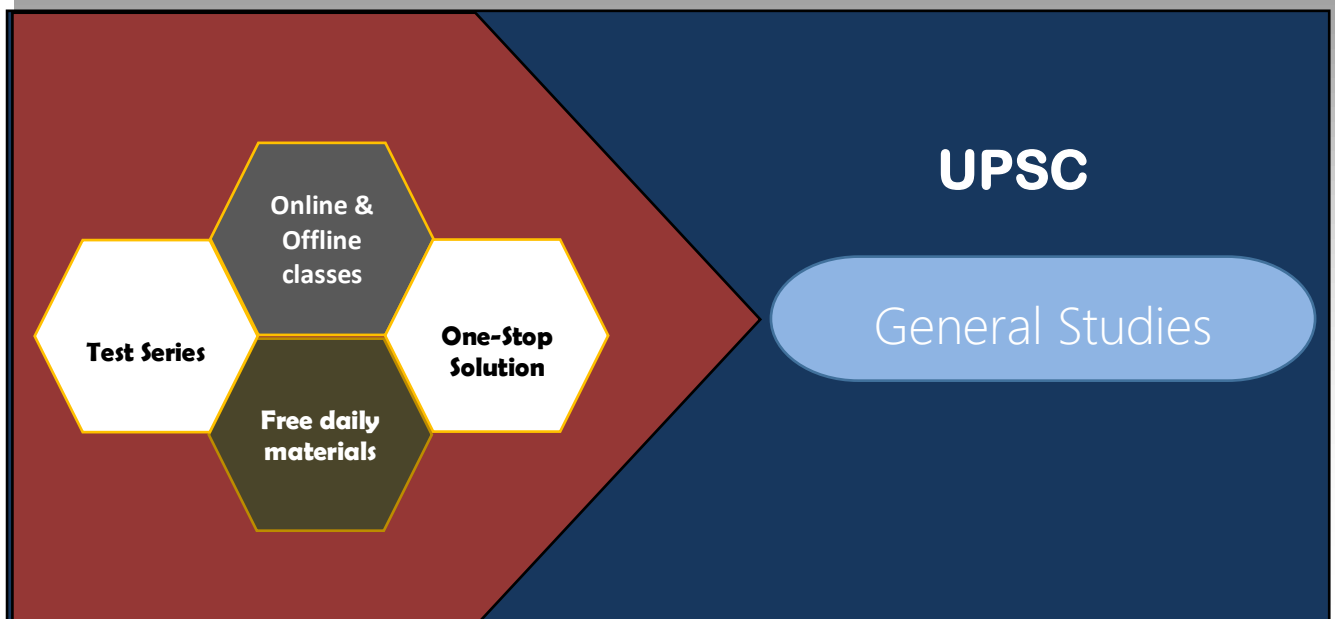
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**SHIKSHA**

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**Articles of the day  
THE HINDU & INDIAN EXPRESS**



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## **GS 1 : Heritage, culture ,Geography of the World and Society**

### **1. National Mission for Manuscripts (NMM)**

- The Union Ministry of Culture is set to “revive and relaunch” the National Mission for Manuscripts (NMM) and is mulling the formation of an autonomous body to help preserve ancient texts in India.
- Presently, NMM is a part of the Indira Gandhi National Centre for Arts.
- The new body, likely to be named the National Manuscripts Authority, will be an autonomous entity under the Ministry of Tourism and Culture.

#### **National Mission for Manuscripts (NMM):**

- It was established in February 2003, by the **Ministry of Tourism and Culture**, Government of India.
- **Mandate: Documenting, conserving and disseminating the knowledge preserved in the manuscripts.**
- Motto: ‘Conserving the past for the future’
- A unique project in its programme and mandate, the NMM seeks to **unearth and preserve the vast manuscript wealth of India.** India possesses an estimate of **ten million manuscripts**, probably the **largest collection in the world.** These cover a variety of themes, textures, and aesthetics, scripts, languages, calligraphies, illuminations, and illustrations. While **75%** of the existing manuscripts **are in Sanskrit**, 25% are in regional languages, according to the NMM.
- **Objectives: Locate manuscripts** through a national-level survey and post-survey. **Document** each and **every manuscript** and manuscript repository, **for a National Electronic Database** that **currently contains** information on **four million manuscripts** making this the **largest database on Indian manuscripts** in the world.
- Conserve manuscripts **incorporating both modern and indigenous methods** of conservation and training a new generation of manuscript conservators. **To train the next generation of scholars in various aspects of Manuscript Studies** like languages, scripts and critical editing and cataloguing of texts and conservation of manuscripts.
- To promote access to manuscripts by **digitizing the rarest and most endangered manuscripts.** To promote **access to manuscripts through the publication** of critical editions of unpublished manuscripts and catalogues. To

facilitate public's engagement with manuscripts through lectures, seminars, publications and other outreach programmes.

- To achieve this mandate, the mission has **established** more than **100 Manuscripts Resource Centres** and **Manuscripts Conservation Centres** all over India.

## Manuscript

- A manuscript is a **handwritten composition on paper, bark, cloth, metal, palm leaf, or any other material dating back** at least **seventy-five years** that **has significant scientific, historical, or aesthetic value**.
- Lithographs and printed volumes are not manuscripts.
- Manuscripts are found in hundreds of **different languages and scripts**. **Often, one language is written in a number of different scripts**. For example, Sanskrit is written in Oriya script, Grantha script, Devanagari script, and many other scripts.

## 2. 200th anniversary of Kittur Vijayotsava.

- A commemorative postage stamp was released at the historic Kittur Rani Chennamma Stage within the Kittur Fort premises to mark the **200th anniversary of Kittur Vijayotsava**.

## Kittur Rani Chennamma

- Rani Chennamma was born in **1778 in Kakati, Belgaum (now Karnataka)**.
- She was trained in **horse riding, sword fighting, and archery** from an early age.
- She married **Mallasarja Desai**, the ruler of **Kittur**, a small principality in Karnataka.
- **The Kittur Uprising (1824):** The **British East India Company** refused to recognize her **adopted son, Shivalingappa**, as the rightful successor under the **Doctrine of Lapse**. She declared **war** on the British in response to their annexation attempt. In **October 1824**, she led the **Kittur army** against **20,000 British soldiers** stationed near the **Kittur Fort**.
- During the battle, British official **John Thackery** was killed, and the Company forces faced **significant losses**. After initial resistance, British forces returned in **December 1824** with a larger army. Despite her courageous efforts, Rani Chennamma was **captured** along with her forces and imprisoned. She was held captive in **Bailhongal Fort**, where she spent her remaining years. She **died in captivity in 1829**.

## Legacy and Significance

- Rani Chennamma is celebrated as one of the **first women in Indian history** to lead an **anti-colonial uprising**. She is revered as a symbol of **courage, patriotism, and resistance** against colonial oppression.
- She is honored in **Kannada folklore**, particularly through **lavani (folk songs)** that celebrate her bravery and sacrifice. Statues have been erected across **Karnataka**, including a prominent one in **Bengaluru's Parliament House**.

### Doctrine of Lapse

- **Introduced by Lord Dalhousie in 1848**, the Doctrine aimed at expanding British territories in India. The policy was based on the principle that a **princely state without a suitable heir** should become part of the British Empire.
- Applied to princely **states where the ruler died without a natural or legally adopted male heir**, enabling the British to annex those states. The policy was **seen as illegitimate by many Indian rulers** and played a role in the Indian Rebellion of 1857.
- Several **states annexed due to this Doctrine**, include Satara (1848), Jaitpur (1849), Sambalpur (1849), Udaipur (1850), Jhansi (1853), and Nagpur (1854). Prior to the Doctrine of Lapse, princely states had a traditional practice of selecting an heir from a **group of candidates known as bhajans**.
- The policy was **abandoned in 1859**, two years after the end of the Company Rule in India.

### 3. Role of INGOs in Worsening Gender Imbalance in India

- For many years, International NGOs (INGOs) have promoted donor-driven agendas that have frequently caused harm to local communities.

### Historical roots of Gender Imbalance

- **Colonial Policies:** British colonial land reforms in the **18th and 19th centuries**, especially among land-owning castes, exacerbated **female infanticide** due to several socio-economic factors linked to **inheritance, property rights**, and the **structure** of agrarian society.
- **Post-Independence Malthusian Fears:** Following independence, fears of overpopulation dominated Western perceptions of India, and INGOs, influenced by these Malthusian concerns, promoted population control measures.
- **Influence in Institutions:** INGOs embedded themselves in key Indian institutions such as AIIMS and the International Institute for Population Sciences (IIPS), shaping the direction of research and policy towards population management. For example, **Sheldon Segal of the Population**

Council worked closely with the Indian Health Ministry to prioritize family planning over other pressing health concerns like tuberculosis and malaria.

- **Promotion of Sex Selection:** Doctors, influenced by the donor-driven agendas of INGOs, began promoting sex-determination technologies like amniocentesis under the pretext of reducing “unnecessary fecundity.”

### Impact of Sex Determination Technology

- **Introduction and Spread:** Sex determination technologies, such as amniocentesis and ultrasound, Initially intended for detecting fetal abnormalities, they were quickly co-opted for sex selection, leading to a significant increase in female foeticide. Census data reveals a steady decrease from 943 girls per 1,000 boys in 1951 to 927 girls per 1,000 boys by 1991. The sharpest fall occurred between 1971 and 1991, coinciding with the spread of these technologies.
- **Regional Variations:** States with easier access to sex-determination tests, such as Punjab and Haryana, experienced the **steepest declines** in their child sex ratios. By 2001, Punjab’s ratio had dropped to 876 girls per 1,000 boys, while Haryana’s fell to 861.
- **Missing Girls:** A 2006 study published in **The Lancet** estimated that sex-determination technologies contributed to the **loss of 10 million female births** in India between 1980 and 2010, with approximately 500,000 female foetuses aborted annually during this period.

### Way forward:

- **Strengthen Legal Enforcement and Awareness:** Enforce stricter penalties for illegal sex determination practices and raise public awareness to shift societal norms that value male children over female children, promoting gender equality at all levels.
- **Focus on Holistic Public Health and Gender Policies:** Redirect INGO and government efforts toward comprehensive health programs, prioritizing women’s health, education, and economic empowerment, rather than solely focusing on population control.

### 4. Global warming influence hurricane strength

- Recently Hurricane Milton rapidly intensified to Category 5 storm in less than a day on a path across the Gulf of Mexico toward Florida and became one of the strongest Atlantic storms.

### Categorisation of Cyclones



- **Tropical Cyclone** - It is a rotational low-pressure system in tropics when the central pressure falls by 5 to 6 hPa(hectopascals) from the surrounding and maximum sustained wind speed reaches 34 knots (about 62 kmph).
- **Cyclone Movement** - It is a vast violent whirl of 150 to 800 km, spiralling around a centre and progressing along the surface of the sea at a rate of 300 to 500 km a day.
- **Names** - Tropical cyclones are called "Hurricanes" over the Atlantic Ocean and "Typhoons" over the Pacific Ocean.

### What causes hurricanes to rapidly intensify?

- **Rapid intensification** - It is the increase in a tropical cyclone's maximum sustained wind speed of at least 30 knots - about 35 mph within a 24-hour period.
- **Causes of Rapid Intensification** - Rapid intensification is difficult to forecast, but there are a few driving forces.
- **Ocean Heat**-Warm Sea surface temperatures provide the energy necessary for hurricanes to intensify and deeper the warm water, the more energy a storm can draw upon, enhancing its strength.
- **Low Wind Shear** - Strong vertical wind shear can disrupt a storm's organisation, while low wind shear allows hurricanes to grow more rapidly.

### Global warming influence hurricane strength

- Global warming significantly influences hurricane strength through various interconnected mechanisms.
- The interplay between warmer oceans, increased atmospheric moisture, and rising sea levels due to global warming is making hurricanes stronger and more destructive.
- **Warmer Ocean Temperatures** - As global temperatures rise, sea surface temperatures also increase, providing more energy for storms.
- **Rapid Intensification** - Warmer waters also facilitate rapid intensification of hurricanes.

### 5. World's water cycle getting unpredictable, says UN study

- Increasingly intense floods and droughts are a "**distress signal**" of what is to come as climate change makes the planet's **water cycle ever more unpredictable**, the United Nations said.

#### Details:

- Last year, the **world's rivers** were their **driest** for more than **30 years**, **glaciers** suffered their **largest loss of mass in half a century**, and there were also a "significant" number of **floods**.
- Last year marked the **hottest year on record**, characterized by **extreme weather events** such as **prolonged droughts** and **floods** worldwide. These extremes were driven by both naturally occurring phenomena like **La Niña** and **El Niño**, as well as **human-induced climate change**.
- A warmer atmosphere holds more moisture, leading to more intense rainfall, while faster evaporation worsens drought conditions.

#### **Water resources are either excessive or insufficient, creating severe challenges:**

- **Africa** was the most impacted continent in terms of human casualties.
- In **Libya**, catastrophic floods caused by dam collapses in **September 2023** resulted in over **11,000 deaths** and affected **22% of the population**.
- Floods also devastated regions like the **Greater Horn of Africa, Democratic Republic of Congo, Rwanda, Mozambique, and Malawi**.
- Currently, **3.6 billion people** experience insufficient access to **fresh water** at least once a month, with this figure projected to rise to over **five billion by 2050**.

#### **Water cycle:**

- The **hydrologic cycle**, also known as the **water cycle**, explains the journey taken by water molecules as they go from the surface of the Earth to the atmosphere and back again, occasionally going below the surface.
- At its core, the water cycle is the motion of the water from the ground to the atmosphere and back again.
- **Water** travels through many different layers of the earth's surface, including the **oceans, glaciers, and lakes**, as well as simultaneously (or more slowly) moving through the **soil and rock layers** below the surface. These are complex paths.
- The water is afterwards released back into the **atmosphere**.
- The fact that the hydrologic cycle has no beginning and no end is a basic aspect of it.

#### **Key Processes in the Water Cycle:**

- **Evaporation:**
  - Liquid water turns into gas (water vapour).
  - Requires energy from the sun, atmosphere, or other sources (e.g., body heat through sweating).
  - Cooling effect, as seen after swimming or showering.

- **Transpiration:**
  - Water evaporates from plants via small openings called stomata, mostly on leaf undersides.
  - Depends on atmospheric humidity and soil moisture.
  - **99.9%** of water from transpiration is released into the atmosphere; only **1%** aids plant growth.
- **Condensation:**
  - Water vapour turns back into liquid, forming clouds or dew.
  - Occurs when the air temperature cools to the dew point.
  - Releases heat, contributing to weather phenomena like hurricanes.

## 6. Limitations of Gandhi's Vision : Women's rights issue

- Amid recent debates on gender equality and incidents of violence against women, Mahatma Gandhi's vision of women's rights issues calls for renewed engagement, especially on the occasion of his 155th birth anniversary.
- Gandhi's vision for the upliftment of women was a curious mix of promoting women's political mobilisation, self-reliance, and economic independence, while focussing on traditional feminine virtues.

### Women in the Swadeshi Movement

- Women's participation in politics increased during the Swadeshi Movement (1905) against the partition of Bengal. Ramendra Sundar Tribedi called for the observance of "Arandhan Day" on October 16, 1905, when women were to protest by not cooking in their homes and holding women-only protests.
- Women like Kadambini Ganguly and Swarnakumari Devi attended major political events.
- Organizations like Bharat Stree Mahamandal and Abanindranath Tagore's iconic Bharat Mata painting symbolized women's presence in the movement, though their impact was limited.

### Feminine Virtues and Gandhi's Satyagraha

- One of Gandhi's greatest contributions concerning women was encouraging their large-scale participation in the national movement.
- The Black Act of 1913 in South Africa required the registration of non-white marriages, which led to the labelling of unregistered marriages as "illegitimate". Women were at the forefront of opposing this Act and Gandhi used the issue to further their cause.
- Gandhi recognized feminine virtues – tolerance, nonviolence, sacrifice – as central to his philosophy of Satyagraha.

- For Gandhi, the ideal women were the likes of Sita, Draupadi and Damyanti. Sita represented 'chastity' and unyielding support to Ram. Draupadi, in spite of all odds, was a multitasker and resolute companion to the Pandavas. Damayanti exemplified loyalty and remained faithful to her husband, King Nala, even after he abandoned her.
- Gandhi also exhorted women to rise above the role of 'wifeness' and become 'sisters'. For him, women were supposed to be moving away from being a source of 'lust' to 'chastity', from bondage to freedom and from ignorance to education.
- Gandhi recognized the role of women in enforcing prohibition, which became successful when women took leadership roles during the Civil Disobedience Movement (1930).

### **Limitations of Gandhi's Vision**

- Although Gandhi encouraged women to come out of their domestic roles, his insistence on 'pure' and 'virtuous' womanhood restricted their opportunities. Distinctions were also made on the basis of respectability, resulting in the marginalisation of those who did not adhere to conventional moral standards. For instance, Gandhi excluded sex workers from Congress campaigns, creating a divide between 'women on the street' and 'women of the street'.
- Self-reliance was a key principle of Gandhian philosophy. Charkha and Khadi were introduced for self-reliance and economic independence, especially amongst widowed women. However, Gandhi's emphasis on self-reliance through Khadi and Charkha did not significantly empower women or make them aware of their rights.
- Gandhi placed the responsibility of household and religious duties on women, framing them as the solution to societal ills. While advocating for women's education, he made a distinction between the education of men and women based on what he perceived as their natural differences. Child rearing was primarily seen as women's work which was integral to the character-building of the nation.

### **7. Circular migration contribute to skill development and poverty alleviation for Indian migrants**

- Maharashtra's 997 youth, earning Rs 1.37 lakh in Israel, engage in circular migration, boosting skills through labour mobility agreements.

#### **"Triple win" scenario associated with circular migration**

- **Migrants** win by gaining high-paying jobs, improving their skills, and getting social security benefits while working abroad.
- **The home country (like India)** wins because when the workers return, they bring back new skills and experience that help improve local industries.
- **The host country (like Israel or Germany)** wins because they get the skilled workers they need to fill labour shortages without facing long-term migration issues.
- **Skill Development:** Indian workers gain exposure to international work environments, cutting-edge technology, and management protocols, which enhance their skills and employability.
- **Poverty Alleviation:** Higher wages in developed countries allow migrants to send **remittances** back home, improving the economic conditions of their families and contributing to poverty alleviation.

### Circular migration mitigate the issue of brain drain

- **Temporary Nature:** Since workers return after a set period (e.g., five years), they bring back their enhanced skills and experience, preventing a permanent loss of talent to foreign nations.
- **Knowledge Transfer:** Returning workers contribute to domestic industries by applying the new skills and technologies they learned abroad, benefiting the home economy.

### (Way forward)

- **Skill Matching and Training:** Governments must ensure exact skill matching between **migrant workers** and the requirements of the **destination countries**, providing refresher courses and training as needed.
- **Government-to-Government Agreements:** Strong bilateral agreements are essential to safeguard the rights of workers, ensure fair wages, and provide **social security** in the destination countries.
- **Streamlined Procedures:** Policies should simplify legal compliances, fast-track passport issuance, and remove barriers like language skills through training in languages such as Japanese, German, or French.
- **Conclusion:** Circular migration offers a “triple win” by benefiting migrants, home countries, and host nations. It enhances skills, boosts incomes, mitigates brain drain, and fosters knowledge transfer, provided there is proper policy support, skill matching, and streamlined processes.

## 8. Classical Languages status of Prakrit & Pali

- Among the five languages recently granted Classical Language status are Pali and Prakrit, both derivatives of Sanskrit that were widely used in Ancient India. The other languages are Marathi, Bengali and Assamese.

### Prakrits: the language of the people

- The term 'Prakrit' derives from 'prakriti,' meaning 'source' or 'origin'. Most scholars believe this refers to the Prakrits having evolved from Sanskrit.
- They were **much simpler than Sanskrit**, and thus the language used by the masses, as opposed to **Sanskrit being the language of the elites**.
- Most pre-Gupta inscriptions, including the **Ashokan edicts** (3rd Century CE), were composed in various forms of Prakrit.

### No one Prakrit:

- There is **no one Prakrit language**. Rather, Prakrit generally refers to a **group of closely-related Indo-Aryan languages**, which may also have other names.
- The term Prakrit encompasses **various languages and dialects**. Some scholars define it to include all **Middle Indo-Aryan languages** that derived from Sanskrit.
- These languages eventually evolved into the modern languages we speak today, such as **Hindustani, Marathi, and Bengali**.

### Pali: language of Buddhist canon

- As vernacular languages, Prakrits were chosen by heterodox religions like Jainism and Buddhism.
- Pali has traditionally been linked to Magadhi Prakrit, with the term 'pali' meaning "**lines or series**," referring to it as the language of Buddhist texts.
- However, some modern scholars think that Pali is a **blend of several Prakrit languages**, including some western dialects, that were combined and partly influenced by Sanskrit.
- Pali is the language of the **Theravada Buddhist canon** and due to its significance to Buddhism, Pali is the **variant of Prakrit** that is most studied today.
- After Theravada Buddhism declined in India, Pali continued to exist as a religious language in Sri Lanka, Myanmar, Thailand, Laos, and Cambodia, where this branch of Buddhism thrived.

### Pali canon:

- The Pali Canon refers to the standard collection of scriptures divided into three general baskets (Tripitakas) in the **Theravada Buddhist tradition**, written in the Pali language.
- **Vinaya Pitaka** (Discipline Basket): deals with **rules or discipline** of the Buddhist sangha.
- **Sutta Pitaka** (Sayings Basket): the largest basket comprising discourses and sermons of the Buddha himself, as well as some religious poetry.
- **Abhidhamma Pitaka**: the basket that further elaborates on **Buddhist philosophy**.

### 9. Rise and fall of cities in India

- India has undergone five urbanisations evolving from the mercantile Harappan period to the post-independence industrial cities.

#### First urbanization

- **Indus Valley Urbanization** - First urbanisation was under the mercantile Harappans in the north-western part of India.
- **Period** - 2500 to 1900 BCE
- It was a vast civilisation, spread over a large geography, larger than any of the other contemporaneous ones in Egypt, China, and Mesopotamia.

#### Characteristics of Harappan Cities

- **Grid Layout** - The cities were meticulously planned with a grid layout, featuring wide, intersecting streets with separate entry and exit to control movement.
- **Standardized Brick Construction** - Buildings were built using standardized bricks in 1:2:4 ratio, suggesting a centralized system of production and distribution.
- **Citadels** - Many cities had fortified citadels, likely used for defense or administrative purposes.
- **Drainage Systems** - The cities boasted sophisticated drainage systems, including underground pipes and covered drains, to prevent flooding and maintain sanitation.
- **Water Supply Systems** - Wells and reservoirs were used to supply water to the city's inhabitants.

#### Second Urbanization

- **Mahajanapadas** - The second urbanisation happened 1,500 years after Harappa.
- **Period** - 500 BCE

### Characteristics

- **Fortified Cities** - Many of these cities were fortified with walls and gates to protect them from attacks.
- **Diverse Cultures** - Due to their geographical locations, these cities often exhibited diverse cultural influences.
- **Centralized Administration** - Magadha's cities were characterized by a centralized administration, with a strong king and a well-organized bureaucracy.
- **Religious Centers** - Many of these cities like Kashi were important religious centers, attracting pilgrims and scholars from across the region.

### **Third urbanization**

- **Temple urbanisation** - The 3<sup>rd</sup> urbanisation took place as Temple Cities across South India and Southeast Asia.
- **Period** - 7<sup>th</sup> to 12<sup>th</sup> Century
- By the 10<sup>th</sup> Century Chola period, full-blown temple urbanisation emerged.
- **Cities** - Madurai, Kancheepuram, Thanjavur, Srirangam

### Characteristics

- **Temple Center** - Temple was the nerve centre of political and economic activity, surrounded by markets, courtiers, and courtesans.
- **Spiritual and Cultural Hubs** - Temples were centers of spiritual and cultural activities, hosting religious ceremonies, festivals, and educational institutions.
- This attracted scholars, artists, and craftsmen, further contributing to the development of the city.

### **Fourth Urbanization**

- **Muslim Metropolis** - The 4<sup>th</sup> urbanisation is the Muslim Metropolis of Delhi sultanate and Mughal empire.
- **Period** - 12<sup>th</sup> to 17<sup>th</sup> Century CE.
- According to Abu-l Fazl, in 1594 there were 2837 towns of which 180 were named as larger cities.
- **Cities**
  - Delhi sultanate - Delhi, Hisar, Hansi, Sirsa, Meerut, and Aligarh.
  - Mughal Cities - Agra, Fatehpur Siki, Lahore, Sikandra, Shahjahanabad



### Characteristics

- It was primarily agricultural.
- **Feudal System** - The courtiers were paid by giving them a share of the village wealth.
- **Religious Character** - Sufism, Dargahs (shrines), and Pirs became important.
- The Jama Masjid becomes a central site in these cities.
- **Cultural Centers** - Lahore, Agra were renowned cultural center under the Delhi Sultanate and the Mughal Empire, known for its poetry, music, and arts.

### **Fifth Urbanization**

- **Postcolonial cities** - 5<sup>th</sup> urbanisation is the colonial and post-colonial cities.
- Colonial administration had created a new urban, industrial and imperial landscape.
- **Period** - 17th Century onwards.
- **New Factors** - Forces of international trade, mercantilism and capitalism now came to define the nature of society.

### Characteristics

- Colonial cities reflected the mercantile culture of the European.
- **The big coastal cities** – Mumbai, Chennai, Calcutta, Kochi began as fortified settlements of the colonial powers, either the Portuguese or the Dutch or the French or the British.
- **European bases** - European commercial Companies had set up base in different places early during the Mughal era
  - Portuguese in Panaji in 1510
  - Dutch in Masulipatnam in 1605
  - British in Madras in 1639
  - French in Pondicherry in 1673.
- **Trading Centers** - With the expansion of commercial activity, towns grew around these trading centres.

### **10. Steps have been taken to promote classical languages**

- Recently, the Union Cabinet has approved to confer the status of Classical Language to five Indian languages.

### **Classical language**

- **Need for classical status** - To recognize the historical significance and role of the language as a guardian of Bharat's rich cultural and intellectual heritage.

- **Classical languages** - They are ancient languages with independent traditions and a rich literary history that continue to influence various literary styles and philosophical texts.
- **Introduction**- It was first introduced in **2004** in India.
- **Tamil** was the first language to get the Classical language status in 2004.
- **Importance** - By recognizing a language as classical, the government acknowledges their deep-rooted antiquity, vast literary traditions, and their invaluable contribution to the cultural fabric of the nation.

### Criteria for declaring a language as classical

- **Criteria in 2004** - High antiquity of its early texts/ recorded history over a thousand years.
- A body of ancient literature/ texts, which is considered a valuable heritage by generation of speakers.
- The literary tradition must be original and not borrowed from another speech community.
- **Revision of criteria** - It was revised two times, in **2005 and 2024**, based on the recommendations of Linguistic Experts Committees (LEC).

### Features of new classical languages

- **Prakrit** - It was the vernacular of the common folk in ancient India, and the language of heterodox religions like Buddhism and Jainism.
- The term 'Prakrit' derived from Sanskrit word 'prakriti' meaning 'source' or 'origin'. **Linguistic group** - Middle Indo-Aryan languages
- **Pali** - It is the variant of Ardhamagadhi Prakrit.
- It was the language of Theravada Buddhist canon.
- **Linguistic group** - Middle Indo-Aryan languages
- After Theravada Buddhism declined in India, Pali survived as a religious language in Sri Lanka, Myanmar, Thailand, Laos, and Cambodia, where this Buddhist school continued to prosper.

### Steps have been taken to promote classical languages

- Ministry of Education has taken various steps for advancing Classical Languages.
- **Establishing universities** - In 2020, three Central Universities were established through an Act of Parliament to promote Sanskrit.
- The Central Institute of Classical Tamil was created to facilitate translating ancient Tamil texts, promoting research, and offering courses for university students and language scholars.

- **Establishing Centres for Excellence** – It was established for studies in Classical Kannada, Telugu, Malayalam, and Odia under the auspices of the Central Institute of Indian Languages in Mysuru.
- It also takes steps in establishing Centers for promoting Classical Languages.

### Way Forward

- Government shall continue providing technical and financial support for the development and preservation of language.
- Promote academic and cultural initiatives to increase public awareness and motivate more scholars to contribute language development.
- Research and document literary provision and transform to next generation.

### 11. Features and Location of DANA

- The extreme conditions in eastern Spain which saw Valencia get a **year's worth of rain in just 8 hours** can be blamed on an event locally known as **Depresion Aislada en Niveles Altos (DANA)**.

### DANA

- **Depresion Aislada en Niveles Altos (DANA)**, is commonly referred to as the **"cold drop"** in English.
- It is a **meteorological phenomenon** in the **western Mediterranean** region that brings **intense rainfall and flooding**.
- The term **"DANA"** was **coined by Spanish meteorologists** to specifically describe this weather phenomenon.

### Features and Location:

- DANA occurs when **cold air from the Polar Regions** separates from the **polar jet stream** and descends over the **warmer Mediterranean Sea**.
- The contrast between cold air aloft and warm, moist air near the surface causes atmospheric instability, leading to the rapid formation of **cumulonimbus clouds** and intense **thunderstorms**.
- It primarily affects **Spain** and **Portugal** but can also impact **Italy, France**, and other areas around the **Mediterranean Sea**.
- This occurs in **autumn** and **spring**, as temperature variations are more pronounced during these seasons.

## GS 2 : Polity, Governance, International Relations

### 1. Conflict of Israel and Hezbollah

- Prime Minister Benjamin Netanyahu said that Israeli forces would continue to strike Lebanon with full force until the Shiite militant group Hezbollah stops firing rockets at Israel.
- Israeli attacks on Lebanon have killed 700 people in the last week alone, and the exchange of fire between Israel and Hezbollah, which began soon after the October 7, 2023 attacks by Hamas in southern Israel, has led to the displacement of thousands.
- The Israel-Hezbollah conflict has deep roots in the history of southern Lebanon.
- The establishment of the state of Israel in 1948 was accompanied by the violent displacement of more than 750,000 Palestinian Arabs in the event known as the Nakba, or catastrophe. Many of those who were displaced settled in south Lebanon.
- Lebanon had a large Christian population and conflicts between the Palestinians and Christian militias were fuelled by Soviet support for the Arabs and US backing for the Christian coalition.
- In the 1960s and 70s, militants affiliated with the Palestine Liberation Organisation (PLO) began to build a base in south Lebanon, which they used as a launchpad for attacks on northern Israeli towns.
- In March 1978, in response to a massacre of Israelis near Tel Aviv by Palestinian militants based in Lebanon, Israel invaded south Lebanon. In a short war that followed, Israeli forces pushed the PLO back from south Lebanon, creating a buffer north of Israel.
- But the PLO attacks from Lebanon continued and, four years later, Israel mounted another invasion. The Israel Defence Forces (IDF), along with their Lebanese Christian allies, laid siege to Beirut.
- By 1985, Israel had withdrawn from most of Lebanon but maintained a 15-20-km wide security zone in south Lebanon to prevent cross-border attacks. This area was patrolled by the South Lebanon Army (SLA), a Christian militia allied with Israel.
- Hezbollah was formed in the early 1980s in response to the Israeli occupation of Lebanon. The group was founded with support from Ayatollah Khomeini's regime in Iran.

- The group's initial goal was to resist Israeli occupation, but as it strengthened, its objectives expanded to establishing a theocratic state in Lebanon, similar to the one in Iran following the revolution of 1979.
- The long Israel-Hezbollah conflict has shaped the Middle East in multiple ways. Hezbollah, the crown jewel of Iran's overseas military operations, has developed significant military capability, and has become the spearhead of resistance against Israel.
- But all this might be about to change, as Netanyahu's government moves the focus of the war away from Gaza, and IDF tanks line up in northern Israel, seemingly in preparation for another ground invasion of south Lebanon.

## 2. Bail Provisions under PMLA

- The Supreme Court recently held that constitutional courts cannot allow provisions of the Prevention of Money Laundering Act to become instruments in the hands of the Enforcement Directorate to continue incarceration for a long time.

### The Prevention of Money-Laundering Act (PMLA)

- It was enacted by Parliament of India under Article 253 of Constitution in 2002 to prevent money laundering and provide for the confiscation of property derived from or involved in money laundering.
- PMLA and the Rules notified there under came into force with effect from 2005, and it was further amended in 2009 and in 2012.
- Director, FIU-IND and Director (Enforcement) have been conferred with exclusive and concurrent powers under relevant sections of the Act to implement the provisions of the Act.
- The offence under the PMLA mainly involves money laundering obtained through criminal activities (e.g., drug trafficking, terrorism, corruption).

### Bail Provisions under the Law

- Section 45 of the PMLA, which deals with bail, first states that no court can grant bail for offences under this law, and then proceeds to mention a few exceptions. The negative language in the provision itself shows that bail is not the rule but the exception under PMLA.
- The provision makes it mandatory to hear the public prosecutor in all bail applications, and when the prosecutor opposes bail, the court is required to apply a twin test. These two conditions are: (i) that there are "reasonable grounds for believing that [the accused] is not guilty of such offence"; and (ii) that "he is not likely to commit any offence while on bail".

## Supreme Court's Take on the Law

- To address concerns raised by ED regarding possible tampering with witnesses or evidence, the court imposed strict conditions on bail, including: regular appearance before the deputy director of ED; appearance before the investigating officer of the scheduled offences; restraint against contacting any prosecution witnesses or victims related to the scheduled offences; full cooperation with the trial and a refrain from asking for adjournments.
- **Conclusion** :While the PMLA provisions have faced scrutiny, the Supreme Court has consistently upheld their validity, emphasising the need to combat money laundering effectively. The balance between law enforcement powers and individual rights remains a critical aspect of this legal framework.

## 3. Preparing for the next pandemic : NITI Aayog recommendations

- Four years after the onset of Covid, an expert group formed by NITI Aayog has proposed the establishment of a comprehensive framework to handle future public health emergencies or pandemics effectively.
- **Gaps in Legal Frameworks**: Existing laws like the **Epidemic Diseases Act (1897)** and **National Disaster Management Act (2005)** were insufficient for handling large-scale health emergencies. These laws lack clarity on definitions of epidemics and provisions for managing public health crises, drug distribution, and quarantine measures.
- **Delayed Response and Coordination**: The COVID-19 pandemic exposed weaknesses in coordination between central and state governments, highlighting the need for a more organized response mechanism.

## Specific recommendations

- **Enactment of PHEMA**: Introduce the Public Health Emergency Management Act for a more robust legal framework to manage pandemics and other health emergencies.
- **Empowered Group of Secretaries (EGoS)**: Establish a central committee to oversee pandemic preparedness, governance, R&D, surveillance, and response efforts.
- **Strengthened Disease Surveillance**: Create a national biosecurity and biosafety network and monitor human-animal interfaces, especially for zoonotic diseases.
- **Emergency Vaccine Bank**: Develop a stockpile of vaccines for rapid access during health crises, sourced domestically or internationally.
- **Early Warning and Research Network**: Build a forecasting and modelling network, along with Centres of Excellence (CoEs) to advance research on priority pathogens and preparedness.

## Way forward

- **Strengthening Legal and Institutional Frameworks:** Enact a Public Health Emergency Management Act (PHEMA) and establish an Empowered Group of Secretaries for coordinated pandemic response.
- **Enhancing Surveillance and Early Warning Systems:** Build a robust disease surveillance network, biosecurity system, and epidemiology forecasting for early detection and response to outbreaks.
- **Investing in Health Infrastructure and Vaccine Stockpiles:** Develop public health cadres, boost healthcare infrastructure, and create an emergency vaccine bank for rapid deployment during health crises.

## 4. In France, a summit for diplomacy, tech and diversity

- France is set to host more than 100 heads of state, government leaders, and senior officials for the 19th Francophonie Summit on October 4-5, 2024.

### Technology Enhance Diplomatic Efforts Between India and France

- **Digital Collaboration:** The summit emphasizes cooperation in digital technology, which can strengthen ties through joint projects, knowledge sharing, and innovation in areas like **AI and cybersecurity**.
- **Facilitating Communication:** Technology, particularly AI, can enhance communication between diplomats and stakeholders, enabling more **efficient exchanges and negotiations** in multiple languages.
- **Showcasing Innovations:** Events like the FrancoTech Fair will provide platforms for **Indian and French innovators** to collaborate on addressing common challenges, fostering deeper bilateral relations through shared technological advancements.
- **Cultural Exchange:** Emphasizing multilingualism and cultural diversity fosters mutual understanding and strengthens relationships, allowing for more nuanced diplomatic interactions.

### Implications of Global Cooperation in Addressing Contemporary Issues

- **Shared Responsibility:** Global cooperation is essential for addressing challenges like climate change, health crises, and digital governance, promoting collective action and resource sharing among nations.
- **Strengthening Multilateral Institutions:** Enhancing cooperation leads to reforms in institutions like the UN, World Bank, and IMF, making them more effective and responsive to global needs.

- **Fostering Innovation:** Collaborative efforts among nations can drive innovation in technology and policy, enabling quicker and more effective responses to pressing global issues and facilitating knowledge exchange.

#### Way forward:

- **Establish Joint Innovation Initiatives:** India and France should create collaborative platforms for research and development in **emerging technologies**, focusing on areas like AI, cybersecurity, and digital infrastructure to enhance diplomatic relations and tackle common global challenges.
- **Promote Multicultural Diplomatic Engagement:** Both nations should prioritize cultural exchanges and inclusive dialogue that reflect diverse perspectives, thereby **strengthening mutual understanding** and fostering more effective and representative diplomatic strategies.

### 5. Challenges of Internal Democracy of Political Parties

- Many national and regional political parties in India are struggling to maintain democratic structures.

#### Internal democracy of political parties

- **Internal democracy** - The processes and mechanisms by which party members participate in decision-making and leadership selection.
- It's a crucial aspect of a healthy democratic system, ensuring that the party represents the interests of its members and is accountable to them.
- Key components of internal democracy in political parties include its democratic functioning various aspects of it.
- **Open Membership** - Parties should have open membership policies, allowing anyone who meets the criteria (e.g., age, citizenship) to join.
- **Regular Elections** - Regular elections for party leadership positions, such as party president or leader, ensure that members have a say in who represents them.
- **Internal Party Elections** - Members should have the right to participate in internal party elections for various positions, from local to national levels.

#### Challenges to internal democracy of political parties

- **Concentration of Power** - The tendency in political parties towards the concentration of power in one or few leaders at the top.



- **Heroism** - India's multi-party democracy thrives on diversity but often sees political parties driven by individual charisma rather than internal democracy.
- **Dominance of Elites** - In some cases, a small group of elites may dominate a party, limiting the influence of ordinary members.
- **Factionalism** - The formation of factions within parties can undermine internal democracy by creating divisions and hindering consensus-building.
- **Corruption** - Corruption within parties can erode public trust and undermine democratic principles.

### **Role of EC in maintaining internal democracy of political parties**

- The Election Commission of India is an autonomous constitutional authority constituted under Article 324 for administering Union and State election processes in India.
- **Registering Authority** - The EC is the registering authority for all the political parties in our country and thus gives the parties a legal recognition as an entity.
- **Functional Monitoring** - EC monitors whether the political parties are functioning according to their Constitution, by-laws, etc through periodical review of compliance.
- **Oversee Party Election** - Elections monitors whether the elections to their office bearers are taking place regularly.

### **What lies ahead?**

- Consider the wholistic approach of delivering elections on the stipulated time and in a free fair manner.
- Educate the electorate to consider the internal democracy of political parties an important parament while voting for a party.
- Develop clear and specific laws and regulations governing inner-party democracy.

### **6. India's strategic interests in West Asia**

- With escalating tensions between Iran and Israel, India's Ministry of External Affairs she emphasized the need to prevent regional escalation, urging all parties to resolve issues through dialogue and diplomacy for stability.

### **Can India act as a mediator in the Iran-Israel conflict?**

- India maintains **strong strategic and economic ties** with both Israel and Iran, allowing it to communicate with both parties. This balanced relationship positions India as a potential neutral mediator.
- India's stature on the global stage is rising, and its history of **non-alignment** and support for **peaceful dialogue** gives it credibility. However, balancing its strategic partnerships with Israel, Iran, and key Arab states will be challenging.
- **Energy Security:** West Asia is crucial for India's energy needs, supplying about **80% of its oil imports**. A wider conflict could disrupt these supplies and increase energy prices, impacting India's economy significantly.
- **Economic Ties:** India has invested heavily in its relationships with West Asian countries, viewing the region as an extension of its neighborhood. This includes trade partnerships and investments, particularly with major Arab nations and Israel.
- **Security Concerns:** India shares concerns with both **Iran and Israel** regarding terrorism, particularly threats emanating from **Pakistan and Afghanistan**. This common ground could facilitate dialogue but also complicates India's diplomatic balancing act.

### India's relationship with regional powers

- **Regional Dynamics:** Other regional players such as Qatar, Egypt, Saudi Arabia, and Turkey also influence the situation. Qatar has been active in mediating between conflicting parties, while Egypt's geographical proximity to Gaza positions it as a key player in ceasefire discussions.
  - Saudi Arabia's leadership role in the Islamic world adds another layer of complexity to India's diplomatic efforts.
- **Multi-faceted Role:** While India maintains strong defense and economic relations with Israel, it also relies on Iran for energy supplies and has historical ties to various Arab nations.
  - Balancing these relationships is critical for India's foreign policy strategy.

### Way forward:

- **Diplomatic Engagement and Back-Channel Diplomacy:** India can leverage its balanced ties with **Israel, Iran, and key Arab states** to facilitate back-channel communication, focusing on de-escalation and humanitarian relief. India's **non-aligned stance** and growing global influence position it as a credible facilitator for peaceful dialogue.
- **Multilateral Approach:** India should work through international forums like the United Nations and coordinate with other regional players like Qatar,

Egypt, and Saudi Arabia. This multilateral engagement would enhance its role while avoiding the risks of taking sides in the conflict.

## 7. Status of the Swachh Bharat Mission 2.0

### Legacy Waste Dumpsites in India

- The Central Government launched the **Legacy Waste Management Project** under the **Swachh Bharat Mission (SBM) 2.0** in **October 2021**, aiming to remediate these dumpsites by **2026**.
- **Current Status:**
  - **India** has over **3,000 legacy waste dumpsites**.
  - **2,424 dumpsites** have waste loads exceeding **1,000 tonnes**.
  - Only **471 (19.43%)** of the **2,424 dumpsites** have been fully remediated halfway through the project period.

### Legacy Waste Dumpsites

- These dumpsites contain **unmanaged solid waste** accumulated over many years in an unscientific manner.
- **India** generates approximately **1,50,000 tonnes** of municipal solid waste daily (as per the **State of India's Environment 2023 report**).
- Due to a lack of solid waste management infrastructure, **municipal corporations** often create **garbage hills** in city outskirts, which are now part of urban areas due to city expansion.
- Around **16 crore tonnes** of **legacy waste** is spread across **15,000 acres** of prime land in India.

### Swachh Bharat Mission (SBM):

- Launched on **October 2, 2014**, the **Swachh Bharat Mission** aimed to **eliminate open defecation** and create **Open Defecation Free (ODF) villages**.
- **SBM-Urban 2.0 (2021-2026):** Focus on making all cities "**garbage-free**" and maintaining **ODF status**. Includes goals like **100% source segregation**, **door-to-door waste collection**, and **scientific waste management**. Aims to remediate all legacy dumpsites and convert them into **green zones**. Provisions for **scientific landfills** to prevent the creation of new dumpsites.

### Progress on Dumpsite Remediation

- As of September 2024, out of **2,424 dumpsites**:
  - **471** have been fully remediated.
  - **1,226** are under remediation.
  - **727** sites remain untouched.

- **Land Reclamation:**
  - 27% of the total 17,039 acres of dumpsite land has been reclaimed.
  - Tamil Nadu leads with 837 acres (42%) reclaimed.
  - Gujarat has reclaimed 75% of its landfill area (698 out of 938 acres).

### Financial Aspects

- Central Share assistance of ₹3,226 crore has been approved for remediation projects.
- State and Union Territory governments are required to provide matching funds.

### 8. Benefits of National Agriculture Code

- The Bureau of Indian Standards (BIS) has begun the process of formulating a National Agriculture Code (NAC), on the lines of the existing National Building Code and National Electrical Code.

### National Agriculture Code (NAC)

- **NAC** - It is a standard for agriculture practices like preparation of fields, micro irrigation and water use.
- It will cover the entire agriculture cycle, and will also contain a guidance note for future standardisation.
- It will incorporate emerging agricultural technologies, novel farming practices, and varying regional conditions across India.
- **Nodal Authority** - Bureau of Indian Standards (BIS)
- **Objectives** - The NAC will serve as a guide for farmers, agriculture universities, and officials involved in the field.
- To promote quality and best practices in the agriculture sector.
- To create an implementable national code covering recommendations for agriculture practices taking agroclimatic zones, crop type, till agrifood value chain into consideration.
- To act as an enabler of quality culture in Indian agriculture by providing the required reference to policy makers.

### Benefits of NAC

- **Improve Agri Processes** -It will ensure best practices from crop selection to the storage of agricultural produce.
- **Enhance Efficiency** - Optimum utilization of resources & latest technologies.
- **Better Standardization** - Areas which are lacking standardization will be identified and standards will be developed for them.

- **Improve Quality** – It would act as an enabler of quality culture in Indian agriculture by providing the required reference to policy makers and guidance to the farming community.
- **Agricultural Transformation** - It holds immense potential to transform India's agricultural sector by creating a more conducive environment for farmers to thrive.

### What lies ahead?

- Promote collaborative effort among central government, state governments, farmers, and other stakeholders.
- Provide training to farmers on the NAC and its standards.
- Giving financial assistance to institutes for providing training to farmers.

### 9. Specific caste-based practices in prison manuals : unconstitutional

- The Supreme Court declared caste-based discrimination in prisons unconstitutional, ordering immediate reforms in jail manuals nationwide to uphold inmates' dignity, equality, and non-discrimination rights.

### Specific caste-based practices in prison manuals were deemed unconstitutional by the SC

- **Work Assignments Based on Caste:** The assignment of menial tasks like cleaning and sweeping to marginalized castes (e.g., SCs, STs, DNTs) while reserving cooking roles for higher castes was ruled unconstitutional. This violated **Articles 14 (Right to Equality)** and **Article 15 (Prohibition of Discrimination on Grounds of Religion, Race, Caste, etc.)**.
- **Caste-based Classification of Labour:** The court struck down provisions in prison manuals that classified inmates into different labour roles based on their caste, calling it a form of “untouchability” and caste hierarchy.
- **References to ‘Scavenger Class’:** The reference to specific castes as the “scavenger class” was condemned as reinforcing caste stereotypes, and the court ruled such practices unconstitutional under **Article 17 (abolition of untouchability)**.
- **Assignment of Hazardous Tasks:** Marginalized prisoners forced to clean sewers and tanks in unsafe conditions was also ruled a violation of their dignity under **Article 21 (Right to Life with Dignity)**.

### India's prisons face other challenges too:

- **Overcrowding:** In 2016, India's prisons were 20% over capacity, with some prisons over 500% capacity. Overcrowding can lead to poor living conditions and the spread of disease.
- **Poor hygiene and Custodial torture:** Prisoners face physical abuse and sexual abuse, and police may also torture prisoners. Prisons are underfunded, which leads to poor infrastructure, inadequate food, and insufficient clothing.
- **Understaffing:** 33% of prison official positions are vacant. Prison management is a state subject, so prison rules vary by state. **Ineffective bail system:** The bail system contributes to the crisis of undertrial incarceration.

### Actions mandated by the SC

- **Reform of Prison Manuals:** All states and Union territories must revise their prison manuals within three months to align with the judgment, eliminating discriminatory provisions. The Union government is required to update the **Model Prison Manual 2016** and the **Model Prisons and Correctional Services Act 2023** within the same period.
- **Removal of Caste-Based Work Assignments:** The court ordered that no inmate be subjected to work or housing arrangements based on their caste. The caste column in registers of undertrial and convicted prisoners must be deleted.
- **Prohibition of Hazardous Work:** The court mandated that manual scavenging or hazardous cleaning of sewers or septic tanks in prisons be prohibited, in line with the **2013 law banning manual scavenging**.
- **Arrest Guidelines for DNTs:** The court called for strict adherence to guidelines (from **Arnesh Kumar Vs State of Bihar** and **Amanatullah Khan Vs Commissioner of Police, Delhi** cases) to prevent arbitrary arrests of denotified tribe members.
- **Compliance Oversight:** The court initiated **suo motu** proceedings to monitor the implementation of these reforms and ordered states and the **Union government to submit compliance reports**, ensuring sustained oversight.
- **Conclusion:** The Supreme Court's landmark ruling ends caste-based discrimination in prisons, mandating nationwide reforms in jail manuals, safeguarding inmates' dignity, and promoting equality by eliminating discriminatory caste-based practices and work assignments.

### 10. Key takeaways of Suicide pod under legal scrutiny in Switzerland

- Switzerland police arrested at least four persons recently for their involvement in the death of a 64-year-old American woman by a 'suicide pod' on September 23. The woman, whose identity has not been disclosed, reportedly suffered from an autoimmune condition for years. This incident has turned the spotlight on the contentious Sarco pod.

## Key takeaways

- Both euthanasia and assisted dying are ways in which a person may intentionally choose to end their life.
- Euthanasia refers to the practice of intentionally ending a person's life to relieve them from suffering or terminal illness. Euthanasia relies on the presence of a physician. Euthanasia may be of two kinds – voluntary, where the patient gives their explicit consent, and involuntary, when they are unable to do so, possibly because they are in a coma.
- Euthanasia can also be classified based on the method:
  - Active Euthanasia: Involves directly administering substances (e.g., lethal injection) to cause death.
  - Passive Euthanasia: Involves withdrawing medical treatments or life-support that sustains life, allowing death to occur naturally.
- Assisted Suicide: The process where a person provides another individual, typically a patient, with the means to end their own life (e.g., supplying lethal drugs), but the person takes the final action themselves.
- Assisted Dying: This term is often used to refer to the practice of providing terminally ill, mentally competent adults with the means to end their own lives. It is typically done through the prescription of life-ending medication.
- Key Difference from Assisted Suicide: The term assisted dying is usually reserved for cases where the person is already nearing death due to terminal illness. It is focused on hastening an inevitable death rather than providing a means for anyone wishing to die.

## About Sarco pod

- Named after sarcophagus, the stone coffin used to bury ancient royalty, the Sarco is a coffin-sized, air-tight machine designed by Exit International.
- First made in 2019, the Sarco pod consists of a 3D-printed detachable capsule placed on a stand with a canister of liquid nitrogen. A person lying inside it could press a button to initiate the dying process, flooding the air inside it with nitrogen gas.

## 11. Features of MOU between India-USA

- With an eye on reducing dependence on China, India and the US signed a memorandum of understanding (MOU) to expand and diversify the critical minerals supply chain at a bilateral commercial dialogue.

### Origin and Nations involved:

- **Countries involved:** India and the United States signed a Memorandum of Understanding (MOU) aimed at expanding and diversifying critical mineral

supply chains. This agreement is part of a broader effort to reduce dependence on China for critical minerals, which are essential for modern technology and clean energy transitions.

- **Objective:** The MOU aims to strengthen cooperation in areas like mineral exploration, extraction, processing, recycling, and recovery between India and the US.

### Key Features:

- The agreement focuses on improving the **resilience of the critical minerals sector** by identifying equipment, policies, and best practices that both countries can adopt. It also **emphasizes joint projects** in third countries and cooperation in newer areas like semiconductors and clean energy.
- Both countries are working to create a sustainable supply chain for critical minerals like **Rare Earth Elements (REEs), lithium**, and others, given China's dominance in the sector.

### Initiatives taken by India:

- **Planning Commission (now NITI Aayog):** Highlighted the need for critical minerals for industrial growth, identifying 12 strategic minerals, including lithium, cobalt, and tungsten.
- **Ministry of Mines:** Set up a steering committee to review rare-earth elements and energy-critical elements. Studies on India's mineral reserves were conducted to formulate a strategy.
- **Geological Survey of India (GSI):** Developed plans to enhance rare earth exploration, crucial for securing India's mineral resources.
- **Council on Energy, Environment, and Water (CEEW):** Conducted studies identifying 13 minerals critical for India by 2030, essential for manufacturing and clean energy.

### Dr. Veena Kumari Dermal committee:

- **Objective:** To assess the importance and supply risks of critical minerals using a three-stage process: international study, inter-ministerial consultation, and statistical analysis.
- **Outcome:** 30 minerals were identified as critical, based on factors like availability, substitutability, and supply risks, with two minerals categorized as crucial for fertilizers.

## **12. Characteristics of Circular Migration**

- Recently India and Israel have signed a circular migration labour agreement.



## Circular Migration

- **Circular Migration** – It is a repetitive form of migration wherein people move to another place (the destination country) and back (country of origin) according to the availability of employment.
- It means that people move to different locations for a brief period of time when work is available.
- It is a phenomenon mostly among low-income groups who migrate to avail of seasonally available jobs in another country, city, place etc.
- **Circular Migrant** - As per the report on measuring circular migration by the United Nations Economic Commission for Europe Task Force, one is called a circular migrant if you have completed at least 'two loops' between two countries.
- Circular migration became quite popular in the 60s and 70s with the advent of globalisation and development.

## Circular Migration within India

- **Internal Migration** - In India, internal migration, which is migration within a particular country or State, has almost always been circular.
- **Rural to Urban** - With the advent of jobs in the manufacturing, construction and services sector, there has been a huge flow of migrants from rural areas to urban cities.
- Between 2004–2005 and 2011–2012, the construction sector witnessed one of the largest net increases in employment for all workers, specifically for rural males.
- **Rural Urban Collapse** – Due to this migration Rural populations and their economy dwindled and urban spaces witnessed infrastructural collapse as they are unable to properly house incoming populations.

## Benefits of circular migration

- **Balanced migration** - It looks at migration not only from the point of view of the receiving country but also of the sending nation.
- **Human Capital Development** - Enhanced experience of working with sophisticated construction machinery and advanced management protocols
- **Prevent Brain Drain** – The negative effects of brain drain will reduce and a sort of brain circulation will be encouraged, wherein the migrants can use their talents in both countries and still contribute to remittances.

## Challenges

- Even though India has the requisite numbers, fulfilling the global skills gap is not an easy proposition.

- **Language barriers** - Communication becomes challenging, since since moving across different countries with short period stay doesn't let learning the language.
- **Legal compliance challenges** - G-to-G agreements for circular migration require exact skill-matching and many legal compliances.

### Government initiatives

- **Demand Aggregation** - National Skill Development Corporation (NSDC) has aggregated the skill gap demand for many of India's partner countries.
- **State level SOPs** - Maharashtra Institution for Transformation (MITRA) worked closely with the NSDC to evolve SOPs and policy norms so that skilled youth could access higher wage markets.
- **Skill Development** - Launched in 2015, this mission aims to provide vocational training and skill development to Indian youth, making them more attractive to employers abroad.
- **Booster Training** - NSDC has developed a four-day course on Recognition of Prior Learning (RPL) to upgrade the existing skills.

### 13. Role of India to navigate relationship with major powers

- India's participation in the **sixth Quad Leaders' Summit in Wilmington, Delaware, U.S., on September 21, 2024**, has heightened expectations for strengthening security cooperation among the "four key maritime democracies in the Indo-Pacific."

### India relationships with major powers

- **Strategic Autonomy**: India maintains a policy of non-alignment, balancing relations with both the **U.S. and Russia**. It is careful not to be drawn into formal alliances but seeks to leverage its partnerships for national interests.
- **Quad vs. Russia**: India's engagement with the U.S.-led Quad strengthens its **Indo-Pacific strategy**, while its ties with Russia (a Quad opponent) focus on maintaining historical **military and strategic benefits**.
- **Russia-China Dynamics**: As Russia moves closer to China, India seeks to rebalance, ensuring its interests are not sidelined, particularly in the context of China's growing influence in Asia and unresolved border disputes.
- **U.S. Partnership**: While deepening ties with the U.S., India is cautious about fully aligning with **Washington's agenda** (for exports), especially regarding tensions with Russia.
- **As a Peace facilitator**: India is increasingly positioning itself as a peace facilitator, evidenced by the NSA (Ajit Doval) of India's outreach to Russia and France regarding the Ukraine conflict and peace plan.

- As a '**Vishwa Bandhu**': India's engagement with both Ukraine and Russia shows its willingness to serve as an interlocutor, navigating complex diplomatic terrains while pushing for dialogue in global conflicts.

#### Way forward:

- **Strengthen Strategic Autonomy:** India should continue balancing its relationships with major powers by deepening economic and security ties with both the U.S. and Russia, while maintaining flexibility to protect its national interests, particularly in the Indo-Pacific and vis-à-vis China.
- **Expand Peace Diplomacy:** India can further leverage its role as a mediator in global conflicts, enhancing its international standing by promoting dialogue and peace initiatives.

#### 14. India makes pledge of \$300 million for WHO programme

##### India's contribution:

- India has pledged over \$300 million for the WHO's core program from 2025 to 2028. So far, WHO has received contribution pledges for over \$2.2 billion towards a \$7.1 billion funding gap.
- The largest share of \$250 million will be spent on the **Centre of Excellence for Traditional Medicine**.
- India is the **sixth largest contributor** of core funding to the World Health Organization (WHO). India has committed the largest amount of funds so far in southeast Asia.
- The funding aims to save at least **40 million lives** over four years through various initiatives including **increased vaccine delivery** to priority countries and support to 55 countries in **training and employing 2 million health workers**.

##### WHO's funding:

- The WHO relies on two primary types of funding: assessed contributions and voluntary contributions.
- **Assessed contributions:** These are mandatory payments made by member states, calculated based on the country's wealth and population. They support the core functions of WHO.
- **Voluntary contributions:** These are funds provided by member states, international organizations, and private sector entities. They often fund specific programs and initiatives.

##### Classification of Voluntary Contributions:

- These funds are categorized based on the flexibility WHO has in their allocation.
- **Core Voluntary Contributions (CVC):** Core Voluntary Contributions are fully unconditional, giving WHO complete discretion on fund usage.
- **Thematic and Strategic Engagement Funds:** These funds are partially flexible, allowing some discretion while meeting contributors' reporting and accountability requirements.
- **Specified Voluntary Contributions:** These contributions are tightly earmarked for specific programmatic areas and must be spent within a designated timeframe. Specified voluntary contributions made up **87% of all voluntary contributions** in 2022-2023.

### 15. India's middle-income trap

- The World Development Report 2024 highlights the **"middle-income trap,"** where economies stagnate as growth slows. Only 34 middle-income nations advanced to high-income status in 34 years.
- The World Bank defines **middle-income economies** as those with **incomes between \$1,136 and \$13,845 per capita.**
- The **middle-income trap** refers to a slowdown in growth when an economy reaches a certain income threshold, about **11% of U.S. per capita income.**

#### State intervention crucial for breaking the middle-income trap

- **State intervention** is vital for **coordinating development goals**, as seen in South Korea and Chile, where governments played an active role in shaping industries and ensuring the private sector's alignment with national development objectives.
- The state ensures **investment, infusion of global technologies, and domestic innovation**, which are critical for modern economies. This is known as the **3i approach** (Investment, Infusion, Innovation).
- State intervention disciplines local elites, ensuring firms succeed based on **performance, not political connections.** Underperforming firms are allowed to fail, promoting efficiency and innovation.

#### Challenges does India face in balancing state intervention with democratic values

- **Economic Power Concentration:** India faces a growing concentration of wealth among powerful business houses, which are perceived to be closely linked to the state. This risks **cronyism** rather than performance-based growth, which could hinder innovation and investment.
- **Manufacturing Stagnation:** Unlike South Korea, India's manufacturing sector has not experienced significant growth. With global export demand

slowing and increased **protectionism**, manufacturing is less likely to drive India's growth.

### **World Bank recommendation to escape the middle-income trap:**

- **World Development Report 2024:** This report outlines a three-pronged approach for middle-income countries to escape the trap: **Investment:** Initially focusing on increasing investment. **Technology Infusion:** Incorporating modern technologies into domestic industries. **Innovation:** Ultimately fostering innovation to enhance competitiveness and productivity

### **Way forward:**

- **Economic Growth Strategy:** Niti Aayog CEO emphasized the need for a comprehensive economic strategy to avoid the middle-income trap, which he described as the "biggest threat" to India's growth.
- **Free Trade and Global Integration:** Niti Aayog CEO advocated for increased openness to free trade and alignment with global value chains.
- **Urban Development and Infrastructure:** The government should focus on transforming urban areas into economic hubs, which is seen as crucial for driving growth.

## **16. Importance of Empowering Girls**

- The **International Day of the Girl Child is observed annually on October 11**. This day serves as a critical reminder of the need to empower and protect girls worldwide.
- It shows the importance of gender equality, access to education, and opportunities for young girls.
- **The day aims to create an environment where girls can thrive, equipping them with the tools to lead and shape their futures.**

### **Theme for 2024: Girls' Vision for the Future**

1. The theme for this year's celebration, "**Girls' Vision for the Future**," highlights the aspirations and hopes that girls possess despite the challenges they face.
2. Research by **UNICEF indicates that girls are determined to create a better future for themselves** and their communities.
3. However, to realize this vision, girls need **allies – governments, communities**, and individuals who actively listen to and respond to their needs.

## **Gender Equality in the Indian Constitution**

- The Indian Constitution embodies the principle of gender equality. It guarantees fundamental rights to women and empowers the state to **take affirmative action against historical socio-economic and political discrimination.**
- Key provisions ensure that women are protected from discrimination based on sex and gender.
- Empowerment of women transcends policy; it is a transformative process that enables women to claim equal opportunities across economic, cultural, social, and political spheres.

### Key Government Schemes:

1. **Beti Bachao, Beti Padhao:** Aimed at promoting gender equality and ensuring the survival, education, and empowerment of girls.
2. **Sukanya Samriddhi Yojana:** Launched in 2015, this scheme encourages parents to save for their daughters' education and marriage, ensuring financial security.
3. **Scheme for Adolescent Girls (SAG):** Addresses health and nutritional needs for adolescent girls.
4. **Udaan:** An initiative launched in 2014 to increase enrollment of girl students in prestigious engineering institutions.
5. **National Scheme of Incentive to Girls for Secondary Education (NSIGSE):** Launched in 2008, it aims to improve educational opportunities for girls, particularly from marginalized communities.

### Legal Measures for Protection

India has implemented several legal measures to empower and protect girls:

1. **Prohibition of Child Marriage Act, 2006:** This act aims to eliminate child marriage by penalizing those involved.
2. **Protection of Children from Sexual Offences (POCSO) Act, 2012:** This legislation addresses child abuse and includes updated rules to enhance its effectiveness.
3. **Juvenile Justice Act, 2015:** Ensures care and protection for children in need.
4. **Mission Vatsalya:** Focuses on child development and protection, offering services such as the Child Helpline and the Track Child portal.
5. **PM CARES for Children Scheme:** Provides support for children orphaned due to COVID-19. These initiatives create a supportive environment that promotes the rights and well-being of girls in India.

## 17. Nagaland Government's Response on Creation of Frontier Nagaland Territory

- The Eastern Nagaland People's Organisation (ENPO) has issued an October 31, 2024, deadline for the Nagaland government to provide feedback to the Ministry of Home Affairs on the proposal for creating an **autonomous territory named Frontier Nagaland Territory (FNT)**. This move could significantly impact the governance and territorial arrangement of Nagaland, specifically the six eastern districts bordering Myanmar.

### Frontier Nagaland Territory

- The proposed FNT would comprise six districts: **Kiphire, Longleng, Mon, Noklak, Shamator, and Tuensang**.
- The ENPO represents seven tribes: **Konyak, Phom, Sangtam, Yimkhiung, Chang, Tikhir and Khiamniungan**, has led the demand for the creation of FNT, citing long-standing neglect by the Nagaland state government towards these districts.
- These districts make up **about 20 out of 60 seats** in the Nagaland Legislative Assembly and are located along the **India-Myanmar border**, making them strategically significant.
- The ENPO claims that the eastern districts have been systematically neglected in terms of **infrastructure, education, and development**, which has prompted their call for greater political and administrative autonomy.

### Constitutional Provisions:

- **Article 371A (Special Status for Nagaland):** Nagaland enjoys **special provisions under Article 371A** of the Indian Constitution. This article ensures that **no Act of Parliament in respect of religious or social practices of the Nagas, their customary laws, ownership of land, and its resources, applies to the state unless the Legislative Assembly of Nagaland passes a resolution to do so**. This gives Nagaland significant autonomy over cultural and legal matters.
- The **Sixth Schedule of the Constitution** of India allows for the formation of autonomous administrative divisions which have been given **autonomy within their respective states**.
- Most of these autonomous district councils are located in **North East India** but **two are in Ladakh**, a region administered by India as a union territory. **Presently, 10 Autonomous Councils in Assam, Meghalaya,**

Mizoram and Tripura are formed by virtue of the Sixth Schedule with the rest being formed as a result of other legislation.

- The district and regional councils within their territorial jurisdictions can constitute **village councils** or **courts for trial of suits** and cases between the tribes. They hear appeals from them.
- The district council can establish, construct or manage primary schools, dispensaries, markets, ferries, fisheries, roads and so on in the district. It can also make regulations for the control of money lending and trading by non-tribals. But such regulations require the assent of the governor.
- The **acts of Parliament or the state legislature do not apply** to autonomous districts and autonomous regions or apply with specified modifications and exceptions.

### 18. Key facts of Tele Mental Health Assistance and Networking Across States (Tele-MANAS)

- **Tele MANAS is now available as a comprehensive mobile platform - Tele MANAS App - developed for the public.**

#### Tele MANAS:

- **Tele Mental Health Assistance and Networking Across States (Tele MANAS)** was started by the Ministry of Health and Family Welfare 2022.
- It seeks to function as a comprehensive, integrated, and inclusive 24x7 **tele-mental health facility**.
- It aims to provide free tele-mental health services all over the country round the clock, particularly to people in remote or underserved areas.
- Tele-MANAS will be organised in a **two-tier system**: **Tier 1** comprises **state Tele-MANAS cells**, which include trained counsellors and mental health specialists. **Tier 2** will comprise specialists at the **District Mental Health Programme (DMHP)/Medical College** resources for physical consultation and/or e-Sanjeevani for audio-visual consultation.
- Currently, there are 51 operational Tele-MANAS cells functioning across all 36 States and UTs, offering services in **20 different languages**.
- Another feature added to the programme this year is the **video consultations facility** which will be undertaken by the mental health professionals who are taking audio call escalations to get further information about the caller as part of history taking and clarification.



## 19. Key Highlights NI-KSHAY POSHAN YOJANA

- The Union Health Ministry has increased the monthly nutrition support for TB patients under the Ni-Kshay Poshan Yojana.

### Key Highlights of the Announcements made by the Ministry of Health

1. The **monthly nutrition support for TB patients under the Ni-Kshay Poshan Yojana has been doubled from Rs 500 to Rs 1,000** to ensure that TB patients receive adequate nutrition during their treatment.
2. The Union Minister announced that **Rs 1,040 crore has been allocated to the Ni-Kshay Poshan Yojana** to provide better nutritional support to TB patients across the country.
3. **The scope of the Pradhan Mantri TB Mukh Bharat Abhiyaan expanded to include household contacts of TB patients.** Now the family members living with TB patients will also receive social support from the community to improve the overall health and immunity of the family members, reducing the risk of them contracting TB.
4. **Ni-Kshay Mitras are volunteers or organizations that adopt TB patients and their families to provide additional support.** They will now also adopt household contacts of TB patients and distribute food baskets to them to reduce the out-of-pocket expenses for TB patients and their families.
5. The ministry has **introduced Energy Dense Nutritional Supplementation for underweight TB patients;** patients whose body mass index (BMI) is less than 18.5 kg/m<sup>2</sup> at the time of diagnosis, about 12 lakh underweight patients will receive this special nutritional support for the first two months of their treatment.
6. All TB patients will now receive nutritional support ranging from Rs 3,000 to Rs 6,000 under the Ni-Kshay Poshan Yojana. This support is essential for ensuring that TB patients get the necessary nutrients to aid their recovery and improve their overall health.

### Ni-Kshay Poshan Yojana

1. Ni-Kshay Poshan Yojana was **launched by the Ministry of Health and Family Welfare in April 2018** to provide nutritional support to tuberculosis (TB) patients to help them recover more effectively.
2. **TB patients must be registered on the Ni-Kshay portal to receive benefits.** This portal helps in tracking and managing TB patients' treatment, improving data collection, and facilitating targeted intervention.
3. **The financial incentive is preferably provided through Aadhaar-enabled bank accounts** to ensure that the funds reach the intended beneficiaries directly.

## 20. Need for Rationalising PDS and NFSA

- October 16 is observed as World Food Day every year by the United Nations Food and Agriculture Organisation (FAO).

### Public Distribution System

- Public Distribution System (PDS) – It evolved as a system of management of scarcity through distribution of foodgrains at affordable prices.
- PDS is operated under the joint responsibility of the Central and the State/UT Governments.
- Role of Central Government - Procurement, storage, transportation and bulk allocation of food grains to the State Governments through Food Corporation of India (FCI)
- Role of State Government - Allocation within State, identification of eligible families, issue of Ration Cards and supervision of the functioning of Fair Price Shops (FPSs)
- National Food Security Act - The 2013 Act aimed at reducing exclusion errors legally entitles up to 75% of the rural population and 50% of the urban population to receive subsidized foodgrains under TPDS.
- Expanded Coverage - About two thirds of the population of maximum coverage of 81.34 crore persons, is covered under the Act.
- Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY) - It has been extended for a period of next five years with effect from 1st January, 2024.

### Need for rationalizing PDS and NFSA

- High Cost of Food Subsidy – The annual food subsidy for distribution of food grains to AAY households and PHH beneficiaries, Other Welfare Schemes and Tide Over is to the tune of Rs. 2.13 lakh crore.
- Reduced Poverty – As per NITI Aayog's Multi-dimensional Poverty Index , poverty ratio has declined from 29.13 % in 2013-14 to 11.28 % in 2022-23.
- The coverage of 66% target under NFSA can be reduced accordingly.
- Price Revision – Subsidized food prices have not been revised since inception of the act.
- PDS leakages - A substantial part of almost 25 to 30 % of food and fertilisers subsidies, , never reaches the intended beneficiaries.

### What lies ahead?

- Ensure enough lead time to prepare for proper implementation and transformation.
- Digitisation of the agri-food system could help in rationalizing the food subsidy system.

- Revise the subsidized food prices in alignment with the inflation figures.
- Encourage states to implement SMART PDS system to improve its effectiveness and efficiency.

## 21. India and Russia Cooperation on Northern Sea Route and Polar Navigation

- **India and Russia** are deepening their cooperation on the **Northern Sea Route (NSR)** through joint projects in Arctic shipbuilding, training Indian sailors for polar navigation, and cargo transit.
- The discussions come at a time when India is enhancing its investments in **Russia's Far East region** and working on major transport corridors like the **Chennai-Vladivostok Maritime Corridor** and the **International North-South Transport Corridor (INSTC)**.

### Northern Sea Route (NSR)

- The **Northern Sea Route (NSR)**, the **shortest shipping route** for freight transportation between **Europe** and **countries of the Asia-Pacific region**, straddles **four seas** of the Arctic Ocean.
- Running to **5,600 km**, the **Route begins** at the boundary between the **Barents** and the **Kara seas (Kara Strait)** and **ends** in the **Bering Strait (Provideniya Bay)**.
- The distance savings along the **NSR** can be as high as **50%** compared to the currently used shipping lanes via **Suez or Panama**.
- **Arctic Infrastructure:** Russia is investing in **nuclear icebreakers and updating the NSR's infrastructure** to make it an efficient shipping artery linking Europe, Russia, and the Asia-Pacific region.

### India-Russia Cooperation on the Northern Sea Route (NSR):

- **Cargo Transit:** Identifying targets for **Indian-Russian cargo movement** along the NSR.
- **Training of Indian Sailors:** The potential for training Indian sailors in polar navigation techniques.
- **Arctic Shipbuilding:** Collaborative development of projects focused on **Arctic shipbuilding technology**.
- **Memorandum of Understanding (MoU):** A draft MoU between India and Russia was proposed to enhance cooperation in cargo shipping along the NSR.
- **Rosatom, Russia's state nuclear energy corporation**, acts as the infrastructure operator for the NSR since 2018.

### International North-South Transport Corridor (INSTC):

- Proposed in 2000, the INSTC was designed as a **transport route from India to Russia via Iran**, offering an **alternative to the conventional Suez Canal route**.
- The **corridor spans 7,200 km** incorporating **sea, rail, and road components**, crossing multiple countries and **aimed at enhancing India's access to Central Asian and Eurasian markets**.
- **Planned route:** The INSTC envisages the movement of goods from **Mumbai to Bandar Abbas in Iran** by sea; from **Bandar Abbas to Bandar-e-Anzali**, an **Iranian port on the Caspian Sea**, by road; from **Bandar-e-Anzali to Astrakhan**, a **Caspian port in the Russian Federation** by ship across the **Caspian Sea**; and onward to other parts of the **Russian Federation and Europe** by rail.

## 22. Link between Suicide and Mental Health disorders

- Weeks after a final-year student died allegedly by suicide in his hostel room at the Indian Institute of Management (IIM), Ahmedabad, the institute's students' council has demanded setting up of a committee to probe into the circumstances surrounding the death.
- According to the annual report of the National Crime Records Bureau (NCRB), 1.64 lakh people died by suicide in 2021 – an increase of 7.2 per cent from 2020. In the past three years, the suicide rate in the country has increased from 10.2 to 11.3 per 1,00,000 population. Most suicides in India are by youth and middle-aged adults – with 65 per cent of the suicides in 2020 being reported in the age group of 18-45 years.

### Key takeaways

- According to WHO, the link between suicide and mental disorders (in particular, depression and alcohol use disorders) and a previous suicide attempt is well established in high-income countries. However, many suicides happen impulsively in moments of crisis with a breakdown in the ability to deal with life stresses, such as financial problems, relationship disputes, or chronic pain and illness.
- In addition, experiencing conflict, disaster, violence, abuse or loss and a sense of isolation are strongly associated with suicidal behaviour. Suicide rates are also high among vulnerable groups who experience discrimination, such as refugees and migrants; indigenous peoples; lesbian, gay, bisexual, transgender, intersex (LGBTI) persons; and prisoners.
- The urgency to act to prevent suicides has been recognized and prioritized at the highest levels. The reduction of the suicide rate is an indicator in the UN Sustainable Development Goals (the only indicator for mental health),

WHO's General Programme of Work and WHO's Comprehensive Mental Health Action Plan 2013–2030.

- In 2021, WHO launched LIVE LIFE: an implementation guide for suicide prevention in countries. Through the LIVE LIFE initiative, governments are encouraged and supported to implement a suite of evidence-based interventions and foundational pillars for suicide prevention.
- The Government has released the National Suicide Prevention Strategy in 2022. The National Strategy for Suicide Prevention provides a framework for multiple stakeholders to implement activities for prevention of suicides in India. Strategy aims to reduce suicide mortality by 10% in the country by 2030. It includes an action framework with proposed actions with key stakeholders, implementation framework and mechanism, thus providing a path forward for preventing suicides.
- The Mental Healthcare Act 2017 brought in some necessary changes. The Act effectively decriminalised attempted suicide, which was punishable under Section 309 of the Indian Penal Code. It ensured that the individuals who have attempted suicide are offered opportunities for rehabilitation from the government as opposed to being tried or punished.

### 23. Effect of Doctrine of Lis Pendens

- The Supreme Court recently held that the non-applicability of the provisions of Section 52 of the Transfer of Property Act, 1881 (TPA) wouldn't bar the applicability of principles of lis-pendens, which are based on justice, equity, and good conscience.

#### Doctrine of Lis Pendens

- **Lis pendens** in common parlance means “a pending legal action”.
- The **maxim representing** this doctrine means that ‘**during the pendency of litigation, nothing new should be introduced**, and to maintain the status quo, to abstain from doing anything which may affect any party to the litigation.
- It is based on the **principle that during the pendency of a suit, the subject matter of it (i.e. the property in the suit) should not be transferred to a third party.**
- It is **dealt with in Section 52 of the Transfer of Property Act, 1882**, which provides that **if there is any transfer of any immovable property pending litigation, the same shall not affect the rights of the parties** in respect to the immovable property.
- The **outcome of the litigation, passed by a court of competent jurisdiction, in the matter during the pendency of which the transfer had taken place would**

be binding upon such a purchaser, who has purchased the property during the pending litigation.

- It serves to protect the rights and interests of parties involved in a pending law suit concerning a specific property.
- **Effect of Doctrine of Lis Pendens:** The effect of the rule of lis pendens is **not to invalidate or avoid the transfer** but to **make it subject to the result of the litigation**. According to this rule, therefore, **whosoever purchases a property during the pendency of a suit is bound by the judgment** that may be made against the person from whom he derived title, even though such a purchaser was not a party to the action or had no notice of the pending litigation.
- **Conditions for Applicability:** The Supreme Court has stated the required elements for the applicability of the rule of lis pendens under Section 52. They are as follows: The **suit must be in proceeding**. The instituted suit should be filed in court with competent jurisdiction. The right of title of an immovable property is directly and specifically in question. The **suit directly affects the rights of the other party**. The **property in question is being transferred by either party**. The **suit must not be collusive** (a suit in which a decree is obtained by a fraud or collusion) in nature.
- **Non-Applicability of Doctrine:** This doctrine is not applicable in certain cases. They are as follows:
  - Sale made by mortgager in exercise of his power conferred under the deed.
  - In cases **where only the transferor is affected**.
  - In cases **where proceedings are collusive** in nature.
  - When the **property is not described correctly** and makes it unidentifiable.
  - When the right to the said property is not directly in question and alienation is permitted.

#### 24. Key features of FIVE EYES

- Five Eyes supports Canada in spat with India.
- Citing alleged involvement in the killing of Hardeep Singh Nijjar, Canada has expelled six Indian diplomats. In a tit-for-tat move, India too expelled six Canadian diplomats.

#### Fiver Eyes

- The Five Eyes is an intelligence-sharing alliance consisting of five countries: United States, United Kingdom, Canada, Australia, and New Zealand.
- The alliance was initially formed during World War II for sharing signals intelligence (SIGINT) and has since evolved into a broader intelligence cooperation framework.

- It is based on the UKUSA Agreement, a multilateral agreement for cooperation in intelligence activities, particularly concerning signals intelligence.

#### Key Features:

- **Intelligence Sharing:** The Five Eyes share a wide range of intelligence, including military, political, security, and cyber intelligence.
- **Scope:** Initially focused on the Soviet Union during the Cold War, the Five Eyes now addresses global security threats such as terrorism, cybercrime, and state-sponsored espionage.
- **Technology and Surveillance:** The alliance members operate extensive signals intelligence infrastructure and conduct joint surveillance operations on potential security threats worldwide.

#### Historical Background:

- The UKUSA Agreement was formalized in 1946, primarily between the United States and the United Kingdom. Over time, the agreement was expanded to include Canada (1948), Australia, and New Zealand (both in 1956).
- The Five Eyes network became central during the Cold War in monitoring and intercepting Soviet communications.
- In the post-Cold War period, it expanded its scope to cover threats like terrorism, nuclear proliferation, and cybersecurity.

### 25. United Nations Women Report and its challenges

- A new report from United Nations Women has unveiled a significant gender gap in social protection worldwide, leaving billions of women and girls vulnerable to poverty.

#### Data points and status:

- **2 billion women and girls** worldwide lack access to social protection (e.g., cash benefits, healthcare, pensions). **18%** of nearly 1,000 social protection measures introduced by governments across 171 countries focus on **women's economic security**.
- **63% of women** globally give birth without maternity benefits, with the figure rising to **94% in sub-Saharan Africa**. **25% more likely:** Women aged 25-34 are more likely to live in extreme poverty compared to men of the same age.
- **7.7 times more likely:** Women in fragile settings face a much higher likelihood of extreme poverty due to factors like conflict and climate change.

### Challenges:

- **Gender-specific vulnerabilities:** Women face compounded risks due to conflict, economic shocks, and climate change, which are not adequately addressed in existing social protection schemes.
- **Inflation:** Rising food and energy costs since 2022 have disproportionately impacted women, worsening their financial situation.
- **Gaps in maternity benefits:** Lack of maternity leave and financial support leaves women vulnerable during childbearing years, contributing to gender inequality in economic stability.
- **Extreme poverty:** Women, especially in fragile settings, are far more likely to experience poverty, making gender-responsive policies essential.
- **Funding gap:** Low-income countries need \$77.9 billion (or 15.9% of GDP) to implement basic social protection systems, but lack the fiscal capacity to do so.

### Way ahead:

- **Gender-responsive social protection:** Governments must design systems addressing the unique challenges faced by women and girls to ensure inclusivity.
- **International support:** Financial aid from global bodies may be needed to help low-income countries close funding gaps for comprehensive social protection.
- **Innovative policies:** Targeted policies in countries like Mongolia, Mexico, and Senegal show the effectiveness of extending benefits to informal workers.
- **Prioritizing economic security:** Governments should focus more on measures that improve women's access to resources and benefits, enhancing their economic security.

### Conclusion:

- The UN Women report highlights the urgent need for **gender-responsive social protection policies to bridge the gap** in economic security for women and girls globally. Countries should prioritize inclusive social protection measures and collaborate internationally to ensure sustainable development that addresses gender inequality.

### 26. Section 6A of Citizenship Act

- **In the 1980s**, Assam faced significant **unrest over illegal immigration**, mainly from Bangladesh.



- This migration began before the Bangladesh Liberation War in 1971 and continued after, causing social and economic challenges in the region.
- The All Assam Students Union (AASU) became a key voice against this immigration, demanding government action to protect the culture and identity of the Assamese people.

#### Key Factors Leading to the Accord:

- The AASU organized widespread protests, strikes, and civil disobedience against illegal immigrants. This movement gained strong public support, reflecting concerns about jobs, resources, and cultural identity.
- The protests led to violent incidents, forcing the government to intervene.
- The Indian National Congress, led by Prime Minister Rajiv Gandhi, recognized the need to find a solution to stabilize the situation in Assam.
- Rajiv Gandhi's government understood the urgency of addressing these issues to maintain peace in the northeastern region.
- **Negotiations:** In 1985, discussions began between the government and representatives of AASU and the All Assam Gana Sangram Parishad (AAGSP), another student-led group. The goal was to reach an agreement on the status of illegal immigrants and how to protect the rights of Assamese citizens.

#### Section 6A

- The Citizenship Act, 1955, saw Section 6A introduced through the Citizenship (Amendment) Act, of 1985.
- It follows the Assam Accord, signed on August 15, 1985, and mainly addresses the citizenship of those who migrated from Bangladesh to Assam in a rare and disturbed phase following the Bangladesh Liberation War and demographic distortions.

#### Legal Challenge to Section 6A

- **2012 Petition:** The Assam Sanmilita Mahasangha, a civil society group, filed a writ petition challenging the constitutional validity of Section 6A.
- Mahasangha argues that the cut-off year for Assam should be 1951 instead of 1971),
- The case was referred to a Constitution Bench in 2014, to examine whether Section 6A is constitutional though it prescribes a different cut-off date for Assam (1971) from the one prescribed in the Constitution for the rest of the country (1948).

Arguments in Defence of Section 6A:

- The Centre defends Section 6A by citing Article 11 of the Constitution, which grants Parliament the authority to legislate on citizenship matters.
- They argue that Parliament can create specific laws for certain regions based on particular needs or historical contexts without breaching equality rights.
- **Fear of Statelessness:** Respondents, including NGOs like Citizens for Justice and Peace, warn that striking down Section 6A could render many current residents stateless after having enjoyed citizenship rights for decades.

Majority Opinion:

- **Constitutional Validity:** Chief Justice D.Y. Chandrachud, along with Justices Surya Kant, M.M. Sundresh, and Manoj Misra, upheld Section 6A, stating it does not violate Articles 6 of the Constitution.
- **Legislative Objective:** The Chief Justice emphasized that the provision aims to balance humanitarian needs with the impact of migration on Assam's economic and cultural landscape.
- **Rationale for Cut-off Date:** The March 25, 1971, cut-off is justified as it aligns with the onset of significant historical events (Operation Searchlight) that caused mass migrations during the Bangladesh Liberation War.

## 27. Organ donation and Transplantation in India

- The Union Health Minister has directed States and Medical institutions to create permanent jobs for transplant coordinators.

### Transplant Coordinators

- It is a crucial person in the organ donation process, they do everything from helping identify donors to coordinating the entire process of organ transplantation. Their main role includes:
- **Talking to families** when someone passes away and encouraging them to consider organ donation. **Matching donors and recipients** (the person who will get the organ).
- **Handling logistics** (like moving the organs to the right place quickly).
- **Supporting the donor's family** through a very emotional time.
- Without these coordinators, the entire process of organ donation and transplant could slow down or become more complicated.

## Organ Donation and Transplantation in India

- **The Transplantation of Human Organs and Tissues Act (THOTA) 1994 regulates the removal, storage, and transplantation of human organs and tissues for therapeutic objectives, and it also prohibits the commercialization of organ donation.**

### Process of Organ Donation

- For living donations, the donor must give informed consent. For deceased donations, consent is generally obtained from the next of kin.
- Potential donors undergo medical evaluations to ensure they are suitable candidates for donation.
- Organs from the donor are surgically removed and transplanted into the recipient, this process must be completed quickly to ensure the functionality of the organs.

### Challenges

- **Many people don't fully understand what organ donation involves.** Myths, like it might disfigure the body goes against religious beliefs, that stop people from donating. These misconceptions can be addressed with better education.
- **In some communities, cultural beliefs discourage organ donation.** People believe that donating organs could interfere with certain traditions or customs. Addressing these concerns requires sensitivity and a comprehensive approach to reach different communities.
- The number of deceased organ donors is low compared to the number of people who need transplants because there is **no system in place to identify and manage potential donors.**

### Way Forward

- **Awareness campaigns to explain the importance of organ donation and clear up any myths.** Using media like TV, social media, and even local events can help more people learn about organ donation and how they can participate.
- The government should **ensure that laws like THOTA are applied equally across all states, this will streamline the process of getting approval for organ donations and help stop illegal practices like organ trafficking.** It's also important to have ethical rules in place to make sure donations are truly voluntary.
- **Technology can be utilized to improve the efficiency of the donation process,** digital registries can track donors and recipients to help match

organs faster and minimize waiting periods. Telemedicine can also be used to provide care for patients in areas where healthcare access is limited.

## 28. Challenges in India's science research ecosystem

- It has been 94 years since an Indian won a Nobel Prize in the sciences – Physics, Chemistry or Medicine, while working in India.
- **Inadequate Basic Research** - Few institutions are engaged in cutting edge research.
- **Short of Researchers** - The number of researchers as a proportion of population is five times lower than the global average.
- **Brain Drain** - In 2022, the number of Indian students leaving the country for higher education reached a six-year high of 770,000 and over 1.6 million people have relinquished Indian citizenship since 2011.
- **Low levels of public funding** - In 2020-21, gross expenditure on research and development (GERD) was about 0.7% of the GDP.
- **Bureaucratic Hurdles** - The complex layers of administrative clearance, ranging from project proposals to budgetary allocations, contribute to delays and inefficiencies in the research ecosystem.

## India's prospects in research activities

- **Recognition** - The call of "Jai Jawan, Jai Kisan, Jai Vigyan, Jai Anusandhan" is intended to reinforce the foundation of research and innovation for development.
- **Increase in Fiscal Support** - In the interim Budget for 2024-25, a corpus of ₹1 lakh crore has been announced to bolster the research and innovation ecosystem.
- **Human Resource Potential** - Annually, India generates an impressive 40,813 PhDs and is in 3<sup>rd</sup> place after the United States and China.
- **High Research Output** - India's research output remains substantial, ranking 3<sup>rd</sup> globally, with over 3,00,000 publications in 2022.
- **Patent Improvement** - India also demonstrates commendable performance in patent grants, securing the sixth position globally with 30,490 patents granted in 2022.

## Way forward

- Collaboration between the government, business enterprises and HEIs is essential to maximise the positive impact of science, technology, and innovation.

- Creating a conducive environment that emphasizes the benefits and opportunities associated with advanced research degrees is crucial for overcoming the enrolment challenge.
- Provide an efficient mechanisms that can facilitate swift approvals and clearances for research projects in specialized domains.

## 29. Child betrothals are a ploy to escape punishment

- The Supreme Court of India recently ruled that **child betrothals**, often used as a **tactic to evade punishment** under the Prohibition of Child Marriage Act (PCMA), are a **violation of basic rights**, including freedom of choice, personal autonomy, and the right to a childhood.
- The court's ruling was based on petitions filed by NGOs like the **Society for Enlightenment and Voluntary Action**.
- The NGOs noted that despite the enactment of the PCMA almost two decades ago, child marriage rates remain alarmingly high.

### Observations by the court:

- **Vagueness of the Law:** The court observed that the current child marriage laws are vague regarding child betrothals.
- The court urged Parliament to explicitly outlaw child betrothals and classify a child whose **marriage is arranged as a minor as in need of care and protection** under the Juvenile Justice Act.
- It also highlighted that India has yet to fully address the issue of minor betrothals despite international commitments, such as the **Convention on the Elimination of All Forms of Discrimination against Women (CEDAW)** adopted in 1979.
- The court warned that the centuries-old practice of child marriage poses a threat to modern laws like the **Protection of Children from Sexual Offences (POCSO) Act**.
- The institution of child marriage, the court stated, directly facilitates sexual abuse of child brides by design.

### **Clash between Personal Laws and Child Marriage Prohibition:**

- The Supreme Court pointed out the confusion regarding how personal laws interact with the prohibition of child marriage.
- The Centre had submitted a note pushing for the PCMA to take precedence over personal laws but did not follow up by providing records of conflicting High Court judgments on the matter.

### **Guidelines Issued by the Supreme Court:**

- Implementing age-appropriate, culturally sensitive **sexuality education** in schools.
- Launching a **Child Marriage Free Village** initiative, similar to the Open Defecation Free Village program, involving local leaders.
- Establishing a designated portal for **online reporting of child marriages** through the Home Ministry.
- Initiating a **compensation scheme** for girls who **opt out** of child marriages through the Ministry of Women and Child Development.
- Allocating an annual budget to prevent child marriages and support affected individuals.
- Judicial Confusion on Personal Laws

### 30. Supreme Court's Assam verdict

- The Supreme Court has upheld **Section 6A of the Citizenship Act, 1955**, which grants citizenship to migrants who entered Assam between January 1, 1966, and March 24, 1971, under the Assam Accord. This decision addresses Assam's unique demographic and migration history, balancing regional concerns with national unity.
- **Assam Accord (1985)**: Set March 24, 1971, as the cut-off date for citizenship, aiming to resolve tensions between indigenous Assamese people and migrants.
- **Section 6A**: Added to the Citizenship Act to implement the Assam Accord, establishing special criteria for Assam, different from India's post-Partition cut-off.
- **NRC (2019)**: Updated to identify legitimate citizens in Assam, excluding 1.9 million people, raising questions about human rights and citizenship.
- **Legal Challenges**: Petitioners argued Section 6A violates Articles 14 (equality) and 29 (cultural rights) of the Constitution, singling out Assam and threatening its indigenous identity.

#### Arguments Against & Favor of Section 6A :

- **Violation of Article 14**: Creates an unequal framework by applying different rules for Assam.
- **Cultural Erosion**: Threatens the cultural identity of indigenous Assamese under Article 29.
- **External Aggression**: Cites illegal immigration as "external aggression," threatening Assam's security.
- **Accord Betrayal**: Seen as undermining the original spirit of the Assam Accord.
- **Implementation Issues**: Misuse and bureaucratic delays create unrest in Assam.

- **Parliamentary Competence:** Parliament has the authority to regulate citizenship under Article 11.
- **Unique Situation:** Assam's demographic challenge justifies a special framework.
- **Controlled Process:** Section 6A provides a regulated, time-bound process for citizenship.
- **Alignment with Constitution:** Articles 6 and 7 align with Section 6A.
- **National Unity:** The ruling upholds fraternity and national cohesion.

### Way Forward

- Strengthen border controls to prevent further illegal immigration. Periodic review of Section 6A for effective implementation. Safeguard Assam's linguistic and cultural identity. Broaden national discussions on citizenship policies, including the Citizenship Amendment Act (CAA). Increase public awareness to promote understanding and reduce tensions.

### Conclusion

- The Supreme Court's verdict on Section 6A acknowledges Assam's unique demographic challenges while affirming Parliament's legislative authority. It balances regional concerns with national unity and may influence future discussions on citizenship laws in India.

### **31. India on the verge of achieving WHO Certification in Eliminating Kala-azar**

- India is on the verge of achieving a significant milestone by seeking certification from the **World Health Organization (WHO)** for **eliminating Kala-azar** as a public health problem. The country has maintained the required criteria for elimination – less than one case per 10,000 people for two consecutive years.

### Kala Azar:

- **Kala-azar, also known as visceral leishmaniasis, is the second deadliest parasitic disease after malaria in India.** The disease is caused by the protozoan parasite *Leishmania donovani*, transmitted through the bite of an infected female sandfly.
- **Kala Azar is a parasitic infection transmitted by sandflies. It causes fever, weight loss, spleen and liver enlargement.** It is characterized by irregular bouts of fever, weight loss, enlargement of the spleen and liver, and anemia.

### Three main forms of the disease:

- **Visceral leishmaniasis (VL)**, also known as **kala-azar**, is fatal if left untreated in over 95% of cases. It is characterized by irregular bouts of fever, weight loss, enlargement of the spleen and liver, and anemia. Most cases occur in **Brazil, east Africa and India**.
- **Cutaneous leishmaniasis (CL)** is the most common form and causes **skin lesions, mainly ulcers, on exposed parts of the body**. These can leave life-long scars and cause serious disability or stigma. **Mucocutaneous leishmaniasis** leads to **partial or total destruction of mucous membranes of the nose, mouth and throat**.

### India's Progress Towards Elimination:

- To achieve WHO certification, India must maintain a rate of fewer than **one case per 10,000 people** for another year. This would make India the second country, after **Bangladesh**, to eliminate Kala-azar as a public health issue.
- India's **National Health Policy (2002)** originally aimed to eliminate Kala-azar by **2010**, but this goal has been revised multiple times to **2015, 2017**, and finally **2020**.

### Vulnerable Regions:

- The highest number of Kala-azar cases come from **Bihar, Jharkhand, West Bengal**, and parts of **Uttar Pradesh**.
- **Bihar** alone accounts for **70%** of the country's cases, driven by factors like **poor sanitation** and **climate conditions**, which are conducive to sandfly breeding.

## **32. Role of business priorities in a changing world**

- B20 Summit Brazil 2024 will be held during October 24 -25 in 2024.

### **B20 Summit**

- **B20** - Business 20 (B20) is the official G20 dialogue forum with the global business community, connecting the business community with G20 governments.
- **G20 2024 Presidency** - Brazil
- **Business Potential** - Businesses of the world have the potential to leverage new opportunities for growth and benefit from wider dispersal of developmental gains.
- **Policy Priorities** - Businesses of both advanced and emerging economies have come together and identified key priorities and policy actions that will facilitate inclusive growth and development.



- **Businesses and Global Growth** - As lead players in the growth endeavour, businesses also must prioritise certain actions to align with emerging challenges faced by the world.

### For inclusive development

- Equitable growth remains a top imperative as the world seeks to promote inclusive development.
- **Skill development** - Empowering workers and building their capacity to adapt to changing industrial scenarios. Tailored programmes for skilling and upskilling workers, particularly women.
- Working with academic institutions and developing curricula suited to evolving industry needs.
- **Financial Access** - Tailored credit solutions along with diversity and inclusion policies.
- In India, the convergence of Unified Payments Interface and digital access has transformed financial transactions, with over 530 million accounts opened under the landmark Jan Dhan Yojana.

### For better food security

- Sustainable food systems and boosting food and nutrition security are another critical pillar of focus for encouraging sustainability efforts.
- **Challenges in Food Security : Climate Change**- Myriad factors including the impact of extreme weather events have exacerbated the global food crisis.
- **Trade Issues** - National security concerns and unfair trade practices are leading to rising tariffs and other hurdles that constrain the efficacy of trade.
- **Role of Businesses in Addressing Food Security Sustainable Agri Practices** -Investing in infrastructure and Agricultural technologies such as precision farming, digital tools. **Resilient Global Trade** - Organisations such as the World Trade Organization should be strengthened to identify and counter unfair trade practices.

### Role of business in ensuring common global aspirations

- **Digital transformation and innovation** - Businesses must harness AI for responsible use in health care, climate change and resource management.
- **Youth Inclusion** - Businesses can engage youth in developing innovative solutions to pressing contemporary issues and drive positive societal impact.
- **Investments** - Business can invest in social tech startups, digital platforms for research and development collaborations.
- **STEM** - Corporates should develop science, technology, engineering and mathematics (STEM) talent in mission mode.

- **Sustainability** - Fair and just climate policies can enable businesses to work towards carbon mitigation.
- **Circular Economy** - Industry should promote circular economy options and strive to inculcate sustainable business practices in their usual operations across the board.

### 33. 'Doctrine of Coverture'

- The **Marital Rape Exception (MRE)**, rooted in the **doctrine of coverture** from English common law, has long sparked debates about the legal autonomy of women within marriage.
- The MRE is found in **Exception 2 to Section 375** of the **Indian Penal Code (IPC)**, 1860, and its equivalent, **Section 63 of the Bharatiya Nyaya Sanhita (BNS)**, 2023.
- According to these provisions, **sexual intercourse** or sexual acts by a man with his wife do **not constitute rape** if the wife is **above 18 years of age**.

#### Doctrine of Coverture from English Common Law

- The **doctrine** states that upon marriage, a **woman's legal existence** was essentially **merged with that of her husband**.
- The married woman was legally **dependent on her husband**, losing autonomy over her legal rights and property.
- **Impact on Women's Rights:** Under this doctrine, a wife had **no independent legal identity** during marriage. Women could not **own property**, **enter contracts**, or **bring legal claims** without their husband's approval. The husband had control over the wife's body and actions, including **sexual relations**.
- **Influence on Marital Rape Exception:** The doctrine formed the basis for the original **Marital Rape Exception** in British common law. It implied that a wife **gave permanent consent** to sexual relations upon marriage, which could not be withdrawn. This legal reasoning was adopted in many British colonies, including **India**, and continues to influence Indian law today.
- **Modern Rejection:** England **abolished the Marital Rape Exception** in 1991 in the case of **R v. R**, recognizing that the doctrine of coverture no longer reflected the status of women in modern society. Despite this, the doctrine's influence persists in India's legal system, particularly through the **Marital Rape Exception** in BNS.

### 34. Supreme Court's Stand on Secularism and Minority Institutions:

- The **Supreme Court of India**, while hearing a case concerning the **regulation of madrasas** under the **Uttar Pradesh Board of Madrasa Education Act, 2004**,

clarified that laws regulating **religious or linguistic minority institutions** do not inherently breach **secularism**. This observation followed a challenge to an **Allahabad High Court decision**, which had struck down the Act, claiming it violated **secular principles**.

### Supreme Court's Stand on Secularism and Minority Institutions:

- The **Supreme Court** observed that regulating institutions run by **religious or linguistic minorities does not automatically breach secularism**.
- **Chief Justice of India (CJI)** emphasized that a law regulating such institutions, by itself, does not violate the principle of secularism. He clarified that a **State has the right to regulate minority institutions, especially when they are government-aided**.
- The CJI stressed that **providing broad-based education in madrasas** is essential for students to acquire knowledge beyond religious teachings and **become productive citizens**.

### What does the Constitution say about minorities?

- **Article 29**, which deals with the "**Protection of interests of minorities**", says that "any section of the citizens residing in the territory of India or any part thereof having a **distinct language, script or culture** of its own shall have the **right to conserve the same**", and that "**no citizen shall be denied admission into any educational institution** maintained by the State or receiving aid out of State funds **on grounds only of religion, race, caste, language or any of them**".
- **Article 30** deals with the "**right of minorities to establish and administer educational institutions**". It says that all minorities, whether **based on religion or language**, shall have the right to establish and administer educational institutions of their choice. It says that "in making any law providing for the compulsory acquisition of any property of an educational institution established and administered by a minority.
- **Article 350(A)** says there shall be a **Special Officer for linguistic minorities to be appointed by the President**. "It shall be the duty of the Special Officer to investigate all matters relating to the safeguards provided for linguistic minorities under this Constitution and report to the President upon those matters at such intervals as the President may direct, and the President shall cause all such reports to be laid before each House of Parliament, and sent to the Governments of the States concerned".

### Article 28 - Prohibition of Religious Instruction in State-Funded Educational Institutions

- **Article 28** deals with the **issue of religious instruction in educational institutions**, especially those funded or maintained by the state. It establishes **clear boundaries between religion and education in India**.

**The following are the features of Indian secularism:**

1. **Equal respect** and regard for **all faiths** by the nation.
  2. **No prejudice** sponsored by the state between residents on religion basis.
  3. India follows the **policy of non-interference** in the functioning of any faith by the state.
  4. Moreover, **the 42nd Constitutional Amendment of the Indian Constitution** states that India is a **secular country**, thus, there is **no relationship between religion and state**. However, India pays respects to all religions but **it did not recognize any national religion**.
- **Indian philosophy of secularism is related to "Sarva Dharma Sambhava"** which means equal respect to all religions.
  - India **does partially** separate religion and state. For example, it **does not have an official** state religion and state-owned educational institutions cannot impart religious instructions.

### **35. Salient Features of Pradhan Mantri Bhartiya Janaushadhi Pariyojana (PMBJP)**

- Recently, Pradhan Mantri Bhartiya Janaushadhi Pariyojana (PMBJP) reached a significant milestone, with Janaushadhi medicines worth Rs. 1,000 crore sold in the year 2024-25 till October 2024.

#### **Janaushadhi Pariyojana**

- It is a campaign *launched in 2016*, to provide quality medicines at affordable prices to the masses making essential healthcare accessible to all citizens.
- **Launched by** – *Department of Pharmaceuticals* under Ministry of Chemicals and fertilisers in association with Central Pharma Undertakings.
- **Objectives** – Ensuring *access to quality medicines* for all sections of the population especially the poor and the deprived ones.
- Creating awareness about generic medicines through education and publicity to counter the perception that quality is synonymous with high price only.
- Encouraging health care professional particularly in those government hospitals, to prescribe generic alternatives, thereby promoting cost-effective treatment options.
- Generate employment by engaging individual entrepreneurs in opening PMBJP Kendra

- **Operation** – It is operated by government agencies as well as by private entrepreneurs.

### Salient features

- **Janaushadhi Kendras (JAKs)** are accessible points for quality healthcare, providing a friendly environment where individuals can find the medications they need.
- **Incentives to the Kendra owners** – Rs. 5.00 lakh to be given @ 15% of monthly purchases made, subject to a ceiling of Rs. 15,000/- per month.
- **One-time incentive** – Rs. 2.00 lakh is to be provided for furniture & fixtures and computer & printers to the PMBJP Kendras opened in North-Eastern States, Himalayan areas, Island territories and backward areas mentioned as aspirational district by NITI Aayog.
- It is also provided if it is opened by women entrepreneur, Divyang, SCs & STs and Ex-servicemen.
- **Prices of the medicines** – They are 50%-90% less than that of branded medicines prices in the open market.
- **Quality procurement** – They are procured only from World Health Organization – Good Manufacturing Practices (WHO-GMP) certified suppliers for ensuring the quality of the products.

### Impacts

- **Promotes health equity** – It ensures essential healthcare products are available, accessible and affordable to everyone, especially the marginalized.
- **Savings to the citizens** - It is estimated to have saved approximately of Rs. 30,000 crores of citizens in the past 10 years.
- It has saved about Rs. 5000 crore in the current year (FY 2024-25)
- **Greater coverage** - The number of kendras has grown to more than 14,000 and all districts have been covered.
- **Extensive product basket** – It includes 2047 medicines and 300 surgical devices, catering to various therapeutic groups.

### Way forward

- Organise workshops across India with Kendra owners, doctors and various important dignitaries.
- Embrace the integrated approach for spreading awareness about PMBJP with State Governments.

## GS 3 : Economy, Science and Technology, Environment

### 1. Benefits of Urban Farming & Agriculture 4.0

- Urban farming, powered by Agriculture 4.0, is ushering in a new era of food production by integrating advanced technologies.
- **Urban Farming** – It is the practice of cultivating crops, livestock, or types of food in an urban environment.
- It takes advantage of available spaces in cities, such as rooftops, balconies, community gardens, and vacant lots.
- **Need for Urban Farming** - As urban populations grow, cities are embracing innovative solutions to ensure fresh, sustainable food for all.
- Urban farming is expected to play a critical role in addressing global food security challenges, particularly in cities, where 68% of the world's population is expected to reside by 2050.
- **Agriculture 4.0** - It is the use of Internet of Things (IoT), Big Data, Artificial Intelligence and Robotics to improve farming more precise, productive and efficient.
- **Potential** - By 2028, the global smart agriculture market is projected to reach \$25.4 billion, driven by the increasing adoption of IoT and precision farming techniques.

#### Urban farming methods

- **Rooftop Farming** – It utilizes the underutilized space on rooftops, this urban Farming method involves growing crops in containers or raised beds.
- **Vertical farming** - Vertical farming allows crops to be grown in stacked layers, optimising limited space and enabling year-round production.
- **Community gardens** - They are collaborative spaces where individuals or groups come together to cultivate plants collectively.
- These gardens are typically located on shared land, such as parks or vacant lots.

#### Benefits of urban farming

- **Increased Food Production** - Urban farming allows for the cultivation of fresh produce in areas where traditional agriculture is limited.
- **Improved Food Quality** - Access to fresh, pesticide-free produce, ensuring higher nutritional value and reducing health risks associated with chemical residues.

- **Enhanced Food Security** - Urban farming strengthens food security in urban areas, by reducing dependence on external food sources, particularly during times of crisis or disruptions in the supply chain.
- **Environmental Development** - Rooftop gardens utilise otherwise unused space, regulating building temperatures, improving air quality, stormwater management, and reduction of the urban heat island effect.
- **Environmental Sustainability** - It promotes sustainable practices such as composting, rainwater harvesting, and waste reduction, contributing to a greener and more resilient urban ecosystem.
- **Community Engagement** - Engaging in urban farming fosters a sense of community and social cohesion.

### Challenges

- **Limited Space** - Rapid urbanization has led to a reduction in open spaces, making it difficult to establish large-scale farms.
- **Soil Contamination** - Urban areas often suffer from soil contamination due to industrial activities, pollution, and improper waste disposal.
- This contaminated soil can negatively impact crop quality and pose health risks to consumers.

### 2. Dead Coral Skeletons hinder Reef Regeneration

- A study conducted at Moorea, French Polynesia, has revealed that the network of **dead coral skeletons** left behind by bleaching events prevents reefs from regenerating.

### Corals

- Corals are **marine invertebrates** made up of genetically identical organisms called **polyps**.
- Polyps have a **mutualistic relationship** with microscopic algae called **zooxanthellae** that live within their tissues.
- Zooxanthellae perform **photosynthesis**, providing the corals with carbohydrates, while the corals offer compounds needed for photosynthesis.
- Corals have **calcium carbonate skeletons**, which help in building the reef structure.
- Thousands of polyps combine to form coral colonies, which multiply and grow over time.
- **Coral reefs** are underwater ecosystems formed by the accumulation of **calcium carbonate skeletons** from corals.
- Known as the “**rainforests of the seas**”, they provide habitat and protection for a wide variety of marine life.

- Coral reefs are built by both **hard** and **soft corals** and grow over time as more corals attach to the reef structure.

### Challenges due to Dead Corals

- **Shelter for Seaweed:** Dead coral skeletons create a complex structure that offers protection to macroalgae (seaweed) from herbivores. This allows seaweed to colonize the reef quickly, outcompeting young coral.
- **Impeded Herbivory:** The complex landscape of dead corals prevents herbivores, which normally graze on algae, from accessing the macroalgae effectively. This leads to unchecked algae growth.
- **Increased Competition:** Macroalgae grow faster and reproduce more frequently than coral, leading to increased competition for space, light, and nutrients, which further inhibits young coral from settling and growing.
- **Annual Coral Reproduction:** Coral typically spawns only once a year, while algae reproduce continuously. This gives algae a competitive advantage in newly available spaces left by dead coral skeletons.
- **Altered Ecosystem Balance:** The presence of dead coral shifts the balance between herbivores, algae, and coral, making it difficult for the reef to regenerate naturally.

### Conditions for Reef Regeneration

- **Flat Substrate:** After events like cyclones, which remove coral but leave behind a flat surface, reefs tend to recover more easily, as young coral can settle and regrow without much competition from macroalgae.
- **Herbivore Activity:** Active herbivory is crucial for reef recovery, as herbivores control the growth of macroalgae, allowing space for coral recruits to settle and thrive.
- **Clear Space for Coral Recruits:** To regenerate effectively, coral needs open space free from excessive algae. Removing dead coral skeletons might help create these conditions.
- **Frequent Disturbances:** Coral reefs are better adapted to recover from frequent but non-lethal disturbances like storms, which scrape off coral and allow for fresh regrowth, compared to bleaching events, which leave the dead coral structure intact.
- **Water Quality and Temperature:** Coral recovery depends on optimal water conditions, including the absence of pollutants and suitable temperatures.



### 3. Triple-dip La Niña phenomenon influenced air quality in North India

- The delayed onset of La Niña and the late retreat of the monsoon have diminished hopes that Delhi's residents might enjoy improved air quality this winter compared to previous years.

#### Triple-dip La- Nina

- Triple-dip La Niña refers to the rare occurrence of La Niña persisting for three consecutive years, causing prolonged cooler ocean temperatures in the Pacific and influencing global weather patterns, including stronger monsoons. No dispersion of pollutants: The delayed onset of La Niña has led to stagnant air and calm winds, preventing the dispersion of pollutants. In previous winters, La Niña helped improve air quality with stronger winds and atmospheric circulation.
- Trapped air pollutants: The slower monsoon retreat resulted in extended periods of high humidity, reduced atmospheric mixing, and trapped pollutants near the surface, contributing to deteriorated air quality.

#### Meteorological factors contributed to the observed anomalies in air quality

- Monsoon Retreat and Humidity: The delayed retreat of the monsoon contributes to prolonged periods of high humidity and calm winds. These conditions reduce atmospheric mixing, trapping pollutants near the surface and leading to elevated levels of PM2.5 and PM10.
- Stagnant Winds: The absence of La Niña conditions results in stagnant surface winds, which hinder the dispersion of pollutants. This stagnation is particularly problematic given the regional emissions from stubble burning and other sources.
- Stubble Burning: With prevailing north-north-westerly winds, stubble burning in Punjab and Haryana could significantly worsen Delhi's air quality if it occurs at even half the intensity seen in previous years.

#### Future climate and air quality management strategies

- Need for Broader Focus: There is a growing recognition that air quality management must shift from a localized emission-centric approach to one that considers larger meteorological patterns and regional airsheds. Policy Recommendations: Policymakers should prioritize mitigating PM2.5 emissions over PM10, as PM2.5 poses greater health risks.

- Integration of Climate Factors: Future air quality strategies should integrate climate change considerations, recognizing that local emissions are only part of the equation.
- **Way forward** :Adopt Regional Airshed Management: Shift from a localized approach to a broader airshed strategy, accounting for meteorological patterns and regional pollution sources to improve air quality management.Prioritize PM2.5 Mitigation and Climate Integration: Focus on reducing PM2.5 emissions, which pose higher health risks, and incorporate climate change factors into long-term air quality policies for comprehensive solutions.

#### 4. Index of Industrial Output (IIP) and Index of Core Industries (ICI)

- Output levels in India's core sectors slipped to a nine month low in August, even as year on year growth slipped 1.8%, marking the first contraction in three and a half years.
- The Index of Core Industries (ICI), which constitutes about 40% of the broader index of India's industrial output (IIP), stood at 155.8 in August, marking a third consecutive month of sequential decline.

#### Index of Industrial Production (IIP)

- The Index of Industrial Production (IIP) is a key measure used in India to gauge the growth and performance of various industrial sectors over time. It tracks changes in the production volume across different sectors of the economy, providing insights into the overall industrial health of the country. It is compiled and published monthly by the Central Statistical Organisation (CSO) six weeks after the reference month ends.

#### Key Features of the IIP:

- Base Year: The IIP is calculated with reference to a base year, which was last updated to 2011-12. The base year serves as the point of comparison to measure growth in industrial output.
- Sectors Covered: The IIP comprises three major sectors: Manufacturing: This sector constitutes about 77.6% of the total weight of the index, reflecting the importance of manufacturing in India's economy. Mining: Accounts for 14.37% of the IIP's weight. Electricity: Comprises 7.99% of the IIP's weight.

#### Index of Core Industries (ICI)

- The Index of Core Industries (ICI) is a crucial economic indicator that measures the performance of eight core industries in India. These industries

are fundamental to the economy and have a significant impact on overall industrial performance.

- **Weightage:** The ICI tracks the performance of eight core industries, which together account for around 40.27% of the IIP.
- **Base Year:** The base year for the ICI is 2011-12, which is the same as the base year for the IIP.
- ICI for a reference month is released with a time lag of one month on the last day of the next month, which is about twelve days prior to the release of Index of Industrial Production (IIP) for the reference month.
- The ICI is released by the Office of the Economic Adviser, Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce & Industry.

## 5. Indianizing Common Practice Standards and challenges

- Recent research suggests for indianizing common practice standards in carbon markets so that the agroforestry sector could contribute an additional carbon sink of over 2.5 billion tons of CO<sub>2</sub> equivalent by 2030.

### Common Practice

- **Common Practice** – It refers to the established guidelines and benchmarks used to measure, report, and verify carbon emissions reductions and other related activities.
- It is a key criterion used to assess whether a project is contributing any additional environmental benefits beyond what is typically done for the region.
- **Role** – It plays a vital role in the climate finance realm.
- According to carbon standards such as Verra's Verified Carbon Standard (VCS) or the Gold Standard.
- If an activity is deemed "common practice", it may not qualify for carbon credits, as it is not seen as contributing additional environmental benefits beyond the norm.

### Challenges of common practice in India

- **Small and fragmented landholdings** - Recent data indicate that **86.1% of Indian farmers** are small and marginal, with landholdings of less than two hectares. **Non-systematic agroforestry practices** – These farmers often engage in agroforestry in a non-systematic, scattered manner, planting trees alongside crops or on small patches of fallow land.

- **Lacks additionality criteria** – Indian agroforestry practices may not meet this criteria set by current carbon standards because they are perceived as “common” within the Indian context.
- **Exclusion of farmers** – It effectively excludes a large number of Indian farmers from participating in ARR carbon finance projects.
- Thus it denies them the opportunity to earn additional income from carbon credits.

### India centric approach

- **Dominance of agroforestry** – India’s vast potential in the agroforestry sector is a unique opportunity to integrate with carbon finance projects.
- **Scope for integrating with ARR initiatives** – Agroforestry can be linked with Afforestation, Reforestation, and Revegetation (ARR).
- The Energy and Resources Institute (TERI) has demonstrated the potential of ARR projects in India, spearheading 19 projects across seven States, benefiting over 56,600 farmers.
- **Higher potential** - There is a possibility to expand the area under agroforestry from the current 28.4 to 53 million hectares by 2050.
- Agroforestry accounts for 8.65% of India’s total land area and contributes 19.3% of the country’s carbon stocks.

### Benefits of indianizing common practices

- **Formalizes agroforestry** – It enables a more systematic and sustained approach to agroforestry.
- **Improves agriculture** – It can help address issues such as low productivity, dependence on monsoons, and environmental degradation.
- **Creates additional income** - Enabling a greater number of farmers to participate in carbon finance projects, provides them with additional income streams while contributing to India’s climate goals.
- Participating in ARR projects presents a pathway to income diversification.

### What lies ahead

- International carbon finance platforms should revise the standards to better align with the realities of Indian agriculture.
- International standards should evolve to reflect the specific conditions of the Indian subcontinent.
- Revise the ‘Common Practice’ guidelines to be more inclusive of Indian agroforestry practices.

## 6. SEBI rules to curb F&O

- The Securities and Exchange Board of India (SEBI) recently introduced significant reforms in the equity index derivatives (futures and options, F&O) framework to curb speculative trading, protect retail investors, and improve market stability.

### Recent SEBI Reforms and Their Implications:

#### 1. Recalibration of Contract Size for Index Derivatives:

- **Reform:** The minimum contract size for index derivatives has been increased to ₹15 lakh (from the earlier ₹5-10 lakh), effective November 20, 2024.
- **Implication:** This raises the entry barrier, ensuring that participants have sufficient risk tolerance, reducing speculative trading by small retail investors.
- **Impact:** It will discourage small traders from taking excessive risks, encouraging more responsible trading.

#### 2. Upfront Collection of Options Premium:

- **Reform:** From February 1, 2025, trading members must collect the options premium upfront from buyers.
- **Implication:** It reduces the misuse of leverage in options trading, enforcing financial discipline and reducing the risk of defaults.
- **Impact:** This measure protects investors from over-leveraged positions, preventing potential market volatility.

#### 3. Rationalization of Weekly Expiring Derivatives Products:

- **Reform:** Only one benchmark index per exchange will offer weekly expiring derivatives, starting November 20, 2024.
- **Implication:** Limits frequent speculative trades that create short-term volatility, especially on expiry days.
- **Impact:** Reduces speculative pressure, promoting market stability.

#### 4. Intra-Day Monitoring of Position Limits:

- **Reform:** From April 1, 2025, SEBI will monitor position limits intra-day, not just end-of-day.
- **Implication:** Prevents excessive speculative positions from being built up during the day.
- **Impact:** Real-time compliance ensures smoother and more stable market functioning.

#### 5. Removal of 'Calendar Spread' Treatment on Expiry Day:

- **Reform:** Effective February 1, 2025, calendar spread benefits will not be available on the day of contract expiry.
- **Implication:** Forces traders to execute rollovers earlier, reducing speculation on the day of expiry.

- **Impact:** Eases volatility and stabilizes derivative prices during expiration.
- 6. **How these reforms impact India:**
  - **Curbing speculation:** Larger contract sizes and upfront premium collection reduce excessive speculation, particularly by small traders.
  - **Market stability:** Limiting speculative positions and lowering intra-day volatility enhances market stability, attracting long-term investors.
  - **Protecting retail investors:** The reforms safeguard retail investors from significant losses due to aggressive short-term trading.
  - **Promoting capital growth:** A focus on disciplined investment strategies supports capital formation and sustainable economic growth.

## 7. Impacts of declining elephant population & its Conservation initiatives

- Interim Elephant Census report has highlighted declining elephant population across India.
- **Elephant Census** – It is a synchronized census conducted region wise.
- It is conducted **every 5 years** by the **Wildlife Institute of India (WII)**, an autonomous body under the ministry.
- **Census Methods**
  - Direct (head) count - Forest divisions is divided into sample blocks ranging from 4 to 6 sq km.
  - Indirect (dung) count
  - waterhole count method – Identifying waterbodies frequented by the elephants.
  - DNA profiling
  - Camera traps
  - Statistical modelling based on mark-recapture

### Impacts of declining elephant population

- **Human Animal Conflict** – Threats have pushed elephants to venture into historical but currently unoccupied areas fuelling human-elephant conflicts.
- **Retaliatory Killing** - In some cases, conflicts can escalate to retaliatory killings of elephants, further exacerbating their population decline.
- **Economic Losses** - Human-elephant conflicts can result in significant economic losses for farmers and communities, especially in areas where agriculture is a primary livelihood.
- **Habitat Degradation** - As elephant populations decline, their role in shaping and maintaining ecosystems becomes compromised.
- **Disruption of Food Chains** - Their decline can disrupt food chains, affecting predator populations and overall ecosystem balance.

- **Reduced Seed Dispersal** - Elephants play a vital role in dispersing seeds, helping to regenerate forests and maintain plant diversity.

### Elephant's conservation initiatives

- **Area Conservation** - There are 33 elephant reserves in India aimed at conserving their population.
- **Project Elephant** - It was launched in 1992 to protect elephants, their habitat and corridors, address issues of man-animal conflict and welfare of captive elephants
- **Surveillance** - Monitoring of Illegal Killing of Elephant is launched in 10 elephant reserves since 2003.
- **Stop Poaching** - Anti-poaching units have been formed to patrol elephant habitats and apprehend poachers.
- **Prevent Wildlife Crime** - Special Elephant task forces have been set up to address specific threats to elephant populations, such as ivory smuggling.

### Strategies to conserve elephant population

- Strengthening elephant corridors and connectivity, restoring habitat, mitigating developmental projects, and ensuring the support of local communities for elephant conservation.
- Focused estimation exercise to comprehensively assess occupancy and abundance to devise specific conservation actions.

## 8. Centre Reconstitutes Monetary Policy Committee

- The central government on Tuesday reconstituted the Monetary Policy Committee (MPC) ahead of the monetary policy review of the Reserve Bank of India (RBI) on October 7-9.
- The government has appointed three external members in the MPC. They have been appointed for a period of four years.

### Key Points about the Monetary Policy Committee (MPC):

- **Establishment:** The MPC was constituted under the Reserve Bank of India Act, 1934, following amendments made in 2016. Its creation was part of the RBI's transition to an inflation-targeting framework, enhancing transparency and accountability in monetary policy formulation.
- **Objective:**
  - The primary mandate of the MPC is to maintain price stability while keeping in mind the objective of economic growth.

- It is tasked with setting the repo rate, the key policy rate, to control inflation within the prescribed target.
- Composition: The MPC consists of 6 members:
  - 3 members from the RBI:
    - The Governor of RBI, who acts as the Chairperson.
    - The Deputy Governor in charge of monetary policy.
    - One officer of the RBI nominated by the central bank.
  - 3 external members appointed by the Government of India. These are experts in economics or related fields, selected for a tenure of four years and are not eligible for reappointment.
- Decisions are made by a majority vote, with each member having one vote. In case of a tie, the RBI Governor has the casting vote.
- Mandate and Inflation Targeting:
  - The MPC's mandate is to maintain inflation within the range of  $4\% \pm 2\%$ . This means the inflation target is set at 4%, with an upper tolerance limit of 6% and a lower limit of 2%. The committee usually meets bi-monthly (once every two months) to review the economy and set the policy interest rate, which influences inflation and growth. The MPC is required to meet at least four times in a year according to RBI Act 1934.
- Rationale for the MPC:
  - Prior to the MPC's establishment, monetary policy decisions were made solely by the RBI Governor. The MPC institutionalizes a democratic decision-making process, bringing multiple perspectives from both within and outside the RBI.
  - It helps in reducing discretionary control and fosters a more objective, rule-based approach to monetary policy.

## 9. Reason for Naxalism growth and steps taken by Government

- Recently security forces in Chhattisgarh's Bastar region engaged in a significant gunfight with Naxalites, resulting in the death of 28 insurgents. This marks one of the highest casualty tolls in recent anti-Naxal operations.

### About Naxalism:

- **Origins in Naxalbari:** The Naxalite movement began in 1967 in Naxalbari village, West Bengal, when peasants led an uprising against local landlords over land disputes.
- **Maoist Ideology:** The movement was inspired by Maoist political ideology, advocating armed rebellion to overthrow the state and redistribute land and resources to oppressed communities.



- **Spread to Tribal Regions:** Naxalism gradually spread to underdeveloped and tribal areas, particularly in states like **Chhattisgarh, Odisha, Jharkhand,** and parts of **Andhra Pradesh**.
- **Objective:** The Naxalites aimed to challenge the Indian state through armed insurgency, focusing on the redistribution of land, wealth, and resources to marginalized and tribal communities.
- **Red Corridor Zones** The Red Corridor refers to areas significantly affected by Naxalite-Maoist insurgency. It includes regions in Chhattisgarh, Odisha, Andhra Pradesh, Maharashtra, West Bengal, Jharkhand, Bihar, and Telangana.

### **Reasons for Naxalism's growth:**

- **Tribal displacement:** Massive displacement due to development projects and mining activities has fueled discontent among tribal populations, making them vulnerable to Maoist influence.
- **Socio-economic gaps:** Poverty, lack of education, and absence of government welfare programs in tribal and rural areas have deepened grievances.
- **State negligence:** Lack of infrastructural development, poor connectivity, and weak governance in the Red Corridor have created vacuums that Maoists exploit.
- **Forest rights:** The **Forest (Conservation) Act, 1980** restricts access to forest produce, further alienating forest-dependent communities.
- **Government focus on security:** The government's emphasis on security measures rather than addressing underlying socio-economic issues has left many grievances unresolved.

### **Legal measures:**

1. **Unlawful Activities (Prevention) Act (UAPA):** Declares Naxalite groups as terrorist organizations and enables swift action against them.
2. **Relief and Rehabilitation Policy:** Encourages Naxalites to surrender and join the mainstream by offering rehabilitation packages.
3. **Forest Rights Act, 2006:** Aims to restore land rights to tribal communities, addressing one of the root causes of insurgency.

### **Way ahead**

1. **Addressing socio-economic grievances:** Focus on addressing root causes such as land disputes, tribal rights, and poverty through inclusive policies.
2. **Enhanced intelligence:** Improve real-time intelligence gathering and collaboration between state and central forces.

3. **Sustained development:** Ensure the long-term implementation of development schemes and socio-economic programs.

### Conclusion:

- To comprehensively address Naxalism, India must balance military actions with efforts to improve tribal livelihoods and ensure access to “**Jal, Jangal, Zameen**”, the fundamental demands of tribal populations.

## 10. Government launches NMEO-Oilseeds to boost domestic production

- The Union Cabinet has approved the National Mission on Edible Oils-Oilseeds (NMEO-Oilseeds) to enhance domestic oilseed production and attain self-sufficiency in edible oils.

### Newly Launched NMEO-Oilseeds:

- **Aim:** Boost domestic oilseed production, achieve self-reliance in edible, and boost farmers' incomes. Currently, imports account for 57% of India's domestic demand for edible oils.
- **Focus:** It will focus on increasing edible oil production from Oil Palm by enhancing the production of key primary oilseed crops (**Rapeseed-Mustard, Groundnut, Soybean, Sunflower, and Sesamum**)

### Roadmap for the Mission:

- **Increase Edible Oil Production:** Achieve **25.45 million tonnes** of domestic edible oil production by **2030-31**, meeting **72% of domestic demand**.
- **Seed Infrastructure:** It will introduce an online **5-year rolling seed plan** through the Seed Authentication, Traceability & Holistic Inventory (**SATHI portal**) to ensure timely availability of seeds.
- **Seed Hubs & Storage:** Establish **65 new seed hubs** and **50 seed storage units** to strengthen seed production infrastructure.
- **Value Chain Clusters:** Develop over **600 value chain clusters** across **347 districts**, covering **10 lakh hectares** annually. These clusters will focus on providing **high-quality seeds** and promoting **Good Agricultural Practices (GAP)**.

### Other Initiatives by the Government:

- **National Mission on Edible Oils - Oil Palm (NMEO-OP):** Launched in **2021** with a budget of **Rs 11,040 crore** to boost **oil palm cultivation**.

- **Import Duties:** A 20% import duty on edible oils has been imposed to protect domestic producers from **cheap imports** and encourage local oilseed cultivation.
- **MSP & PM-AASHA:** The **Minimum Support Price (MSP)** for mandated edible oilseeds has been increased, and the **Pradhan Mantri Annadata Aay Sanrakshan Abhiyan (PM-AASHA)** ensures oilseed farmers receive MSP through **price support and deficiency payment schemes**.

#### Way forward:

- **Strengthen Research and Development:** Invest in research initiatives focused on developing climate-resilient, high-yield oilseed varieties through advanced technologies like genome editing.
- **Enhance Farmer Engagement and Training:** Implement comprehensive training programs for farmers on **Good Agricultural Practices (GAP)** and effective resource management.

#### 11. Combatting Sickle Cell Disease

- **Sickle Cell Disease (SCD)**, a genetic disorder that significantly reduces life expectancy and causes severe complications, continues to pose a challenge in India. Recent reports from **rural Maharashtra** have highlighted remarkable efforts in managing the disease, offering hope and relief to patients in marginalized communities.

#### Sickle Cell Disease (SCD):

- **Sickle Cell Disease (SCD)** is an **inherited haemoglobin disorder** characterised by a **genetic mutation** that causes **red blood cells (RBCs)** to assume a **sickle or crescent shape** rather than their **normal round shape**.
- This **abnormality in RBCs** results in **increased rigidity**, **impairing their ability to circulate effectively throughout the body**. Consequently, **individuals with SCD** often experience complications such as **anaemia, organ damage, recurrent and severe pain episodes**, and a **shortened lifespan**. **Sickle cell disease is a common monogenic disorder of haemoglobin**.
- **India** has the **highest prevalence of SCD in South Asia**, with over **20 million** affected individuals. As per the **Ministry of Health and Family Welfare**, **marginalised tribal populations are most vulnerable to SCD**.
- **Symptoms:** Symptoms of sickle cell disease can vary, but some common symptoms are- **Chronic anaemia** which leads to fatigue, weakness, and

paleness. **Painful episodes (also known as sickle cell crisis)** cause sudden and intense pain in the bones, chest, back, arms, and legs.

### Treatment Processes:

- **Blood Transfusions:** These can help relieve anaemia and reduce the risk of pain crises.
- **Hydroxyurea:** This medication can help reduce the frequency of painful episodes and prevent some of the disease's long-term complications.
- **Gene Therapy:** It can also be treated by bone marrow or stem cell transplantation by methods like **Clustered regularly interspaced short palindromic repeats (CRISPR)**.

### National Mission to Eliminate SCD 2047:

- There is a need for a **paediatric formulation of hydroxyurea** in line with the **National Mission to eliminate SCD by 2047**. Under the **Sickle Cell Anaemia Mission**, the **Council of Scientific and Industrial Research (CSIR)** is developing **gene-editing therapies for SCD**.

## **12. Significance of MicroRNA and Gene Regulation**

- 2024 Nobel Prize for Medicine was awarded to Ambros and Ruvkun for their discovery of Gene regulation by microRNA.

### **MicroRNA**

- **MicroRNA** - These are a new class of tiny RNA molecules that play a crucial role in gene regulation for nearly all multicellular organisms, including humans.
- Human genome codes for over one thousand microRNAs.
- **Function of MicroRNA** - It controls gene expression mainly by binding with messenger RNA (mRNA) in the cell cytoplasm during the transcription process.
- Instead of being translated quickly into a protein, the marked mRNA will be either destroyed and its components recycled, or it will be preserved and translated later.
- A single microRNA can regulate the expression of many different genes, and conversely, a single gene can be regulated by multiple microRNAs.

### **Gene regulation**

- **Gene Regulation** - It is the fundamental principle governing how gene activity is regulated.
- Chromosomes inside the nucleus of each cell carry genetic information in the form of DNA.
- Every cell in the body has the same chromosome, containing same identical genes.
- But different cells need to use different genes depending on their function and Different tissues in the body create different proteins, depending on their specific functions.

### Significances of Micro RNA

- Discovery of microRNA helped in understanding how bodies of complex organisms such as humans function work.
- **Role in Evolution** - Gene regulation by microRNA has enabled the evolution of increasingly complex organisms.
- **Role in Development** - MicroRNA enabled the differentiation of cells to form different types of cells.
- **Understanding diseases** - Faults in gene regulation can result in serious diseases like cancer, diabetes, or autoimmune conditions.
- Understanding gene regulation helps in understanding and potentially treating many of these conditions.
- **RNA production** - Cellular machinery for producing functional microRNAs is used to produce other small RNA molecules in both plants and animals, for example as a means of protecting plants against virus infections.

### 13. Tiger conservation initiatives in India

- Recently National Tiger Conservation Authority gave instructions to states to start the process of relocation from core areas of tiger reserves.
- **Project Tiger** - It was launched by the Central government on April 1 1973 in a bid to promote conservation of the tiger.
- First launched at the Jim Corbett National Park.
- Centrally Sponsored Scheme of the Ministry of Environment, Forests and Climate Change.
- **National Tiger Conservation Authority (NTCA)** - It a statutory body under the Ministry of Environment, Forests and Climate Change was established in 2005 to manage tiger reserves and lead tiger conservation efforts.
- **Tiger reserves** - They were set up as a part of Project Tiger initiated in 1973 and are administered by the NTCA.

- **The Tiger Census** - It is held once in every 4 years by National Tiger Conservation Authority (NTCA) in association with state forest departments and the Wildlife Institute of India.
- **MSTripES** - Monitoring System for Tigers: Intensive Protection and Ecological Status
- It creates a database and analyses the information to provide inferences for better management of tiger reserve.

### Significance of Tiger Conservation

- **Balancing Ecosystem** - Since Tigers are the apex predators in their ecosystems, their conservation regulates prey populations and helps maintain a healthy balance in the ecosystem.
- **Biodiversity** - Protecting tigers ensures the conservation of a wide range of other species within their habitats, as their presence indirectly supports the survival of many other animals.
- **Habitat Preservation** - Tiger conservation efforts benefitted in conserving sub-Himalayan forests, tropical rainforests, savannahs and mangroves.
- **Ecotourism** - Tiger reserves attract tourists from around the world, generating significant revenue for local communities and the national economy.

### Negative impacts of tiger conservation plan

- **Impact on Other Species** - Altering and manipulating habitats to favour tigers, does not necessarily help other species that share the tiger's habitat.
- **Extinction of Caracal** - Rare caracal of open savannahs and rocky stretches, were silently disappeared in early 2000s from Sariska Tiger Reserve due to the plantation of *vilayati kikar*, an invasive tree.
- **Decline of Antelope** - Neglect of rich microhabitats such as the riverine forest abutting perennial streams, led to the decline of the four-horned antelope.
- **Ecological Change** - Construction of numerous artificial waterholes for improving tiger sightings increased the soil moisture in this naturally dry forest, leading to changes in vegetation.
- **Social Impact** - Local hostility in several tiger reserves due to lose of access to resources and livelihood once the tiger reserve come into place.

### Challenges in Tiger conservation

- **Development Challenges** - Fragmentation by rampant infrastructure development such as Highways, dams and industries threaten a number of tiger reserves across.

- **River Interlinking impact** - 58 sq. km of savannah in Panna tiger reserve will soon be submerged by the Ken-Betwa Interlinking Project.
- **Hydroelectric projects** - These projects in the vicinity of Dibang tiger reserve will likely affect tigers and their movement.
- **Unplanned development** - It threatens to create habitat islands that will not support most wild species, let alone large carnivores such as tigers.
- **Rural to Urban Transformation** - Rapid rural-to-urban transformation also has consequences for biodiversity.

#### 14. Features and significance of 'Humsafar Policy'

- The Ministry of Road Transport and Highways has launched the '**Humsafar Policy**' in New Delhi to improve **travel convenience on National Highways** and boost the **development of Wayside Amenities**.

##### 'Humsafar Policy'

- The Humsafar Policy is an initiative launched by the **Ministry of Road Transport and Highways** to enhance the convenience and experience of travelers on **National Highways (NHs)**.
- It focuses on developing **Wayside Amenities** along highways to provide a range of facilities for highway users, ensuring smooth, safe, and comfortable journeys.
- The policy also emphasizes environmental sustainability by incorporating **eco-friendly practices** like **water conservation, solar energy, and waste recycling**.

##### Features of the Humsafar Policy

- **Wayside Amenities:** Includes food courts, fuel stations, EV charging stations, parking, toilets, ATMs, and pharmacies.
- **Standardized Facilities:** Ensures well-maintained and hygienic services for commuters.
- **Visibility for Service Providers:** Featured on the 'Rajmarg Yatra' app, with signage space and renewal fee waivers for high-rated providers.
- **Monitoring & Inspection:** Regular third-party checks to maintain service quality, with alerts for low-rated facilities.
- **Green Focus:** Encourages solar energy, water conservation, and waste recycling.

##### Significance

- **Better User Experience:** Enhances travel with high-quality facilities.

- **Economic Impact:** Creates jobs and supports local communities.
- **Standardization:** Ensures consistent quality and accountability.
- **Technological Integration:** The 'Rajmarg Yatra' app gives real-time facility info and allows feedback from users.

## 15. Dust-Driven Ocean Fertilization

- Dust carried by wind from drought-stricken southern Africa caused a bloom of marine phytoplankton off the southeast Madagascar coast from November 2019 through February 2020.

### Ocean Fertilization

- **Ocean fertilization or ocean nourishment is a type of technology for carbon dioxide removal** from the ocean based on the purposeful introduction of **plant nutrients to the upper ocean** to increase marine food production and to **remove carbon dioxide from the atmosphere**.
- Ocean nutrient fertilization, **for example iron fertilization**, could stimulate photosynthesis in phytoplankton. The phytoplankton would convert the ocean's dissolved **carbon dioxide into carbohydrate**, some of which would sink into the **deeper ocean before oxidizing**.

### Iron Fertilization

- Iron fertilization is the intentional introduction of **iron-containing compounds (like iron sulfate) to iron-poor areas** of the ocean surface to **stimulate phytoplankton production**. This is intended to enhance biological productivity and/or **accelerate carbon dioxide (CO<sub>2</sub>) sequestration** from the atmosphere. Iron is a trace element necessary for photosynthesis in plants.
- It is **highly insoluble in sea water and in a variety of locations** is the limiting nutrient for phytoplankton growth. Large algal blooms can be created by supplying iron to iron-deficient ocean waters. These blooms can nourish other organisms.

### Sources of Dust

- The primary sources of dust are large desert regions, **such as the Sahara in Africa, the Gobi in Asia, and the deserts of Australia**. Winds lift dust particles into the atmosphere, where they can travel thousands of kilometers across continents and oceans.
- The most well-studied dust transport is from the **Sahara Desert to the Atlantic Ocean**, including regions as far away as the Caribbean and the Amazon basin.



## Mechanism of Ocean Fertilization

- When dust settles on the ocean surface, iron and other nutrients dissolve in seawater and become available to phytoplankton. **This fertilization stimulates the growth of these microorganisms**, leading to an increase in primary production.
- **Phytoplankton, through photosynthesis**, absorb carbon dioxide from the atmosphere, thus playing a critical role in the global carbon cycle. The enhanced growth of phytoplankton can lead to **increased sequestration of carbon as they die and sink to the ocean floor**, trapping carbon in the deep ocean for long periods.

## Conclusion

- Dust-driven ocean fertilization plays a significant role in regulating marine ecosystems and the global carbon cycle. While natural dust deposition contributes to **ocean productivity and carbon sequestration**, the implications of altering this process, either through climate change or artificial means, remain a topic of ongoing research.

## 16. Marburg Virus symptoms and treatment

- Rwanda has reported a Marburg virus outbreak with several confirmed cases and deaths, making it a country of concern for public health.

## Marburg Virus

- The Marburg virus is a highly dangerous virus that causes **Marburg Virus Disease (MVD)**, also known as **Marburg Hemorrhagic Fever**.
- It belongs to the same family of viruses as **Ebola** (the **filovirus** family).
- **MVD** has a **case fatality rate** that can range from **24% to 88%**, depending on the virus strain and how cases are managed.
- The virus was first identified in **1967** during simultaneous outbreaks in **Marburg** and **Frankfurt** in Germany.
- The **Marburg virus** initially spreads from **animals to humans**, primarily through exposure to **Rousettus bats**, particularly the **Egyptian fruit bat**, found in caves or mines.

## Symptoms and Treatment

- Symptoms typically begin between **2 to 21 days** after exposure to the virus.

- **Early symptoms** are: High fever, severe headache, Muscle aches, Chills, Severe watery diarrhoea, abdominal pain and cramping, nausea and vomiting.
- As the disease progresses, more severe symptoms may develop, including: **Bleeding** (both internal and external) ex – blood in **vomit and faeces**.
- Patients often die **8 to 9 days** after the onset of symptoms, primarily from **severe blood loss and multiple organ failure**.
- Currently, there are **no approved vaccines or specific antiviral treatments** for MVD. However, **supportive care** can improve the chances of survival.
- Supportive treatment includes:
  - **Rehydration** with oral or intravenous fluids to maintain fluid and electrolyte balance.
  - Treatment of specific symptoms like **fever, pain, and diarrhoea**.
  - **Blood transfusions and oxygen therapy** may be required for severe cases.

### 17. Fairwork India report : Challenges and status of Gig economy

- The 'Fairwork India Ratings 2024' highlights that platform aggregators in India fail to ensure local living wages and resist recognizing the collective rights of workers.

#### Key highlights as per the report:

- **No Platform Scored Perfectly:** No digital labor platform scored more than 6 out of 10 points, and none met all criteria across the five principles – Fair Pay, Fair Conditions, Fair Contracts, Fair Management, and Fair Representation.
- **Fair Pay:** Only BigBasket and Urban Company ensured a minimum wage, but no platform met the criteria for guaranteeing a living wage after work-related costs.
- **Fair Conditions:** Several platforms (e.g., Amazon Flex, Swiggy, Zepto) provided safety equipment and training, but only a few offered comprehensive accident insurance and income loss compensation.

#### Present Status of Gig Economy in India:

- **Growth of the Gig Economy:** India is witnessing rapid growth in the gig economy, with millions of workers depending on digital platforms for their livelihoods. The rise of app-based platforms such as **Uber, Zomato, and Urban Company** has driven the expansion of gig work across **urban areas**.
- **Government Focus:** Recent years have seen increasing political and legislative attention to gig worker welfare. Karnataka and Jharkhand are

examples of states that have proposed new legislation to regulate platform work and protect gig workers' rights.

- **Worker Conditions:** Despite the expansion of gig work, platforms in India still lag in ensuring fair pay, safety, and management of gig workers. The **Fairwork India Ratings 2024** reveal that no platform scored above **6 out of 10**, signaling considerable gaps in adhering to key labor standards.

### Challenges faced by the Gig Economy

- **Low Wages and Unstable Earnings:** Many platforms fail to ensure a local living wage for workers after accounting for work-related costs. Only a few platforms like **Bigbasket** and **Urban Company** guarantee the local minimum wage, but none meet the standard of ensuring a living wage.
- **Lack of Social Security and Benefits:** Most gig workers lack access to benefits such as healthcare, insurance, and paid leave. While a few platforms provide accident insurance, broader social security protections remain elusive.
- **Poor Working Conditions:** Platforms often do not ensure adequate safety training or measures. While some like **Swiggy**, **Zomato**, and **Zepto** offer basic safety equipment and training, broader protections, especially in terms of income loss and sick leave, are limited.

### Way forward:

- **Strengthen Legal Protections and Social Security:** Introduce comprehensive legislation ensuring gig workers receive fair wages, social security benefits like healthcare and insurance, and clear, comprehensible contracts.
- **Promote Worker Representation and Fair Management:** Encourage platforms to recognize collective bodies of gig workers, ensuring their right to unionize. Implement transparent and bias-free management practices, along with grievance redressal mechanisms, to improve working conditions and fairness.

## 18. Advantages of Synthetic Medical Images

- As we consider how artificial intelligence (AI) is transforming various fields, one emerging area is the use of synthetic medical images in healthcare.

### Synthetic Medical Images

- **Synthetic medical images** are AI-generated images created without using traditional imaging devices like **MRI**, **CT scans**, or **X-rays**.

- These images are constructed using **mathematical models** or AI techniques, such as **generative adversarial networks (GANs)**, **diffusion models**, and **autoencoders**.

### Advantages offered

- **Intra- and Inter-Modality Translation:** Generate images from the same or different types of scans, helping when certain scans are unavailable. **Privacy Protection:** Created without patient data, reducing privacy concerns and easing data sharing for research.
- **Cost and Time Efficiency:** Synthetic images are quicker and cheaper to generate compared to real medical scans. **Scalability:** Easier to produce large volumes of medical data for AI training and research.

### Challenges posed

- **Potential for Misuse:** Could be used to create medical deepfakes, leading to fraudulent claims or fake clinical findings.
- **Lack of Real-World Complexity:** May not capture subtle details found in real medical data, potentially lowering diagnostic accuracy.
- **Truth Erosion:** Relying too heavily on synthetic data may distort AI models, leading to diagnoses that don't align with real-world cases.
- **Ethical and Regulatory Concerns:** Questions around how these images should be controlled and monitored to avoid misuse.

## 19. Global wildlife numbers have declined 73% since 1970, says WWF

- The **World Wide Fund (WWF) for Nature's Living Planet Report (LPR) 2024** highlights a **73% decline** in monitored wildlife populations from **1970 to 2020**, up from a **69% decline** in the **2022 edition**. The report emphasises the need for significant **"collective effort"** over the next **five years** to address the dual crises of **climate change** and **biodiversity loss**.

### Details:

- **Living Planet Index (LPI)**, provided by the **Zoological Society of London (ZSL)**, tracks **35,000 population trends** across **5,495 species** from **1970-2020**: Freshwater ecosystems show the steepest **decline** at **85%**. Terrestrial ecosystems face a **69% decline**. Marine ecosystems have a **56% decline**.
- **LPI in 2024 and 2022 reports** are not directly comparable due to changes in datasets (265 additional species, 3,015 more populations added in 2024).
- Wildlife declines signal potential extinction risks and vulnerability of ecosystems to tipping points, which could lead to irreversible changes.

### Key Threats to Wildlife:

- **Habitat loss and degradation**, driven by unsustainable farming and food consumption.
- Over-exploitation, invasive species, and diseases.
- Pollution, especially in Asia and the Pacific, which has seen a **60% decline in wildlife populations**.

### Global Perspective:

- Nature is under severe stress due to linked crises of biodiversity loss and climate change, threatening critical ecosystems like the Amazon rainforest and coral reefs.
- Countries have pledged to halt nature loss (Global Biodiversity Framework), limit global warming to **1.5°C** (Paris Agreement), and eradicate poverty (UN Sustainable Development Goals).

### About WWF:

- WWF is an independent conservation organization, with over **30 million** supporters and a global network active in over 100 countries.
- WWF's **mission** is to stop the degradation of the **Earth's natural environment** and to build a future in which humans live in harmony with nature, by conserving the world's biological diversity, ensuring that the use of renewable natural resources is sustainable, and promoting the reduction of pollution and wasteful consumption.

## 20. Agrarian crisis of NABARD survey: Landholding recedes by 1/3rd

- The latest **All India Rural Financial Inclusion Survey (NAFIS) 2021-22** by the **National Bank for Agriculture and Rural Development (NABARD)** highlights key trends among **rural farming families** in India.
- This is **NABARD's second survey** conducted since **2016-17**.

### Key findings:

- **Rising Income but Increasing Expenses:**

- The **monthly household income** of farmers **increased** from **Rs 8,059** in **2016-17** to **Rs 12,698** in **2021-22**, a **57.6%** rise.
- However, **monthly expenditures** also **surged** from **Rs 6,646** to **Rs 11,262**, a **69.4%** increase, showing that while income is rising, so are living costs.
- **Shrinking Landholdings:**
  - Average **landholding size** among farmers **decreased** from **1.08 hectares** in **2016-17** to **0.74 hectares** in **2021-22**, a **31%** reduction.
- **Shift in Spending Patterns:**
  - The share of **food** in total spending **decreased** from **51%** to **47%**, indicating that more is being spent on **non-food items**, raising concerns about food security.
- **Growing Debt Burden:**
  - The percentage of families with outstanding debts rose from **47.4%** in **2016-17** to **52%** in **2021-22**.
  - Despite the **increase in debt**, access to formal financial institutions improved, with **institutional lending rising** from **60.5%** to **75.5%**.
- **Access to Government Schemes:**
  - The **Kisan Credit Card (KCC) scheme** expanded from **10.5%** to **44.1%** coverage.
  - **Pension coverage improved**, with **23.5%** of families having at least one member receiving a pension, up from **18.9%**.
  - **Insurance coverage** saw a significant **rise** from **25.5%** to **80.3%**.
- **Improved Financial Literacy:**
  - **Financial literacy** grew from **33.9%** to **51.3%**, and **better money management behaviours** were observed in **72.8%** of families, up from **56.4%**.
  - **More rural families** reported saving money, with **66%** having savings in **2021-22** compared to **50.6%** in **2016-17**, and the average savings amount increased from **Rs 9,104** to **Rs 13,209**.

## 21. Tadoba-Andhari Tiger Reserve

- Tadoba Andhari Tiger Reserve is preparing to introduce a captivating addition to its offerings for the first time – a thrilling ropeway safari.

### Tadoba-Andhari Tiger Reserve:

- **Location:** It is located in the Chandrapur district in **Maharashtra**.
- It is the largest and oldest Tiger Reserve of Maharashtra.
- The origin of the name "Tadoba" lies with the name of the god "**Tadoba**" or "**Taru**", worshipped by the tribes that live in the dense forests of the Tadoba

and Andhari regions. "Andhari" refers to the Andhari River that meanders through the forest.

- The total area of the reserve is 625.4 sq. km. This includes Tadoba National Park, covering 116.55 sq. km, and Andhari Wildlife Sanctuary, covering 508.85 sq. km.
- **Corridor:** The reserve has corridor linkages with Nagzira-Navegaon and Pench Tiger Reserves within the State.
- **Habitat:** Biogeographically, the reserve falls in the Central Plateau province of the Deccan Peninsula. The habitat has undulating topography in the north and is rich in biodiversity.
- **Vegetation:** Southern Tropical Dry Deciduous
- There are **two lakes** and one waterway in the reserve, **Tadoba Lake, Kolsa Lake**, and the **Tadoba River**.
- **Flora:** It is blessed with thick forests covered with **teak trees** and other vegetation such as crocodile bark, salai, tendu, karaya gum, and mahua madhuca. The reserve is adorned with **patches of grass and bamboo shrubberies**.
- **Fauna:** The notable faunal species include the **tiger, leopard, sloth bear**, wild dog, gaur, chital, and sambar. As many as 280 species of birds are found, apart from reptiles (54 species), amphibians (11 species), and fishes (84 species).

## 22. Industrial Output by IIP Drops for the First Time in Nearly Two Years

- **India's industrial output, measured by the Index of Industrial Production (IIP), fell by 0.1% in August 2024**, released by National Statistical Office (NSO), MoSPI.
- This is the **first decline in 21 months and is due to a high base effect** along with drops in mining and electricity output.

### High Base Effect

- A **high base effect occurs when a current value is compared to a very high previous value**. This can lead to a **deceptive perception of growth or decline**, as the percentage change from a high base can appear smaller than it actually is.
- This is only an 8.33% increase, but it might seem like a **slowdown compared to Year 2**. However, the **increase from Year 1 to Year 3 is still 30%**, which is substantial. The **reason for this perceived slowdown is the high base effect**. The increase in Year 3 was from a higher starting point (120 units) compared to Year 2.

### Key Data Highlights:

1. **Previous Performance:** Industrial output had increased by **4.7%** in July 2024 and **10.9%** in August 2023.
2. **Cumulative Growth:** For the **financial year 2024-25**, industrial growth from April to August is at **4.2%**, down from **6.2%** in the same period last year.

#### Sectoral Performance:

1. **Mining Output:** Decreased by **4.3%** in **August**, compared to a **3.8%** increase in **July** and a **12.3%** rise in **August last year**. Heavy rain affected mining activities.
2. **Electricity Output:** Fell by **3.7%** in August, down from **7.9%** growth in July and **15.3%** a year ago.
3. **Manufacturing Sector:** This sector, which makes up **77.6%** of the IIP, dropped to a **22-month low** with only **1.0%** growth in August, compared to **4.4%** in July and **10.0%** in August 2023.

#### Use-Base Classification

1. **Primary Goods:** Went into **negative growth for the first time in 3.5 years**, contracting by **2.6%** in August, compared to **5.9%** growth in July and **12.4%** a year ago.
2. **Capital Goods:** Grew by **0.7%** in August, down from **11.8%** in July and **13.1%** a year ago. This sector is **important as it shows how much companies are investing**.
3. **Consumer Goods:** Mixed results were observed:
  - a. **Consumer Durables:** Grew by **5.2%** in August, down from **8.3%** in July and **6.0%** a year ago, indicating steady demand.
  - b. **Consumer Non-Durables:** Continued to decline for the third month, dropping by **4.5%** in August, compared to **-4.3%** in July and **9.9%** growth last year. This shows ongoing issues in rural demand.

#### Sectoral Breakdown:

1. **Manufacturing Declines:** Out of 23 manufacturing sectors, **11** showed **declines in August**. Notable drops included:
  - a. Other manufacturing: **-8.2%**
  - b. Printing and media: **-7.1%**
  - c. Fabricated metal products: **-6.5%**
  - d. Pharmaceuticals: **-6.1%**



### 23. China's 'Anaconda Strategy'

- Taiwanese authorities recently stated that the *People's Liberation Army (PLA)* is using an '*anaconda strategy*' to put pressure on Taiwan.

#### China's Military Maneuvers around Taiwan

China has been steadily increasing its military activities around Taiwan, both by air and sea:

- Air incursions into the Taiwan Strait have increased significantly, from 36 incursions in January to 193 in September.
- Chinese ships operating around Taiwan has also risen, from 142 in early 2024 to 282 by August.
- These maneuvers seem designed to wear down Taiwan's navy and air force, creating constant pressure.

#### Anaconda Strategy

- The '*anaconda strategy*' involves a combination of military tactics, psychological pressure, and cyber warfare.
- The goal is to weaken Taiwan's defenses and force the island into submission without the need for a full-scale invasion.
- China's approach is one of relentless pressure.
- It is trying to tire out Taiwan and force it into making mistakes, which could then be used as a pretext to launch a blockade.
- Its ultimate goal appears to be to make Taiwan vulnerable without resorting to direct military conflict, keeping Taiwan's forces on the defensive.

#### Other Unconventional Strategies used by China:

- **Wolf Warrior Diplomacy:** A confrontational and assertive style of diplomacy used by Chinese officials, characterized by aggressive rhetoric and nationalistic stances, often aimed at defending China's interests and countering foreign criticism.
- **Gray-Zone Tactics:** A set of covert strategies that fall between war and peace, including actions like cyberattacks, propaganda, and incremental territorial gains, aimed at advancing a nation's goals without triggering a full-scale military conflict.
- **Salami Slicing:** A strategy where small, incremental actions are taken over time to achieve a larger goal without triggering a strong reaction. It is often used to gain control or advantage bit by bit, avoiding immediate confrontation.

## 24. Dragon Drones: A New Weapon in the Russia-Ukraine War

- The Russia-Ukraine war has seen the emergence of a lethal new weapon known as “dragon drones.” These drones have been observed delivering incendiary payloads, igniting fires that can devastate military and natural environments alike.

### Dragon Drones

- **Functionality:** Dragon drones release thermite, a highly combustible mixture of aluminum and iron oxide, originally developed for welding railroad tracks.
- **Ignition:** Once ignited (often via an electrical fuse), thermite creates a self-sustaining reaction that is difficult to extinguish.
- **Temperature:** Thermite burns at an intense temperature of 2,427 degrees Celsius, capable of melting through materials, including clothing, wood, and military vehicles. It can even burn underwater.
- **Human Impact:** Exposure to thermite can result in severe, potentially fatal burns and significant bone damage.

### Deployment in the Conflict

- **Initial Use:** Dragon drones were reportedly first deployed in the Russia-Ukraine war around September. Ukrainian forces used them to set ablaze the vegetation providing cover for Russian troops, forcing them into vulnerable positions.
- **Russian Response:** Following initial deployment by Ukrainian forces, Russian military units also began to develop and use their own dragon drones.

### Legal Considerations

- **International Law:** The use of thermite in warfare is not prohibited under international law; however, the targeting of civilian areas with incendiary weapons is restricted by the Convention on Certain Conventional Weapons (CCW).
- **Indiscriminate Nature:** Experts, such as Marina Miron from King’s College London, note that thermite's indiscriminate nature raises concerns. While not banned outright, its use is limited to military targets to prevent severe burns and respiratory injuries to civilians.

## Conclusion

- The introduction of dragon drones in the Russia-Ukraine conflict highlights a troubling evolution in warfare technology, where traditional combat methods are enhanced by modern innovation. As these drones continue to be employed, discussions around their ethical implications and legal status will remain critical in the context of international humanitarian law.

## 25. The Haber-Bosch Process: A Revolution in Agriculture with Environmental Concerns

- The **Haber-Bosch process**, responsible for the mass production of **ammonia used in fertilizers**, has drastically impacted **global food production**. However, its environmental consequences and long-term sustainability have raised concerns among scientists and environmentalists.
- **Nitrogen in the air is mostly in the form of  $N_2$** , a molecule with a **triple bond** that is very difficult to break. Breaking this bond requires significant energy (946 kJ/mol).
- Once the bond is broken, **nitrogen can form ammonia ( $NH_3$ ) or nitrates**, which plants need to produce proteins, enzymes, and amino acids.

## Nitrogen Cycle and Nitrogen Fixation

- Nitrogen is an essential element **found in amino acids, proteins, hormones, chlorophyll, and vitamins**. It is a limiting nutrient in both natural and agricultural ecosystems, as plants and microbes compete for the nitrogen available in the soil.
- **Nitrogen exists in the atmosphere as  $N_2$ , held by a strong triple bond ( $N\equiv N$ )**. The conversion of nitrogen gas ( $N_2$ ) to ammonia ( $NH_3$ ) is called **nitrogen fixation**. In nature, **nitrogen can be fixed by lightning or ultraviolet (UV) radiation, forming nitrogen oxides ( $NO, NO_2, N_2O$ )**.
- **Nitrification**: In this process, **Nitrosomonas** and **Nitrococcus** bacteria first convert ammonia into nitrite, and **Nitrobacter** bacteria further oxidize it into nitrate. These bacteria are chemoautotrophs.
- **Denitrification**: Nitrate in the soil can be converted back to nitrogen gas ( $N_2$ ) through **denitrification**, performed by bacteria like **Pseudomonas** and **Thiobacillus**.

## About Haber-Bosch Process:

- The **Haber-Bosch process** is an industrial method for synthesizing **ammonia ( $NH_3$ )** from atmospheric nitrogen ( $N_2$ ) and hydrogen ( $H_2$ ). It plays a crucial

role in the production of fertilizers, supporting global agriculture. The process was developed by **Fritz Haber** (1909) and industrialized by **Carl Bosch** (1913).

### Environmental Concerns:

- **Overuse of Fertilizers:** Modern farming practices often lead to the **overuse of nitrogen fertilizers**, with **percapita usage exceeding 50 kg in some countries**.
- **Global Average:** The global average nitrogen fertilizer usage is around 13 kg per capita.
- **Environmental Impact:** Excess nitrogen leads to: **Soil Acidification:** Nitrogen fertilizers increase **soil acidity, damaging ecosystems**. **Water Pollution:** Nitrogen runoff leads to **eutrophication in water bodies**, causing **oxygen depletion and algal blooms**. **Air Pollution:** Reactive nitrogen released into the atmosphere can **acidify rain and contribute to the destruction of natural landscapes**.
- **Food Insecurity Paradox:** Despite the technological breakthrough, **food insecurity persists** due to political, economic, and social challenges.

### **26. MAHA-EV Mission**

- The Anusandhan National Research Foundation (ANRF) announced the launch of the Mission for Advancement in High-Impact Areas -Electric Vehicle (MAHA- EV) Mission.

### **MAHA-EV Mission:**

- It focuses on the **development of key EV technologies** to reduce dependency on imports, promote domestic innovation, and position India as a global leader in the EV sector.
- It is part of ANRF's Advancement in High-Impact Areas (MAHA) program designed to catalyze multi-institutional, multi-disciplinary, and multi-investigator **collaboration to tackle critical scientific challenges**.
- It aims to **accelerate technological advancement** in key sectors that have a high impact on the nation's future growth to create a global standing in the area.
- It is concentrating on **three critical technology verticals-- Tropical EV Batteries and Battery Cells, Power Electronics, Machines, and Drives (PEMD) and Electric Vehicle Charging Infrastructure**.
- **Significance**
  - The mission will **enhance domestic capabilities** in the design and development of essential EV components.

- It will **strengthen competitiveness** and position India as a hub for EV component development, driving global competitiveness and innovation.
- By accelerating the shift towards electric mobility, it will contribute to a greener and sustainable future.

## 27. Significance of India-US \$3.5bn deal for 31 MQ-9B Armed UAVs

- India and the US concluded a \$3.5 bn deal for the procurement of 31 **MQ-9B armed High Altitude Long Endurance (HALE) Remotely Piloted Aircraft Systems (RPAS)**.

### MQ-9B HALE UAV

- The MQ-9B drone is a version of the MQ-9 “Reaper” and has **two models**: Sky Guardian and Sea Guardian.
- It is built by the **General Atomics**.
- This drone can fly over **40,000 feet high**, making it useful for watching the Himalayan border areas.
- It can **stay in the air for up to 40 hours**, perfect for long surveillance missions.
- The MQ-9B has advanced features like **automatic take-off and landing**, a system to avoid other objects, secure GPS, and encrypted communications.
- **Deployment**: The MQ-9B drones are planned to be deployed at four places, including **INS Rajaji near Chennai** and **Porbandar in Gujarat**, by the Indian Navy. The other two services will keep them jointly at two bases in **Sarsawa** and **Gorakhpur** in Uttar Pradesh at Air Force bases due to **long runway requirements**.

### Details of the Procurement:

- **India** is planning for **15 Sea Guardians** for the Indian Navy and **16 Sky Guardians** (eight each for the Indian Army and Air Force). The **Indian Navy** has **leased two MQ-9As** with the maiden flight taking place on **November 21, 2020**.
- As part of the deal, General Atomics will **establish a Global Maintenance, Repair, and Overhaul (MRO) facility in India**, contributing to offset obligations.

### Significance of the deal

- The SeaGuardian model can **help the Navy patrol large areas** more economically than manned aircraft.

- For the Army and Air Force, these drones will help **monitor movements along the borders**, especially with China.
- It can offer **80% of a manned aircraft's capabilities** at **20% of the cost per hour**.

## 28. Key points of guidelines to prohibit greenwashing, misleading green claims

- The government introduced **new guidelines to regulate greenwashing and misleading environmental claims by companies**. These guidelines aim to protect consumers and enhance transparency in eco-friendly marketing.
- **Greenwashing**: Refers to companies making unsubstantiated claims about a product or service having a climate-friendly impact.

### Key points of the guideline:

- Issued by the **Consumer Affairs Ministry**, these rules ensure that environmental claims are backed by **verifiable evidence and clear disclosures**.
- The goal is **not to prohibit such claims** but to ensure they are made with **transparency and integrity**.
- **Verification Requirements**: Claims like **"100% eco-friendly"**, **"zero emissions"**, and **"cruelty-free"** must be supported by **accurate, verifiable data**. Environmental claims must use **consumer-friendly language**, especially for technical terms. Comparative environmental claims must be based on **relevant, verifiable data**, clearly specifying the basis of comparison.
- **Aspirational Claims**:
  - Future or aspirational environmental claims are allowed but must be backed by actionable plans.
- **Disclosure of Information**:
  - Companies **must disclose all material information** regarding environmental claims through advertisements or communications, using **QR codes, URLs, or other digital media**.
- **Specific Claims**:
  - Claims such as **"compostable"**, **"degradable"**, **"recyclable"**, and **"net-zero"** must be supported by **credible certifications, scientific evidence, or third-party verification**.
  - These disclosures should be easily accessible to consumers.
- **Regulatory Context**:
  - These guidelines complement existing **laws**, and in case of conflicts with specific regulations, those laws will take precedence.
  - The central authority's decision will be final in case of disputes or ambiguity in interpretation.

## 29. Components of Global Hunger Index

- Recently , Global Hunger Index (GHI) 2024 has been published.
- **GHI** - It is a tool for comprehensively measuring and tracking hunger at global, regional, and national levels.
- **Undernourishment** -The share of the population with insufficient caloric intake.
- **Child Stunting** - The share of children under age five who have low height for their age, reflecting chronic undernutrition.
- **Child Wasting** - The share of children under age five who have low weight for their height, reflecting acute undernutrition.
- **Child Mortality** - The share of children who die before their fifth birthday, partly reflecting the fatal mix of inadequate nutrition and unhealthy environments.

### Hunger level of India

- **India's GHI 2024 Rank** - India ranks 105<sup>th</sup> out of the 127 countries with a score of 27.3.
- **Hunger Status** - Severe
- As per the report , about 200 million people i.e 14% of India's existing population is undernourished.
- **Data Used** - It considers the Sample Registration System statistical reports released by Ministry of Statistics and Programme Implementation publishes annually.

### Reasons

- **Systemic Failure** - GDP growth alone does not result in improved food and nutritional security for the entire populace.
- **Low Per Capita Income** - India's per capita income, of \$2,485 in FY24, was less than a fourth of the global average of \$13,920 in FY22.
- **Food Inflation** - Food inflation more than doubled between FY22 and FY24, from 3.8% to 7.5%, affecting the poor.
- **Impact on Farm Output** - Extreme weather events, low reservoir levels and damaged crops, affected farm output.
- **Failure of Safety Net Systems** - Inadequate coverage of social security programs.

### What needs to be done?

- **Inclusive Development** - Enact policies to emphasise pro-poor development alongside addressing social/economic inequalities.

- **Improve access to safety nets** - Improve access to programs such as the Public Distribution Scheme (PDS), PMGKAY and Integrated Child Development Services (ICDS).
- **Agri Transformation** - Invest in agriculture and a holistic food systems approach to promote diversified, nutritious and ecological food production including nutri-cereals such as millets.

### 30. Jiangmen Underground Neutrino Observatory (JUNO)

- China's **Jiangmen Underground Neutrino Observatory (JUNO)**, located in southern Guangdong, is nearing completion and is set to revolutionize our understanding of **neutrinos**, subatomic particles key to unlocking many cosmic mysteries.
- With global collaboration, JUNO is expected to provide groundbreaking insights into neutrino behavior, mass hierarchy, and their impact on fundamental physics.

#### JUNO and Its Purpose

- JUNO is located **700 meters underground in China's Guangdong province**.
- A **giant sphere** equipped with thousands of light-detecting tubes will be housed within a **12-storey cylindrical pool of water**.
- The experiment aims to study elusive **subatomic particles known as neutrinos**, products of nuclear reactions.
- JUNO will focus on determining the **mass hierarchy of neutrinos**, providing insights into the universe's subatomic processes and matter formation.
- JUNO will observe **solar neutrinos**, providing real-time data on solar processes. It will also study **neutrinos released by the radioactive decay of elements like uranium and thorium in the Earth**, helping researchers understand **mantle convection and tectonic plate movement**.
- **Operational Timeline**: Set to begin operation by **late 2025**, JUNO will surpass other major neutrino observatories, including the **Deep Underground Neutrino Experiment (DUNE)** in the U.S., which is still under construction.

#### Neutrinos

- Neutrinos are the **second most abundant particles in the world, after photons**, or the light particle.
- Neutrinos are **mysterious particles**, produced copiously in nuclear reactions in the **Sun, stars, and elsewhere**.
- **Neutrinos** are tiny, near-massless particles produced by nuclear reactions. Every second, trillions pass through matter, including the human body.



- Neutrinos are **created by various radioactive decays**; during a supernova, by cosmic rays striking atoms etc.
- There are **three known varieties of neutrinos**, and they can **transform** from one type to another mid-flight. Understanding which type is the lightest or heaviest could explain processes from the universe's early days and why matter exists in its current form.
- JUNO will track **neutrinos emitted from nearby Guangdong nuclear power plants**, focusing on neutrino transformation, or **oscillation**, to solve the **neutrino mass hierarchy problem**.

### 31. SAMARTH scheme

- **Recently, the central government has extended the Samarth Scheme for two years (FY 2024-25 and 2025-26) with a budget of Rs. 495 Crore to train 3 lakh persons in textile-related skills.**

#### SAMARTH Scheme:

- The **Scheme for Capacity Building in Textiles Sector (SAMARTH)** is a **demand-driven and placement-oriented** umbrella skilling programme.
- **Aim:** It aims to **incentivize and supplement** the efforts of the **industry in creating jobs** in the organized textile and related sectors, covering the entire value chain of textiles, **excluding Spinning and Weaving**.
- In addition to the **entry-level skilling**, a special provision for **upskilling/ re-skilling programme** has also been operationalized under the scheme towards improving the productivity of the existing workers in the Apparel & Garmenting segments.
- Under this scheme skilling programme is implemented through the following Implementing Agencies: Textile Industry. Institutions/Organizations of the Ministry of Textiles/State Governments having training infrastructure and placement tie-ups with the textile industry. Reputed training institutions/ NGOs/ Societies/ Trusts/ Organizations/ Companies /Start-Ups / Entrepreneurs active in the textile sector having placement tie-ups with the textile industry. **Nodal Ministry:** Ministry of Textiles.

### 32. Equitable Agrifood Systems for Food Security and its challenges

- World Food Day 2024 was observed on October 16 with the theme "Right to foods for a better life and a better future".

#### Equitable food system

- **Food system** - It encompasses every stage of food production and consumption from growing, harvesting, processing, packaging, transporting, marketing, consuming, and disposing.
- **Stakeholders of food system** - It involves farmers, processors, retailers, consumers, and even policy makers, each playing a role in influencing the flow and quality of food.
- **Equitable food system** - It is a framework that ensures access to safe, nutritious, and culturally appropriate food to all individuals while promoting fairness and justice throughout the food supply chain.
- **Processing** - Network of factories and facilities that transform agricultural goods into a range of food products for consumption
- **Significance of equitable food system** - Addressing inequalities and empower marginalised communities by prioritising the right to food and nutrition security is essential for peaceful, prosperous communities.

### Challenges in achieving equitable food system

- India's agricultural sector is the cornerstone of its economy.
- **Population Growth** - Feeding nutritiously the current population of about 1.4 billion and an annual growth rate of 0.9% is a huge challenge.
- **Market Access Limitation** - Many smallholder farmers need help accessing markets effectively due to infrastructure limitations and supply chain inefficiencies.
- **Poverty & Inequality** - Rural poverty and inequality affects the participation and distribution of agricultural system.
- **Climate change** - Erratic weather patterns pose risks to agriculture productivity.
- **Infrastructure** - Inadequate infrastructure for storage, processing, and transportation of food affects the food supply chain system.

### What lies ahead?

- Addressing food inequality and ensuring that everyone has access to nutritious food are essential steps.
- Facilitating better links between production and markets, farmers can increase their incomes and reduce food waste.
- Enhancing access to appropriate technologies is vital.

### 33. IndiaAI Mission

- The IndiaAI Mission has selected eight Responsible AI projects in response to the Expression of Interest (EoI) issued under the Safe and Trusted AI Pillar.

### IndiaAI Mission:

- **Origin:** Launched during the Global Partnership on Artificial Intelligence (GPAI) Summit in 2023, New Delhi, by the Prime Minister of India.
- **Background:** Announced to drive AI innovation and build a comprehensive AI ecosystem in line with the visions of “Making AI in India” and “Making AI Work for India.”
- **Aim:** To create an advanced AI infrastructure supporting various sectors, boost AI innovation, enhance data quality, and promote ethical AI practices across the country.
- **Nodal ministry:** Ministry of Electronics and Information Technology (MeitY)
- **Implementing agency:** IndiaAI Independent Business Division (IBD) under the Digital India Corporation (DIC)

### Key Components:

- **IndiaAI Compute Capacity:** Develop AI compute infrastructure with 10,000+ GPUs via public-private partnerships.
- **IndiaAI Innovation Centre:** Create Large Multimodal Models (LMMs) and sector-specific foundational AI models.
- **IndiaAI Datasets Platform:** Unified platform providing access to high-quality non-personal datasets for AI research and startups.
- **IndiaAI Application Development Initiative:** Promote AI applications addressing key challenges in sectors like healthcare, agriculture, and governance.
- **IndiaAI FutureSkills:** Expand AI education through new programs at various academic levels and set up Data & AI Labs in smaller cities.
- **IndiaAI Startup Financing:** Easier access to funding for AI startups, with Rs 2,000 crore allocated.
- **Safe & Trusted AI:** Ensure responsible AI practices with indigenous tools and frameworks.

### **34. Climate change impact harsher on poorer farmers in India: FAO report**

- FAO said that poor households around the world lose 5% of their income each year due to heat stress and 4.4% due to floods.

### **Key Objectives of the Food and Agriculture Organization (FAO):**

- **Eradicate Hunger and Malnutrition:** The FAO aims to eliminate **hunger**, **food insecurity**, and **malnutrition** worldwide by promoting sustainable agricultural practices and increasing food availability.
- **Promote Sustainable Agriculture:** The organization encourages sustainable management of natural resources and resilient agricultural systems to combat climate change and preserve biodiversity.

- **Reduce Rural Poverty:** FAO works to improve the livelihoods of rural populations through economic development, social protection measures, and improved access to markets.
- **Enhance Food Systems:** It focuses on improving food production, distribution, and consumption to ensure the global population has access to nutritious, safe, and affordable food.

### Key Highlights of the Present Report by FAO:

- **Economic Losses from Climate Stress:** The report highlighted that poor households globally lose 5% of their income due to heat stress and 4.4% due to floods annually, compared to better-off households.
- **Impact on Rural Poor in India:** It found that rural poor households in India are affected by climate stress differently, with reduced off-farm employment opportunities during droughts, forcing them to allocate more resources to agriculture.
- **Structural Inequalities:** The report noted that poor households' vulnerability to climate stressors is rooted in structural inequalities, calling for policy measures such as expanding social security.

### NITI Aayog's Response

- **Efforts to Combat Climate Change:** NITI Aayog highlighted India's proactive measures, such as the **National Innovations on Climate Resilient Agriculture (NICRA) project**, which supports farmers' adaptation to severe climate conditions.
- **Social Safety Nets:** Emphasized India's implementation of a nationwide employment **guarantee scheme and extensive food distribution** efforts during the pandemic as evidence of social protection measures.
- **Women's Workforce Participation:** Cited data from the Periodic Labour Force Surveys showing increased female participation in the workforce, indicating progress in addressing gender issues.
- **Open to FAO Suggestions:** Acknowledged the value of considering the FAO's recommendations for further policy improvement while emphasizing India's existing initiatives.

### Way forward:

- **Strengthen Social Protection:** Expand anticipatory social protection programs and climate-resilient agricultural practices to support vulnerable households, reducing income losses from climate stress.

- **Address Structural Inequalities:** Enhance off-farm employment opportunities, tackle gender disparities, and implement policies targeting the root causes of vulnerability to climate-related risks.

### 35. Next Generation Missile Vessels (NGMV)

- American engine manufacturer General Electric recently announced that its LM2500 marine engines have been chosen to power Indian Navy's Next Generation Missile Vessels (NGMV).

#### Next Generation Missile Vessels (NGMV):

- The NGMVs would be **heavily armed war vessels** incorporating **stealth, high speed, and offensive capability** being built for the **Indian Navy**.
- **Six NGMVs are being built** by government-run **Cochin Shipyard Limited (CSL)** at a cost of Rs 9,805 crore.
- The **delivery** of ships is **scheduled to commence from March 2027**.
- The **primary role** of the ships would be to **provide offensive capability against enemy warships, merchantmen, and land targets**.
- These ships will be capable of conducting **Maritime Strike Operations and Anti Surface Warfare Operations** and would be a potent instrument of sea denial for enemy ships, especially at choke points.
- In a defensive role, these ships would be employed for Local Naval Defence operations and seaward defence of Offshore Development Area.

#### Features:

- The **core of the NGMV propulsion system** is the **LM2500, a marine gas turbine, manufactured by** the American engine manufacturer **General Electric**. LM2500 is engineered to unleash superior power while meeting stealth requirements. With a top speed of 35 knots (64 kmph), these vessels carry an **array of anti-surface weapons**.
- The CSL will equip the vessels with **loitering munitions, unmanned vehicles, and other guided weapons** to add to its firepower. The NGMVs' **primary weapon** is anticipated to be the **BrahMos supersonic cruise missile, capable of striking targets at long ranges**.