UNIQUE IAS ACADEMY

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HISTORY AND CULTURE

1. RANI DURGAVATI

Context:

Recently, 500th birth anniversary of Veerangana Rani Durgavati was celebrated.

About Rani Durgavati

- She was born in 1524 Chandel Dynasty of Mahoba in Banda, UP and was married to Dalpatshah of Gond Dynasty of GarhaKatanga in 1542.
- Rani Durgavati, ruled over the Gondwana kingdom from 1550 until 1564.
- Born in the fortress of Kalinjar, located in the present-day Banda district of Uttar Pradesh.
- Her father, Raja Salbahan of Ratha and Mahoba, was a descendant of the famous Chandelas.
- She was married to Dalpat Shah, the son of King Sangram Shah of the Garha Kingdom, sealing an alliance between the Chandela Rajputs and the Rajgonds of the Garha-Mandala dynasties.
- After the untimely death of her husband in 1550, Rani Durgavati took the reins of the Gondwana kingdom.

Rani Durgavati's rule:

- With the support of her trusted advisors, Diwan Adhar Kayastha and Man Thakur, she skillfully managed the administration, promoting peace, trade, and goodwill throughout her realm.
- To strengthen her kingdom's defenses, Rani Durgavati decided to move her capital from the Singorgarh Fort to the strategically important Chauragarh Fort, nestled in the Satpura hill range. This relocation further fortified her position and prepared her kingdom for potential conflicts.
- Rani Durgavati also undertook various developmental projects, including the construction of reservoirs like Ranital, Cherital, and Adhartal, for the benefit of her subjects.
- She was a patron of learning and allowed Acharya Bitthalnath to establish a seat of the Pushtimarg Cult at Garha.
- Under Rani Durgavati's rule, the boundaries of her kingdom were consolidated, and she led her army to quell rebellions. The majority of the population consisted of Gond tribesmen living in villages.
- The kingdom's strength lay in its well-equipped army, comprising cavalry, war elephants, and a large infantry. During the period between 1555 and 1560, Durgavati repulsed the attacks of Baz Bahadur.

War with the Mughals (Battle of Damoh/Narrai):

- In 1562, the Mughal Empire, under the leadership of Emperor Akbar, conquered Malwa, bringing the Mughal dominion closer to the borders of Rani Durgavati's realm.
- As tensions escalated, Mughal general, Abdul Majid Asaf Khan, who had recently vanquished the ruler of Rewa, set his sights on Rani Durgavati's prosperous kingdom.
- When news of the impending attack reached Rani Durgavati, she made a courageous decision to defend her kingdom, despite being outnumbered and outgunned by the Mughal forces.
- Although her advisor, Diwan Beohar Adhar Simha (Adhar Kayastha), warned her about the strength of the enemy, she believed that it was better to die honorably than to live a life of disgrace.

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- Rani Durgavati positioned her forces in Narrai, a valley situated between a hilly range on one side and the Gaur and Narmada rivers on the other. In a valiant display of bravery, Rani Durgavati's son, Vir Narayan, joined the battle and pushed the Mughal army back thrice.
- However, he was wounded and forced to retreat to safety. As the battle raged on, Rani Durgavati sustained severe injuries. Faced with the inevitability of defeat, Rani Durgavati took her own life on June 24, 1564.
- Her act of self-sacrifice and unwavering determination in the face of overwhelming odds earned her the status of a martyr, and her martyrdom day is commemorated as 'Balidan Diwas' to this day.

Contributions

- **Infrastructure Development:** She constructed reservoirs such as Ranital, Cherital and Adhartal and moved the Capital to Chauragarh (from Singaurgarh) on the strategic Satpura Hill Range.
- **Patronage of Religious Figures:** She allowed Acharya Bitthalnath to establish a seat of the Pushtimarg Cult at Garha. She welcomed the Vitthalnath of Vallabh community and took Diksha from him.
- Commitment to Secular Governance.
- **Victory over Baz Bahadur of Malwa:** Tarikh-i-Firishta mentions Durgavati defeated Baz Bahadur, the ruler of Malwa.
- **Historical documentation**: Story of Durgavati was chronicled by Abul Fazl (Akbar's chronicler) and British Colonel, Sleeman.

About Chandela dynasty of Bundelkhand

- Chandelas were an Indian Rajput clan of Central India (aka Jejakabhukti dynasty).
- Founder: Nanuka in 835 CE.
- Prominent Rulers: Yashovarman, Dhanga, Vidhyadhara, Paramardideva, Trilokyavarman.
- Major Cities: Capital city: Khajuraho (later changed to Mahoba)
- Language: Sanskrit and Prakrit
- Social System: Varna system was the basis of social organisation. Women as wives occupied a high place in the family and society.

2. RURAL TOURISM

Context:

- Rural Tourism and Rural Homestays (CNA – RT and RH) under the Ministry of Tourism has identified six niche experiences for tourists wanting to visit rural India, including agritourism, art and culture, ecotourism, wildlife, tribal tourism, and homestays
- Recently, the United Nations World Tourism Organization (UNWTO) announced its list of Best Tourism Villages 2023.

Key-highlights

- There are destinations where tourists can immerse themselves in the rural tourism experience that the government is now developing.

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- More than 134 villages have been listed, each of which provides a set of unique experiences to tourists. The list will only grow.
- Mattur is a village in Karnataka where residents speak only Sanskrit.
- Maachli in Maharashtra is an agrarian homestay surrounded by coconut, betel, and banana plantations.
- Bishnoi village in Rajasthan has frequent visits from the endangered Great Indian Bustard.
- Tamil Nadu's Kolukkumalai is the highest tea plantation in the world.
- Kerala's Dewalokam is a yoga centre on the banks of a river.
- Nagaland's Konyak Tea retreat takes visitors on a trip through tribal culture.
- Telangana's Pochampalli village showcases its traditional weaving techniques.
- Himachal Pradesh's Pragpur village plunges visitors into Kangra heritage architecture.
- The Central Nodal Agency – Rural Tourism and Rural Homestays (CNA – RT and RH) is the coordinating body amongst Centre, States, and other stakeholders.
- It has identified six niche experiences for tourists wanting to visit rural India, including agritourism, art and culture, ecotourism, wildlife, tribal tourism, and homestays.
- Depending on the experience, tourists can sample the local cuisine, see how crops are grown, participate in textile weaving, witness folk art being practiced and performed, and go on nature trails, all the while living within the community

About Rural Tourism

- Rural tourism represents any form of tourism that showcases the rural life, art, culture and heritage at rural areas.
- Ministry of Tourism hasidentified rural tourism as a niche area for the development and promotion of rural India.
- Different forms to rural tourism include agritourism, cultural tourism, ecotourism, etc.
- Rural Tourism activities take place in non-urban (rural) areas with the following characteristics:
- Low population density.
- Landscape and land use are dominated by agriculture and forestry.
- Traditional social structure and lifestyle.

What is the need to focus on Rural Tourism?

- **Huge Potential**: There is a huge potential to capture domestic and international tourists. Despite having a diverse culture and rich architectural heritage, India holds only a 1.2% share of the international tourism market (2019). While Spain has 5.7%, the USA – 5.4 %, China – 4.5% and the UK – 2.7%
- **Creation of Employment Opportunities:** The tourism industry generates both direct and indirect employment. When developed to its fullest potential, it could provide jobs to many young men and women who otherwise are increasingly migrating to cities.
- **Development of rural regions**: It will boost the overall rural economy as rural tourism will augment both consumption as well as investment potential of the rural regions.

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- **Curbing Over-tourism:** Over-tourism means a very high number of people visiting a few tourist destinations, which suffer from the excessive presence of tourism such as Shimla and Goa.
- **Raising India's Soft power**: If the concept of rural tourism is well marketed, then people from developed countries would be drawn towards India. Especially millennials who are fascinated about traditions, culture and art.
- **Unity:** Brings together people of different cultures, faiths, languages etc. and provide broader outlook of life

Daily life:

Improvement in public services and increase the living standards of local community

Challenges associated with Rural Tourism

- **Poor infrastructure**: Long distance from nearby towns; lack of connectivity and poor transportation facilities; inadequate lodging, amusement facilities, electricity, telecommunication including ICT infrastructure etc.
- **Lack of awareness and skills**: Rural populations often lack knowledge, skill and financial backing to market their cultural, artistic, and craft-related services to tourists.
- **Lack of trained manpower**: Rural areas lack trained human resources affecting directly the tourism and hospitality industry.
- **Digital Illiteracy:** Digital literacy in rural areas hinders the adoption of technology-based solutions to market and attract tourists such as advertisements on social media, online booking services etc.

Threat to Ecology:

- Rural tourism has the potential to have a negative impact on the environment and local communities if not managed properly.
- Overcrowding, pollution, and destruction of natural habitats can harm the local ecology and culture, which can deter visitors in the long run.

Safety Concerns:

- Rural areas can be perceived as unsafe by tourists due to a lack of proper security arrangements, which can make it difficult for them to enjoy their experience and create a negative image of the destination.

Potential of rural tourism in India:

- The development of a strong platform around the concept of Rural Tourism is definitely useful for a country like India, where almost 74% of the population resides in its 7 million villages.
- Numerous local traditions like plays, art forms, dances etc. enhance the cultural wealth of rural areas, making these attractive for the tourists.
- Lush green forests in south Indian villages, sacred groves etc. make them an ideal site to promote tourism. Growing trend of short-break holidays, rural areas being near to cities can easily provide for great tourism destinations.
- When developed to its fullest potential, it could provide jobs to many young men and women who otherwise are increasingly migrating to cities.
- Rural tourism can revive many of the arts and crafts traditionally being practiced in the rural communities but dying a slow death.

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- Socially, it can open rural mindset to new thoughts and ideas from the outside world. On the other hand, for the urban citizen, a few days spent amidst traditional rural lifestyle may prove to be a great stress reliever.
- Rural Tourism is any form of tourism that showcases the rural life, art, culture and heritage at rural locations, thereby benefiting the local community economically and socially as well as enabling interaction between the tourists and the locals for a more enriching tourism experience.

Steps taken by the Government to Promote Rural Tourism

Creating assets under MGNREGA:

- The Ministry of Rural Development has been asked to explore the possibility of creating assets under MGNREGA for tourist infrastructure.

Exploring organic agriculture areas:

- The Government is exploring organic agriculture areas developed under the Paramparagat Krishi Vikas Yojana (PKVY) and Mission Organic Value Chain Development in North East Region (MOVCD-NER) for development as rural tourist spots.

State assessment and ranking criteria:

- The Tourism Ministry is also working on launching the State assessment and ranking criteria to help foster competition and reach the overarching objectives of promoting sustainable and responsible tourism.

Swadesh Darshan Scheme:

The "Swadesh Darshan Scheme" seeks to establish "integrated development of theme-based tourist circuits.

Dekho Apna Desh:

- "Dekho Apna Desh" scheme, which aims to persuade the middle class to visit domestically rather than abroad.

Vibrant Village Program:

- In border settlements, the Vibrant Village Program will build tourism infrastructure.

Amrit Dharohar scheme:

- The purpose of this program's inception is preservation and conservation.
- It will make the best use of the area's wetlands, boost biodiversity, and promote ecotourism options, all of which will increase tourism.

Unity Malls to be launched:

- The establishment of Unity malls at well-known tourist destinations will allow the central government to assist the state governments in promoting local handicraft products.
- These malls will feature GI items and the state's unique ODOPS (one district, one product).

Boost to infrastructure:

- The Union Budget also mentioned the development of 50 more airports, heliports, water aerodromes, and other landing areas.
- Additionally, the railways have received Rs2.40 lakh crores. Tourism will inevitably rise as connectivity improves and there are more options for getting there.

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Measures and steps to promote rural tourism:

- Improved infrastructure and connectivity of rural India can improve rural tourism.
- Identification of strength's of villages in different states and introduction of customised trips like Cultural and Heritage walk in Rajasthan, Tribal tours in North-East India.
- Promoting Farm and home stays to provide local and humane touch to tourists.
- Destinations should be specific and proximate to the conventional tourist spots.
- There should be an improvement in the accessibility, proper marketing and periodic maintenance of the destinations.
- Home stays need to follow the traditional style of construction and lifestyle.
- A concerted effort from both the Union Government and State Governments based on a proactive approach is needed.
- Safety of tourists, especially females should be ensured.
- Adequate finances must be devolved to the gram sabha for maintenance of basic infrastructure.
- Training of villagers to avoid any kind of hostility towards tourists.
- Adequate healthcare facilities must be provided.
- Environment impact of increased number of tourists must be assessed.

3. INDIAN ARMY'S PROJECT UDBHAV

Context:

- Union Defence Minister Shri Rajnath Singh unveiled 'Project Udbhav' during the inauguration of the Indian Military Heritage Festival.

What is Project Udbhav?

- Project Udbhav is a collaboration between the Indian Army and the United Service Institution of India (USI), a defence services think tank.
- The project, named 'Udbhav', translates to 'origin' or 'genesis', recognizing the profound knowledge embedded in our nation's historical texts spanning centuries.
- At its core, the project seeks to amalgamate ancient insights with modern military practices, creating a comprehensive approach to tackle present-day security challenges.
- This initiative aims to bridge the gap between age-old wisdom and contemporary military education.
- India's ancient knowledge system, rooted in a 5000-year-old civilizational legacy, boasts a repository of intellectual texts and manuscripts.
- Project Udbhav, as per MoD, aims to facilitate a profound understanding of these systems and their enduring relevance in the modern era.

Inspiration Behind Project Udbhav:

- The initiative builds upon earlier research by the Army Training Command, resulting in the compilation of the 'Compendium of 75 Stratagems' based on ancient Indian scriptures.
- The project draws inspiration from revered texts like Chanakya's Arthashastra which emphasises the importance of strategic partnerships and diplomacy, aligning with contemporary practices.

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- Similarly, Thirukkural, the classical Tamil text, champions ethical conduct in all endeavors, including warfare, aligning with modern codes of ethics and principles of the Geneva Convention.
- The records of history also offer invaluable lessons from prominent military campaigns and leaders.
- The empires of Chandragupta Maurya, Ashoka, and the Cholas serve as examples of flourishing influence during their times.
- Noteworthy is the Ahom Kingdom's 600-year rule, marked by repeated defeats of the Mughals.

Military systems in Ancient India

- India's ancient military wisdom is based upon large body of intellectual texts, scriptures, manuscripts, thinkers and study of prominent military campaigns and leaders.
- **Kautilya's realism**: Kautilya wrote Arthasastra around 300 BC, belongs to Mauryan period. His strategies emphasize understanding ground realities and adapting tactics accordingly.
- **Mandala theory:** It deals with knowledge of foes, friends and allied countries
- **Intelligence Gathering**: He advocated the use of spies (Amatyas) to collect information about enemy capabilities, intentions, and weaknesses.
- **Kamandaka by Nitisara**: It belongs to the Gupta age and follows the Arthasastra tradition.
- Building and maintaining friendly relations with neighbouring states were considered vital for the overall security and stability of the kingdom.
- **Thiruvalluvar by Thiruvalluvar (31 BC**): It deals with Ethical conduct during warfare.
- It aligns with modern military codes of ethics of just war and principles of Geneva Convention.
- **Ramayana, Mahabharata, Bhuddhist Jatakas**: The victory and defeat in the battle largely depended on the knowledge of the science of Vyuha and the tactical deployment of the troop

4. SIR SYED AHMED KHAN

Context:

Year 2023 marked Sir Syed Ahmed Khan's 125th death anniversary.

Syed Ahmad Khan (1817-1898)

He worked as a civil servant, journalist, educationist, social reformer and historian.

Writings:

- He has also written a paper titled "The Causes of the Indian Revolt" to explain the reasons for the revolt from native perspective.

- The Aligarh Institute Gazette, a magazine published by him was an organ of the Scientific Society, succeeded in agitating the minds in the traditional Muslim society.
- He was also a scholar on Christianity and wrote a book, 'Commentary on the Holy Bible'.
- Historical Documentation: His works, like "Asar-us-Sanadid," contributed to preservation of India's rich cultural heritage and serve as valuable historical references.
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Political engagement

- Syed Ahmad Khan, a prominent figure of the 19th century, received education in both religious Scripture, the Quran, and Western sciences.
- His booklet, "Asbab-e-Baghawat-e-Hind" (Reasons for the Indian Revolt of 1857), highlighted British ignorance, their aggressive expansionary policies, and the exclusion of Indians from the Legislative Council of India as major causes for growing antagonism.
- Interestingly, non-official Indian members were included in the Viceroy's Council from 1861, and Syed Ahmad Khan was nominated to the Viceroy's Legislative Council in 1878.
- He supported the efforts of Dadabhai Naoroji and Surendra Nath Banerjee in securing Indian representation in the government and civil services.

Educational and Socio-religious reforms

- Syed Ahmad Khan emphasized interfaith understanding, exemplified by his work, "Commentary on the Holy Bible."
- He advocated modern scientific education for Muslims, criticizing the prevailing superstitions and regressive customs of society.
- He founded the Scientific Society of Aligarh in 1863, modelling it after the Royal Society of England. This society organized annual conferences and disseminated scientific material in English and Urdu.
- He established various educational institutes to promote education, most notably the Muhammadan Anglo-Oriental College (MAOC) in 1875, later evolving into Aligarh Muslim University.
- The MAOC played a pivotal role in the Aligarh Movement of the 19th century, fostering a renaissance among Indian Muslims. While founded primarily for Muslims, MAOC's doors were open to all, emphasizing inclusivity.
- Mohammedan Anglo-Oriental (MAO) College, aimed to provide modern education while preserving cultural heritage.
- The Aligarh Institute Gazette, initiated by him, campaigned against practices such as female infanticide, polygamy, child marriage, sati, segregation of widows, and poverty-induced marriages of young girls to older men.
- His progressive social ideas were disseminated through his magazine, "Tahdhib-ul-Akhlaq" (Improvement of Manners and Morals).

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Views of Syed Ahmad Khan on Women Education

- Despite showing inclination for liberal values and rationality, his views on education to be imparted to women had been controversial.
- Syed Ahmad Khan, believed the ultimate goal for women is marriage and therefore, training for them should focus on familial duties. For women's education he believed in a "Disorganised home-based tutor education".
- However, later he was convinced that the "rejection of women's education by Muslims played a big role in the decline of the community" in comparison to others.
- Despite this, he denounced polygamy, Infanticide, and child marriage

Muhammadan Educational Conference:

- To propagate the ideas of Anglo-oriental College across India, Syed Khan established the All-India Muhammadan Educational Congress in Aligarh, U.P.
- The first session of the congress was held in 1886 in Aligarh and was presided by Maulvi Samiullah Khan.
- The organisation aimed to promote educational development among Muslims through conferences and also to gain University status for the Anglo-Oriental College.

Evolution of Syed Ahmad Khan's political thought

(a) First Phase (Up to 1887)

- Syed Ahmad Khan advocated for Hindu-Muslim unity, emphasizing their shared history and common interests.
- He advocated for the separation of religious and political matters, believing that religious and spiritual issues should not impede nationalist objectives.
- In his role on the Viceroy's Legislative Council, he actively worked for the welfare of both Hindus and Muslims.
- Cooperation between the two communities was evident in the scientific society and the Aligarh British India Association.
- Syed Ahmad Khan even supported the ban on cow slaughter within the MAOC.

(b) Second Phase (After 1887)

- His perspective on the applicability of Western democracy and nationalism in India underwent a significant shift.
- He argued that the complex, diverse nature of Indian society, with its diverse castes, religions, and races, made representative government impractical and could lead to Hindu dominance over Muslims.
- This argument laid the foundation for the two-nation theory, which claimed that Hindus and Muslims were separate nations with distinct interests.
- He aimed to establish an Anglo-Muslim alliance to counter the influence of the Congress, influenced by British officials and the need for their support for his college.

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5. NOBEL PRIZE IN LITERATURE FOR 2023

Context:

- It was awarded to the Norwegian author and dramatist **Jon Fosse**, "**for his innovative plays and prose which give voice to the unsayable.**"
- The Academy honoured Fosse's body of work written in **Norwegian Nynorsk** which includes several plays, novels, poetry collections, essays, children's books and translations.
    - Nynorsk is one of two official languages of Norway.
- **Nobel prize for Literature** is worth **11 million Swedish kronor ($1 million)** and is regarded widely as the world's most prestigious literary award.
- The Nobel Prize in Literature has been awarded **116 times to 120** Nobel laureates between 1901 and 2023.
- In the recent years, the prizes have gone to French author Annie Ernaux (2022), Tanzanian novelist Abdulrazak Gurnah (2021).

6. **MAA DANTESHWARI TEMPLE (CHHATTISGARH)**

- **Dedicated to:** six armed **Mahisasuramardini** as **Danteswari** carved on a black stone.
    - It is **one of the Sakti-pithas (total 51) of India**.
- **Located at**: the confluence of **rivers Sankhini and Dankini**.
- **Constructed by**: the rulers of **Chindak Nagvanshi during 11th -12th century A.D.**
    - Further in the 14th century A.D. this temple was renovated by Annamdev who was the brother of **Prataprudra** of **Kakatiya dynasty**.

GEOGRAPHY

1. SURGE IN HUMAN SETTLEMENTS IN FLOOD-PRONE AREAS:

Context:

- According to a recent study conducted by the World Bank, human settlements in some of the world's riskiest flood zones have increased by a staggering 122% since 1985, contributing to the vulnerability of millions to water disasters induced by climate change. And, this growth is predominantly observed in middle- and low-income countries.
- On the other hand, the most secure regions experienced an 80% increase in growth in human settlements.

What are the Major Takeaways from the Study?

Global Landscape of Settlement Expansion:

- Most countries, especially in East Asia, saw more settlements in regular flood zones and ultra-high flood zones than in dry areas.
- Libya, which suffered from devastating flooding in September 2023, had an 83% increase in settlement extent in the worst flood zones.

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- Pakistan, experiencing catastrophic flooding both in 2022 and 2023, witnessed an 89% increase in settlements in prone areas.

Notable Exceptions:

- Dry settlements in the United States increased by 76%, while the highest flood settlements rose by only 46%.
- Other countries with more dry settlements than ultra-wet areas include India, France, Sweden, Austria, Finland, Japan and Canada.

What are the Possible Factors Behind Increasing Human Settlements in Flood Zones?

- Rural to Urban Migration: As countries experience economic growth, urbanization near waterways becomes prevalent. Settlements often expand into flood-prone areas as cities grow.
- ***For Example:*** Dares Salaam, Tanzania, exemplifies this issue, growing from a fishing village to over seven million people.
- ***Economic Factor***: Low-income populations often cannot afford to live in safer, less flood-prone areas.
- Lack of Regulatory Enforcement: In some countries, land-use planning and zoning regulations might not be effectively enforced. This can result in settlements proliferating in flood-prone areas without adequate safeguards.
- ***¾ Cultural and Historical Ties:*** Some communities have deep cultural or historical connections to flood prone regions, and this can influence their decisions to remain or settle in these areas despite the risks.
- ***Tourism and Recreation***: Coastal and riverfront areas, despite their vulnerability to flooding, continue to draw tourists and recreation enthusiasts because of their inherent appeal.
- The demand for resorts, hotels, and vacation homes can lead to settlement in these areas, even if it's only seasonal.

What is the situation of urban flood risk in India?

1) India is the 3rd highest contributor to global settlements exposed to flood hazards.

2) India is also 3rd in countries with new settlements expanding into flood-prone areas.

This means India is at significant risk of flood-related problems

What should be done?

1) ***Recognition of the problem:*** Recognising that we are actually expanding into flood-prone areas is the first step towards sustainable urban planning.

2) ***Preventing disproportionate harm to the poor:*** There is a need to differentiate between low-income residents and unauthorised structures erected for the elite.

3) ***Scientific mapping***: Every city needs to do a proper scientific mapping of the flood prone areas.

4) ***Resilient infrastructure:*** Urban governments need to make housing in such areas more flood-resilient and protect low-income housing.

For example, riverside settlements that use stilt houses used by the Mishing and the Miyah communities along the Brahmaputra.

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2. MORE FREQUENT CYCLONES IN EASTERN ARABIAN SEA

Context:

- Recently, a study has been published in the Nature Journal, which highlights the concerns related to Climate Change causing frequent Tropical Cyclones (TC) in the Eastern Arabian Sea.
- The study is part of the "Forecasting with Fisher's" project, by the Advanced Centre for Atmospheric Radar Research (ACARR) at Cochin University of Science and Technology (CUSAT).

What are the Key Findings of the Study?

Increasing Frequency and Severity of Cyclones:

- Changes in ocean and atmosphere warming patterns are leading to more frequent and severe tropical cyclones in the Eastern Arabian Sea, adjacent to India's west coast.
- Typically, tropical cyclones in the Arabian Sea occur at the start of the southwestern monsoon between March and June, as well as after the season, between October and December.

The Arabian Sea accounts for about 2% of the annual global mean of tropical cyclones but poses a considerable threat due to its densely populated coastlines.

Impact of Indian Ocean Dipole (IOD):

- ✓ The positive phase of IOD, where one part of the ocean gets warmer than the other, leads to warmer sea surface temperatures and increased precipitation in the western Indian Ocean region.
- IOD, sometimes referred to as the Indian Nino, is similar to the El Nino phenomenon, occurring in the relatively smaller area of the Indian Ocean between the Indonesian and Malaysian coastline in the east and the African coastline near Somalia in the west.

Anthropogenic Influence:

- The recent increase in the frequency of extremely severe cyclonic storms over the Arabian Sea during the post-monsoon season is attributed to anthropogenic (human-caused) influence rather than natural variability.
- Human-induced climate change is contributing to the intensification and higher frequency of cyclones in the Arabian Sea.

Impact on Western Indian Coastline:

- The intensification and increase in cyclone frequency pose a significant threat to the densely populated coastal regions along the western coast of India, from Gujarat to Thiruvananthapuram, facing higher risks, including strong winds, storm surges, heavy rainfall, and other associated hazards.

Concerns for Coastal Communities:

- The changing cyclone patterns are expected to significantly affect the lives and livelihoods of indigenous coastal communities and artisanal fishers, necessitating a need for further studies and adaptation strategies.

Recommendations:

- The study calls for changes in development strategies to account for increased cyclone risks and emphasizes the need for updated policies and technologies related to storm warnings and localized weather services.

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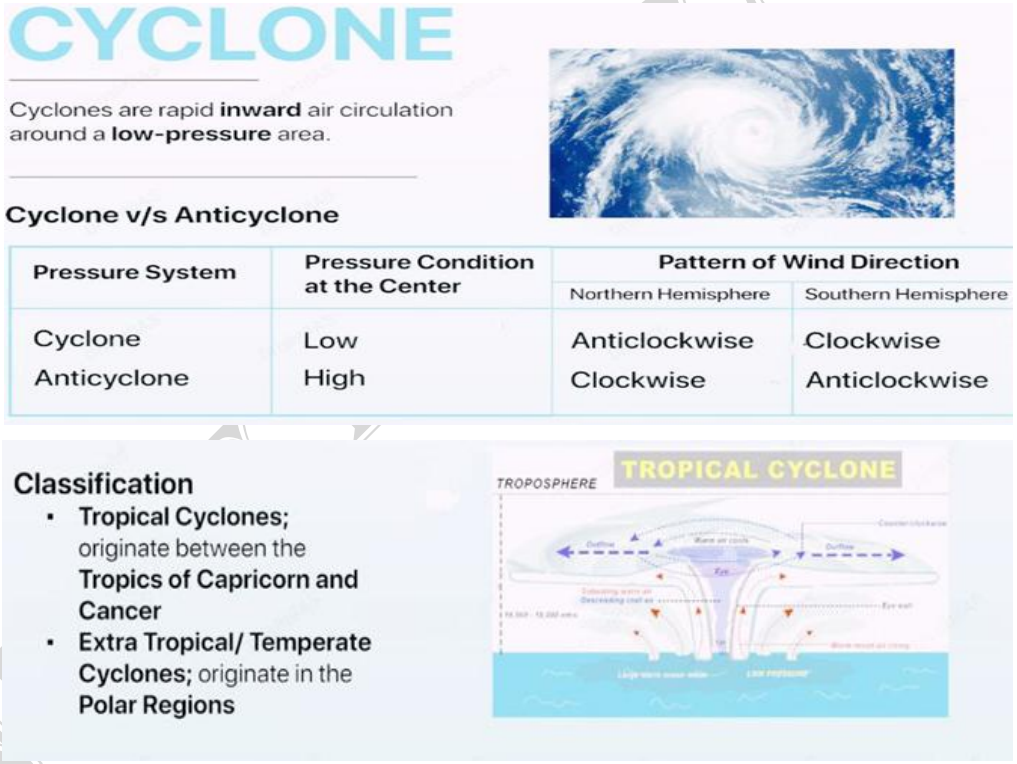
What are the impacts?

- West India- As the eastern Arabian Sea changes, the coastlines of western India are increasingly at risk.
- Intensity- Increase in intensity of cyclones increases their potential to cause high wind, storm surges, severe rainfall, etc.
- ***Population***- The cyclones could pose more and more of a threat to all densely populated coastal regions along the western coast, from Thiruvananthapuram to the coast of Gujarat.
- ***Impact on fishers***- It will affect the lives and livelihood of the indigenous coastal communities and artisanal fishers.
- ***Impact on southwest monsoon*** – Its impact on southwest monsoon is concerning which as the country relies upon heavily for its drinking water and agricultural needs.

What lies ahead?

- This report calls for changes to development strategies to account for the dangers posed by more intense and frequent cyclones.
- There is also a need to develop new policy and technology initiatives in the areas of storm warning, impact-based local weather services and reliable localised weather services.



Conditions for Formation

- Large sea surface with temperature >27° C.
- Presence of the **Coriolis force**
- Small **variations in the vertical wind speed**
- **A pre-existing weak low- pressure area**
- **Upper divergence** above the sea level system

Nomenclature

- Nodal Authority - **World Meteorological Organization (WMO)**
- Indian Ocean Region - **Bangladesh, India, Maldives, Myanmar, Oman, Pakistan, Sri Lanka** and **Thailand** contribute to naming cyclones that occur in this region.

Different Names for Tropical Cyclones

- **Typhoons** - Southeast Asia and China
- **Hurricanes** - North Atlantic and eastern Pacific
- **Tornados** - West Africa and southern USA
- **Willy-willies** - Northwest Australia
- **Tropical Cyclones** - Southwest Pacific and Indian Ocean

Cyclones in India

- **Bi-annual Cyclone Season** - March to May and October to December
- Recent Cyclones - **Tauktae, Vayu, Nisarga and Mekanu** (in Arabian Sea) and **Asani, Amphan, Fani, Nivar, Bulbul, Titli, Yaas and Sitrang (in Bay of Bengal)**

3. GLACIAL LAKE OUTBURST FLOOD IN SIKKIM

Context:

Sikkim recently experienced a Glacial Lake Outburst Flood (GLOF). The South Lhonak Lake, a glacial lake located at an altitude of 17,000 feet in the state's northwest, experienced a rupture as a result of continuous rainfall.

What is Glacial Lake Outburst Flood?

About:

- A GLOF (Glacial Lake Outburst Flood) is a sudden and potentially catastrophic flood that occurs when water stored behind a glacier or a moraine (a natural accumulation of ice, sand, pebbles, and debris) is released rapidly.
  - ✓ These floods happen when glacial lakes formed by melting ice accumulate water behind weak moraine dams.
  - ✓ Unlike sturdy earthen dams, these moraine dams can fail abruptly, releasing large volumes of water in minutes to days, leading to devastating downstream flooding.
  - ✓ The Himalayan terrain, with its steep mountains, is particularly vulnerable to GLOFS.

Reasons behind GLOF and its increased frequency:

Reasons

Glacial Retreat:

- Melting glaciers contribute to glacial lake formation. As glaciers shrink, they release meltwater, which fills these lakes. If the lake's boundary is breached, it can lead to a GLOF.
- Moraine Formation Moraines, piles of debris carried by glaciers, can act as natural barriers. When these moraines dam glacial lakes, they become susceptible to breaching, causing GLOFs.

Landslides and Ice Avalanches:

- Landslides or ice avalanches can fall directly into glacial lakes, displacing water and causing it to breach natural dams, resulting in GLOFs.
- Meteorological Conditions Weather patterns, including sudden temperature changes or extreme storms, can influence the stability of glacial lakes and trigger GLOFs.

Climate Change Impact:

- The Himalayan-Hindukush region is a climate change hotspot. Accelerated glacier melt leads to the formation of glacial lakes. Also, Climate change increases the frequency and intensity of cloudbursts.

Geological Triggers::

- Earthquakes or other geological events can destabilize moraines, leading to the sudden release of water from glacial lakes.

Developmental Changes:

- Modern infrastructure, including dams and roads, alters the landscape. Large dam projects intensify geological stresses, weakening rocks.

What are the Impacts of Glacial Lake Outburst Floods?

- **Loss of Life and Property**: GLOFs can kill people, destroy houses, bridges, roads, forests, and farmland, as well as livestock and crops.

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- For example, a GLOF in Sikkim, India, in October 2023 killed at least 18 people and left more than 150 missing. Another GLOF in Uttarakhand, India, in June 2013 killed more than 5,000 people and damaged several hydropower projects.
- **Disruption of Livelihoods**: GLOFs can affect the livelihoods of the local communities for long periods, by reducing their access to resources, markets, services, and opportunities. GLOFs can also damage the tourism industry, which is a major source of income for many mountain regions.
- **Damage to Infrastructure and Environment**: GLOFs can damage or destroy hydropower plants, which are important for providing electricity and reducing greenhouse gas emissions. GLOFs can also alter the landscape, erode the soil, increase the sediment load in the rivers, and affect the water quality and availability.
- **Trans-boundary Impact:** GLOFs can also affect the downstream areas far from the glaciated headwaters where the threats originate.
- For example, trans-national GLOFs originating in the upper Satluj River Basin (China) are a threat to downstream areas of eastern Himachal Pradesh

South Lhonak Lake to GLOFS?

- The South Lhonak lake in northern Sikkim is situated about 5,200 meters above sea level.
- Scientists have previously warned that the lake had been expanding over years, possibly from the melting of the ice at its head.
- Notably, seismic activities, including a 2011 magnitude 6.9 earthquake, escalated the GLOF risk in the area.
- In 2016, the Sikkim State Disaster Management Authority and other stakeholders launched a critical plan to drain excess water from South Lhonak Lake.
- Visionary innovator Sonam Wangchuk led the effort, employing High Density Polyethylene (HDPE) pipes to siphon off water from the lake.
- This initiative successfully reduced the lake's water volume by approximately 50%, mitigating the risk to some extent.
- However, the recent tragedy is believed to be caused by an avalanche originating from the ice-capped feature surrounding the lake.

What should be the Way Forward?

- Natural Disasters are difficult to stop. But mitigating the impacts of theses disasters is in our hands. Thus NDMA has realised its guidelines for prevention from the negative impacts of Glacial Lake Outburst Flood which must be followed in letter and spirit.
- **Identification of Potentially Dangerous Lakes**- Potentially dangerous lakes must be identified based on field observations, records of past events, geomorphologic and geotechnical characteristics of the lake/dam and surroundings. This will help us in preparing our development plan near these potentially dangerous lakes.
- **Increased Use of Technology**- Promotion of use of Synthetic-Aperture Radar imagery (a form of radar that is used to create two-dimensional images) to automatically detect changes in water bodies, including new lake formations, during the monsoon months.

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- **Channel out Potential Floods-** Reducing the volume of water in the glacial lakes with methods such as controlled breaching, pumping or siphoning out water and making a tunnel through the moraine barrier or under an ice dam.
- **Enhancement of Early Warning Systems (EWS)-** The number of deployed Early Warning Systems must be increased in the Himalayan region for effective mitigation of damage from the GLOF.
- **Comprehensive Alarm Systems-** Modern communication technology using smartphones must complement the traditional alarming infrastructure of acoustic alarms. This will help in early evacuation in case of danger.
- **Development of Uniform Codes for Construction Activity-** We must developing a broad framework for infrastructure development, construction and excavation in vulnerable zones.
  - ✓ We must develop procedures for land use planning in the GLOF prone areas.
- **Training of Local Manpower-** Apart from the specialised forces such as National Disaster Response Force (NDRF), ITBP and the Army, NDMA has emphasised on the need for training local manpower. It has been observed that over 80% of search and rescue is carried out by the local community before the intervention of the state machinery and specialised search and rescue teams.

Note:

What are the Other Recent GLOF Incidents in India?

- In June 2013, Uttrakhand had received an unusual amount of rainfall leading to the melting of the Chorabari glacier and the eruption of the Mandakini river.
- In August 2014, a glacial lake outburst flood hit the village of Gya in Ladakh
- In February 2021, Chamoli district in Uttarakhand witnessed flash floods which are suspected to have been caused by GLOFS.

The Indian Himalayan Region Needs Its Own EIA

- Recent Teesta dam breach in Sikkim and floods and landslides in Himachal Pradesh are a stark reminder of the havoc India's development model is wreaking on environment and ecology especially in the mountains.
- Therefore, it is imperative to assess the worthiness of any significant human endeavour in terms of its impact on the environment.

Environment Impact Assessment (EIA)

- This is a process defined by the UN Environment Programme (UNEP) as a tool to identify the environmental, social, and economic impacts of a project before it is implemented.
- This tool compares various alternatives for the proposed project, predicts and analyses all possible environmental repercussions in various scenarios.
- The EIA also helps decide appropriate mitigation strategies.

Basis of an EIA

- The EIA process would need comprehensive, reliable data and would deliver results only if it is designed to seek the most appropriate, relevant, and reliable information regarding the project.
- Hence, the base line data based on which future likely impacts are being predicted are very crucial.

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What are the Issues in the Indian Himalayan Region (IHR)?

Flaws in Graded Approach:

- Specified flaws in the graded approach of the Indian regulatory system, such as Ministries and Departments emphasise that the IHR is not given special consideration, despite its ecological significance.
- The Himalayas are prone to extreme weather conditions, seismic activity, and the effects of climate change, yet there are no differentiated environmental standards for projects in the region

Issues in Implementation of Different EIA Stages:

- There is a profound lack in addressing the IHR's needs at all stages of the Environment Impact Assessment (EIA) process, from screening to appraisal, by aligning project requirements with the region's ecological needs.
- The inclusion of clauses in the EIA notification to account for specific characteristics of projects in mountainous areas so as to elevate their liability is also lacking.

Lack of National Level Regulator:

- One significant issue in the EIA process is the absence of a national-level regulator, which was suggested by the Supreme Court in 2011 in Lafarge Umiam Mining (P) Ltd. and T.N. Godavarman Thirumulpad vs Union of India, 1995
- Currently, EIA processes tend to favor project proponents, and there is a lack of comprehensive consideration of cumulative impacts, especially in mountainous areas like the IHR.

Issue of Uniformity in EIA 2006 Notification:

- The EIA 2006 notification categorizes projects based on sectors like mining, power generation, and infrastructure, but the threshold limits for requiring an EIA remain the same across the country.
- This uniform approach fails to consider the unique needs and vulnerabilities of the Indian Himalayan Region (IHR), despite its ecological importance and fragility.

Issues in Draft EIA 2020 Notification:

- The EIA process has evolved with several amendments over the years, with a draft EIA in 2020 raising concerns about being perceived as pro- industry and neglecting ecological considerations. The EIA, when used diligently, can be a potent tool for environmental governance and sustainable development.

What are the Steps Required to Safeguard the Ecological Fragility of IHR?

Differentiated Environmental Standards:

- Differentiated environmental standards should be established, taking into account the region's fragility and vulnerability.
- These standards should be incorporated into the Environment Impact Assessment (EIA) process, ensuring that projects in the IHR are subject to more stringent regulations and scrutiny.

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4. CORAL REEF BREAKTHROUGH

Context:

- The International Coral Reef Initiative (ICRI), in collaboration with the Global Fund for Coral Reefs (GFCR) and the High-Level Climate Champions (HLCC), has launched the Coral Reef Breakthrough.
- This initiative aims to safeguard at least 125,000 square kilometres of shallow-water tropical coral reefs by 2030 through investments of at least US$12 billion.

The Coral Reef Breakthrough will focus on four action points:

- Mitigating local drivers of loss, including land-based pollution, coastal development, and overfishing.
- Doubling the area of coral reefs under effective protection by aligning with global coastal protection targets.
- Accelerating restoration efforts to impact 30% of degraded reefs by 2030.
- Securing investments of at least USD 12 billion by 2030 from public and private sources to conserve and restore coral ecosystems.
- Coral reefs are underwater ecosystems made up of colonies of tiny corals called polyps. These marine invertebrates have hard exoskeletons made of calcium carbonate. They are sessile, meaning they are permanently fixed in one place.
- Coral reefs are massive structures made of limestone deposited by coral polyps. They are sometimes called the "rainforests of the sea" because they support approximately 25 per cent of all known marine species.

5. AMAZON RIVER BASIN

Context:

- As Lake Puraquequara dried up, floating village have turned to mud flats.
- Lake lies on Amazon River basin which is facing severe drought due to El Niño and the warming of northern tropical Atlantic Ocean waters.
  - ✓ These climate phenomena are aggravated by global warming and burning of fossil fuels.
- Amazon river basin:
  - ✓ Largest drainage basin in the world
  - ✓ Covers about 34% of South America.

Harbours ~60% of world's rainforest and harbors 10% of planet's known forms of life.

- Countries covered: Brazil (equator and tropic of capricon both pass through it), Bolivia, Colombia, Ecuador, Guyana, Peru, Suriname, and Venezuela.

6. **ZEALANDIA (WORLD'S EIGHTH CONTINENT)**

Context:

- Recent research on Zealandia, an underwater continent to the southeast of Australia, is shedding light on its **geological history** and why it remained hidden for so long.
- **Recently, an international team released highly detailed maps of Zealandia, covering its entire five million square kilometres**

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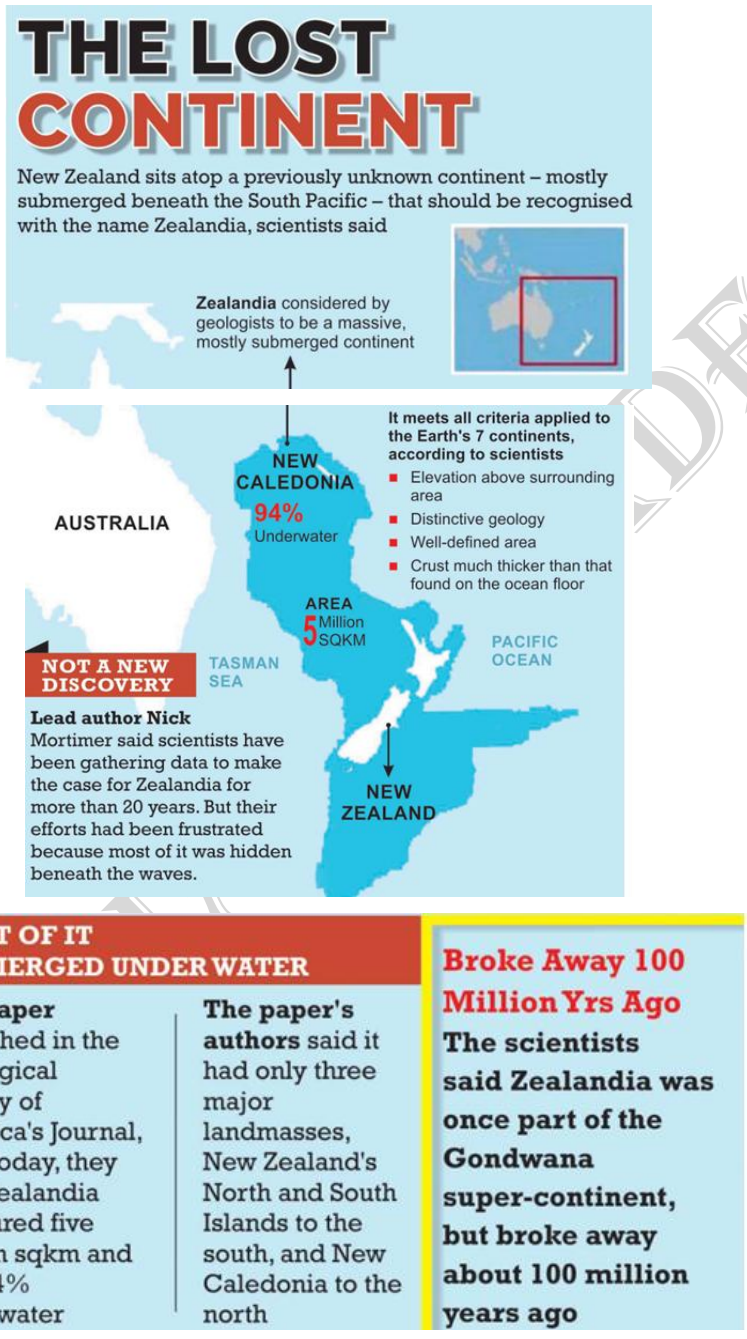
What is Zealandia**?**

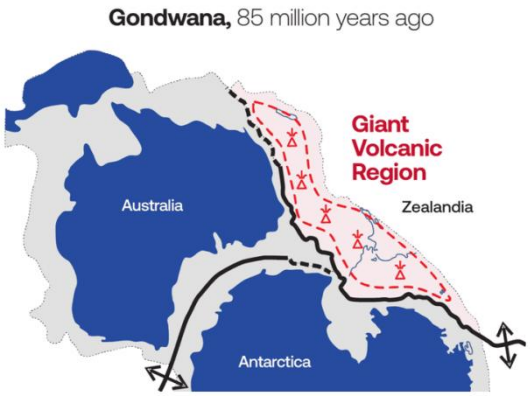
- Zealandia is an **underwater continent** located to the southeast of Australia. It was recognized as Earth's eighth continent in 2017. Zealandia formed around **83 million** years ago during the **Late Cretaceous period** and started as part of the supercontinent **Gondwana** before breaking away.
- **The existence of Zealandia was first recorded in 1642 by Dutch businessman and sailor Abel Tasman**



How was Zealandia formed?

- Gondwana formed when Earth's ancient supercontinent, **Pangea**, split into two fragments.
- **Laurasia** in the north became Europe, Asia, and North America.
- **Gondwana** in the south dispersed to form modern-day Africa, India, Antarctica, South America, and Australia.
- Zealandia began as part of the **supercontinent Gondwana**, which started breaking apart. As Zealandia began to break away from Gondwana, "**The Giant Volcanic Region**" formed – where **magma flooded out of cracks**.

- Zealandia **separated from the landmasses** to its north and south, eventually becoming its own continent. Over millions of years, it underwent stretching and thinning due to tectonic forces, creating ruptures that later formed oceanic crust. Around 25 million years ago, Zealandia largely sank beneath the ocean, becoming the submerged continent we know today.



Evidence in support of Zealandia as a continent:

Evidence	Explanation
Bathymetry	Zealandia's seabed is **considerably shallower** compared to the surrounding oceanic plates, indicating it's underlain by a continental rather than an oceanic crust.
Geological Composition	Analysis of rocks and sediments from Zealandia reveals **continental characteristics,** not typical of oceanic crust.
Tectonic Separation	Zealandia separated from the Gondwana supercontinent and moved independently, forming its **distinct landmass**
Geological Fit	Geological features of Zealandia align with **West Antarctica**, suggesting that these regions **were once connected as part of a larger continent**
Magnetic Anomalies	Measurements of magnetic anomalies in the ocean floor around Zealandia provide insights into its **stretching and thinning processes over millions of years**
Size	While mostly submerged, Zealandia **covers an extensive area of approximately five million square kilometres**, meeting the size criterion for continent status

What is plate tectonics and how continents are formed?

- Plate tectonics is the scientific theory that explains **the movement of the Earth's lithosphere**, which is divided into large, rigid plates. These plates "float" on the semi-fluid asthenosphere beneath them.

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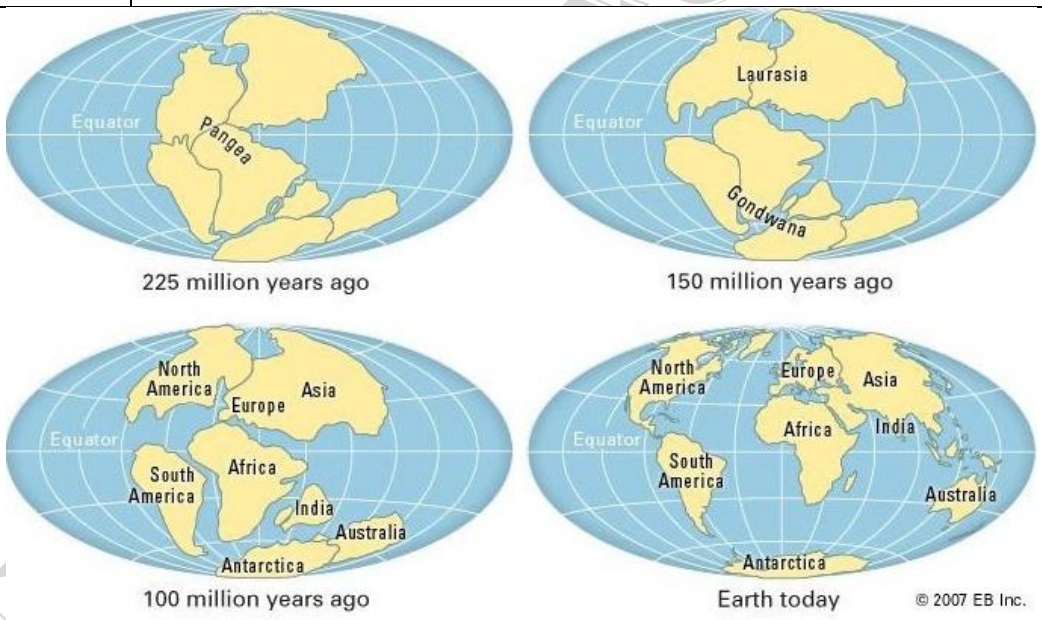
Process of Continental Formation:

Process	Description
1.Breakup of Super continents	Continents are initially part of larger landmasses known as supercontinents. Over millions of years, tectonic forces caused the supercontinent to break apart.
	Example: **Pangaea** began breaking apart approximately **175 million yea**rs ago.
2. Fragmentation	As the supercontinent breaks apart, it results in the **separation of continental fragments or blocks**. These fragments are composed of **continental crust**.
3. Drifting and Movement	Continental fragments start to **drift and move across the Earth's surface**. This movement is driven by the **motion of tectonic plates**.
4. Collision and Assembly	Over time, some continental fragments **may collide with each other** or with other landmasses. These collisions often lead to the formation of **mountain ranges**. Gradually, the fragments **merge together to form larger continents**
5.Continual Change	The process of **continental formation and transformation** is continuous. Continents keep **moving, colliding, and changing shape** due to plate tectonics. This dynamic process involves **mountain building, volcanic activity, and the opening and closing** of ocean basins.



SOCIAL ISSUES

1. GLOBAL HUNGER INDEX 2023

Context:

Global Hunger Index (GHI) 2023 is released by Concern Worldwide and Welt Hunger Hilfe, Non-Government Organisations from Ireland and Germany respectively.

What is the Global Hunger Index?

About:

- The Global Hunger Index (GHI) is a peer-reviewed report, published on an annual basis by Concern Worldwide and Welthungerhilfe.
- The GHI is a tool designed to comprehensively measure and track hunger at global, regional, and national levels, reflecting multiple dimensions of hunger over time.
- The GHI score is calculated on a 100-poir scale reflecting the severity of hunger - 0 is the best score (implies no hunger) and 100 is the worst.

Note: Concern Worldwide is an international humanitarian organization dedicated to tackling poverty and suffering in the world's poorest countries.

What are the Key Takeaways from GHI 2023?

India's GHI Score:

Score Analysis:

India's GHI score 2023 stands at 28.7, categorized as "serious" on the GHI Severity of Hunger Scale.

This shows a slight improvement from its GHI 2015 score of 29.2, which was also deemed serious.

Also, compared to its alarming GHI scores of 38.4 in 2000 and 35.5 in 2008, India has made significant progress.

Related Data and References:

- Child stunting is prevalent at 35.5% (India's National Family Health Survey(NFHS) 2019- 2021)
- The prevalence of undernourishment in India is 16.6% (State of Food Security and Nutrition in the World report 2023)
- India's child wasting rate is a concerning 18.7% (India's NFHS 2019-21), the highest among all countries in the report.
- The under-five mortality rate stands at 3.1% (United Nations Inter-Agency Group for Child Mortality Estimation January 2023)

Global Hunger Trends:

According to the GHI 2023 report, Belarus, Bosnia & Herzegovina, Chile, China are among the top ranked countries (i.e., low level of hunger) and Yemen, Madagascar, Central African Republic are the bottom.

The GHI 2023 score for the world is 18.3, considered moderate, showing minimal improvement since 2015.

- The prevalence of undernourishment has risen from 572 million to approximately 735 million people since 2017.

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- The GHI attributed the stagnation to various crises, including climate change, conflicts, economic shocks, the Covid-19 pandemic, and the Russia- Ukraine war.
- These crises have exacerbated social and economic inequalities and hindered progress in reducing hunger worldwide.

What are the Factors Responsible for Hunger in India?

Socioeconomic Disparities and Poverty: Widespread poverty and socioeconomic disparities are fundamental determinants of hunger in India.

- ✓ Poverty leads to inadequate food consumption and the inability to afford essential nutritional and healthcare services.

Hidden Hunger: India is experiencing a severe micronutrient deficiency (also known as hidden hunger).

- ✓ There are several causes of this problem, including poor diet, disease, and a failure to meet micronutrient needs during pregnancy and lactation.

Inefficient Agricultural Practices and Food Distribution: Inefficiencies in agricultural practices, including suboptimal crop yields and post-harvest losses, also contribute to insufficient food availability.

- ✓ Furthermore, subsequent leakages in food distribution and supply chain management restrict the flow of food to vulnerable populations, resulting in food scarcity and higher prices, which disproportionately affect the poor.

Gender Inequality and Nutritional Disparities: Gender- based disparities exacerbate the problem of hunger and malnutrition in India.

Women and girls often experience unequal access to food within households, receiving smaller portions or lower-quality diets.

Climate Change and Environmental Stressors: India is susceptible to climate change-related environmental stressors, such as changing weather patterns, extreme weather events, and natural disasters.

- These factors can disrupt agricultural production, leading to crop failures and food scarcity.

Lack of Audit for Nutritional Programmes: Although a number of programmes with improving nutrition as their main component are planned in the country, there is minimal or no nutritional audit mechanism at local governance level.

Loop Holes in report:

- **Criticism of Methodology:** The Ministry of Women and Child Development has raised concerns about the report's methodology, suggesting "serious methodological issues" and "malafide intent."
- Data from the government's Poshan Tracker consistently shows child wasting prevalence below 7.2%, which contradicts the GHI's reported figure of 18.7%.
- **Focus on Child Health**: The government noted that three out of the four GHI indicators pertain to children's health and may not provide a complete representation of the entire population.
- **Small Sample Size:** The government expressed doubts about the accuracy of the "Proportion of Undernourished Population" indicator, as it is based on a small sample size opinion poll.

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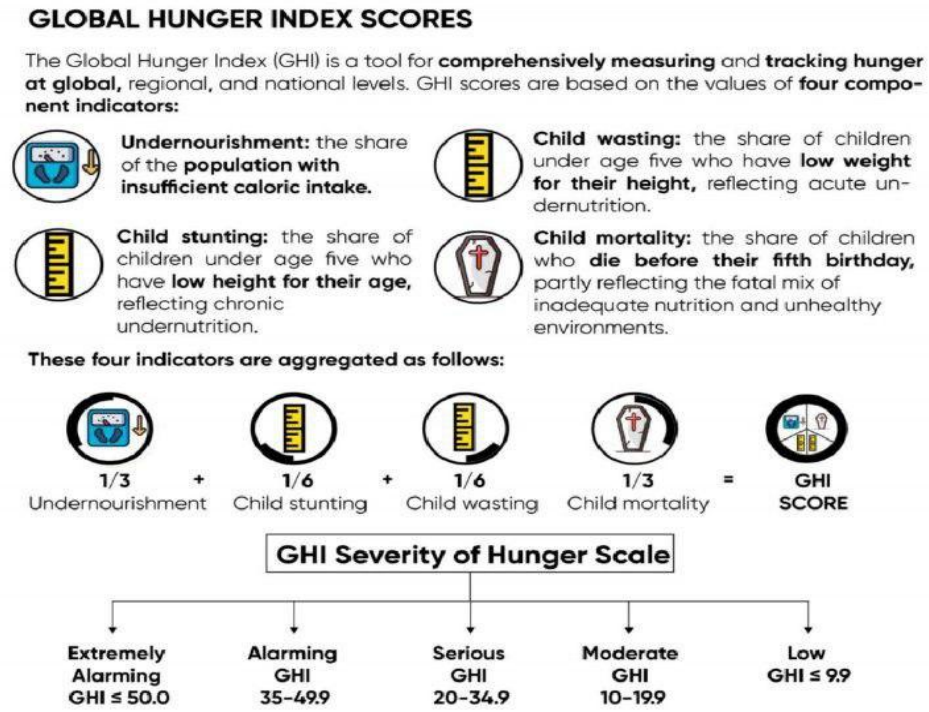
- **Complex Factors:** The government's argument is that indicators like stunting and wasting are outcomes of various complex factors, including sanitation, genetics, environment, and food utilization, and are not solely attributable to hunger.
- The government also pointed out that child mortality may not solely be an outcome of hunger, indicating that other factors are at play.



What are the Indian Government Initiatives to Address Hunger?

- Eat Right India Movement
- POSHAN Abhiyan (National Nutrition Mission)
- Mid-day Meal (MDM) scheme
- Pradhan Mantri Matru Vandana Yojana
- National Food Security Act, 2013
- Mission Indradhanush
- Integrated Child Development Services (ICDS) Scheme
- PM Garib Kalyan Yojna

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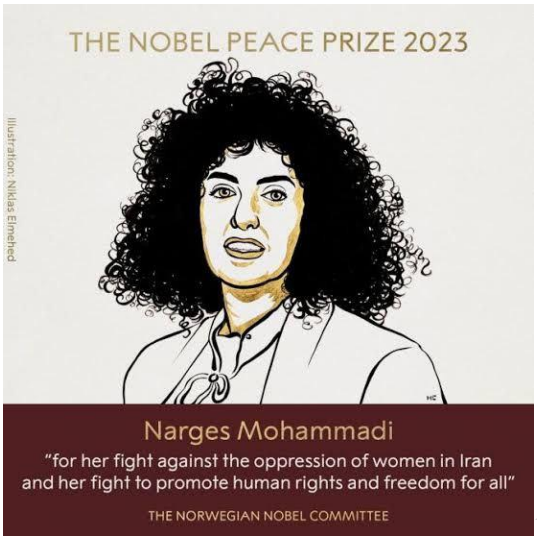
2. NOBEL PEACE PRIZE 2023: WOMEN RIGHTS

Context:

Recently, Iranian human rights activist Narges Mohammadi was awarded the Nobel Peace Prize (2023).



More on News

- Narges Mohammadi is a scientist, journalist and human rights campaigner who persistently fights against the oppression of women in Iran and the promotion of human rights and freedom for all.
- The selection reflects the Nobel Committee's growing recognition of women who lead political and social opposition movements worldwide.

Global Women's Rights Movement

- Different countries have variety in women's rights activism depending upon their histories, nature of States, economic models, cultural formations, and political forms.
- UN Women and feminist scholars and activists broadly divide the global movement for women's rights into 4 generations/waves.

First wave: The first wave emerged in the late 19th and early 20th centuries, primarily in Western countries. Its focus was on legal issues, particularly women's suffrage (the right to vote)

Second wave: it began 1970s and 1980s and was part of a wider youth movement that grew out of the expansion of higher education.

- They were inspired by the Civil Rights movement in the United States, the opposition to Apartheid and the Vietnam War.
- Activists during the initial stages of the second wave were both radical and critical.
- A fundamental shared principle among various feminist currents was the advocacy for autonomy, emphasizing women's entitlement to define their own agendas, even while engaging within political organizations and parties.
- Activities of this wave include supporting fair wage and reproductive rights campaigns, creating women-only journals and publishing houses, etc.

Third wave: It roughly spans around the 1980s and 1990s and coincided with the gradual entry of feminists and feminist ideas into mainstream politics.

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Three significant elements of this wave include:

- ✓ Importance of policy-related activism;
- ✓ Strengthening of feminist movements and rights advocacy in the Global South;
- ✓ Consolidation of women's studies as a discipline. United Nations' four world conferences on women.

Mexico (1975), Copenhagen (1980), Nairobi (1985) and Beijing (1995) were an important stimulus for policy work and for global feminist interaction.

It also saw the creation of the Beijing Platform for Action

(PFA), a policy action framework inspired by the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW).

Fourth wave: The emergence of the internet led to a new brand of social media-fueled women's rights movement. These feminists embraced various social justice issues including racial equity, immigration reform, reproductive rights, environment, and LGBTQIA+ rights.

3 prominent cases of this wave include:

Brazil: Feminists involved in efforts to protect rights previously gained.

- ✓ India: Campaigns around gender-based violence.
- ✓ Malawi: Work of LGBTQIA+ activists to secure justice and recognition.

Conclusion

Feminism constitutes a facet of contentious politics, representing a global social movement that exhibits sustained vitality.

3. MERA YUVA BHARAT

Context:

- Recently, the Union Cabinet, chaired by the Prime Minister of India has approved the establishment of an autonomous body Mera Yuva Bharat (MY Bharat).

About Mera Yuva Bharat:

- It is an autonomous body will benefit the youth in the age group of 15-29 years, in line with the definition of 'Youth' in the National Youth Policy.
- In case of programme components specifically meant for the adolescents, the beneficiaries will be in the age group of 10-19 years.
- It will help in Setting the focus of the Government on Youth Led development and to make the Youth "active drivers" of development and not merely "passive recipients".
- It will be launched on 31st October, 2023 on National Unity Day.

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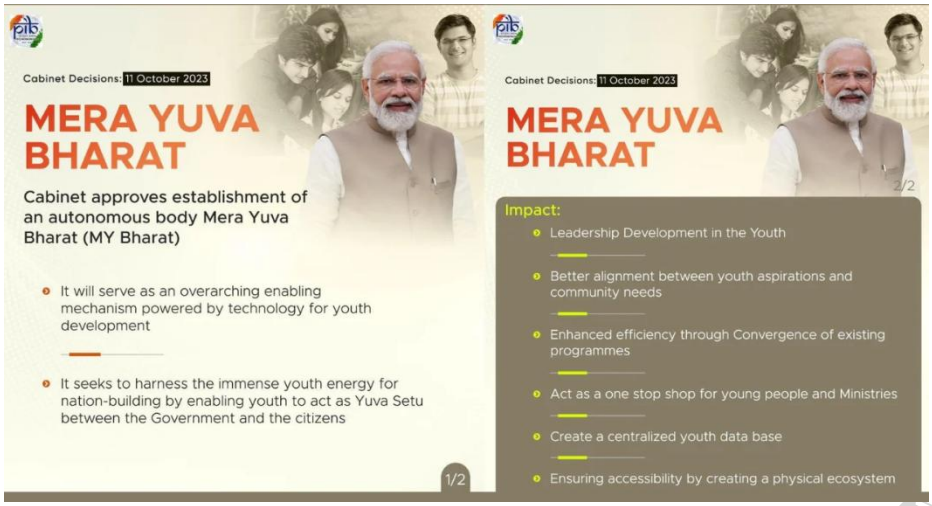

Objectives

- The primary objective of Mera Yuva Bharat (MY Bharat) is to make it a whole of Government platform for youth development.
- Under the new arrangement, with access to resources & connection to opportunities, youth would become community change agents and nation builders allowing them to act as the Yuva Setu between the Government and the citizens.
- It seeks to harness the immense youth energy for nation building.
- Mera Yuva Bharat supported by a technology platform would help to increase the Youth outreach efforts of the Department of Youth Affairs.

4. GRANTING HABITAT RIGHTS AND IMPLICATIONS

Context:

- Recently, the Chhattisgarh Government has granted habitat rights to its Baiga PVTG (Particularly Vulnerable Tribal Group) right after the Kamar PVTG received habitat rights in August 2023.
- The Baiga PVTG became the second group to be granted these rights in Chhatisgarh.
- Chhattisgarh has seven PVTGs (Kamar, Baiga, Pahadi Korba, Abujhmadiya, Birhor, Pando and Bhujia).

What are Habitat Rights?

About:

- Habitat rights recognition provides the community concerned rights over their customary territory of habitation, socio-cultural practices, economic and livelihood means, intellectual knowledge of biodiversity and ecology, traditional knowledge of use of natural resources, as well as protection and conservation of their natural and cultural heritage.
- Habitat rights safeguard and promote traditional livelihood and ecological knowledge passed down through generations. They also help converge different government schemes and initiatives from various departments to empower PVTG communities to develop their habitats
- According to the FRA, "habitat" includes customary habitats and those in reserved and protected forests of PVTGs and other forest- dwelling Scheduled Tribes.

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- Out of 75 PVTG in India, only three have habitat rights- the Bharia PVTG in Madhya Pradesh was the first, followed by the Kamar tribe and now the Baiga tribe in Chhattisgarh.

Procedure of Declaring Habitat:

- The procedure is based on a detailed guideline given for this purpose in 2014 by the Ministry of Tribal Affairs.
- The process involves consultation with traditional tribal leaders to determine the extent of culture, traditions, and occupation.
- Coordination between state-level departments, including Forest, Revenue, Tribal, and Panchayati Raj, and with the UNDP team is essential for defining and declaring habitats.

Legality:

- Habitat rights are granted to PVTGs under Section 3(1)(e) of the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 (also known as FRA).
- The recognition of Habitat rights grants PVTGS possession over their customary territory, encompassing habitation, economic and livelihood means, biodiversity knowledge.

What is the Significance of Granting Habitat Rights?

Preservation of Culture and Heritage:

- Granting tribal rights helps in preserving the unique cultural, social, and traditional heritage of tribal communities. It allows them to maintain their distinct languages, rituals, customs, and traditional knowledge systems.

Empowerment and Social Justice:

- Tribal rights empower these communities by providing them with legal recognition, ensuring their participation in decision-making processes that affect their lives, and rectifying historical injustices. This empowerment contributes to a more just and equal society.

Protection of Livelihoods:

- Many tribal communities depend on their natural surroundings for their livelihoods. Granting rights over lands and resources ensures that they can sustain their traditional occupations like hunting, gathering, fishing, and farming, supporting their economic well-being.

Sustainable Development:

- By granting rights to tribal communities, governments can promote sustainable development. Indigenous practices often prioritize sustainability and conservation, which is crucial for the environment and the overall well-being of society.

Conservation of Biodiversity:

- Tribal communities often possess unique knowledge about their local ecosystems, flora, fauna, and sustainable resource management. Recognizing their rights allows for the preservation of biodiversity and sustainable management of natural resources

Note: Identification of PVTGs

- PVTGs are identified based on criteria such as technological backwardness, stagnant or declining population growth, low literacy levels, subsistence economy, and challenging living conditions.

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- They face vulnerability in health, education, nutrition, and livelihood.
- The Ministry of Tribal Affairs has identified 75 PVGTs in 18 states and one Union Territory.
- In 1973, the Dhebar Commission created Primitive Tribal Groups (PTGs) as a separate category, who are less developed among the tribal groups. In 2006, the Government of India renamed the PTGs as PVTGs.

5. CASTE CENSUS

Context:

- The state government of Bihar recently released a report on the caste survey conducted in the state, after a resolution passed by the state legislature for the same.

More on News

- The State government of Bihar said that the exercise was **not a full-scale census,** but a **"social survey" focused on caste demographics**.
- After the release of caste survey data by the Bihar government, **several other states** including Rajasthan, Odisha, Maharashtra, Karnataka, etc., are **planning or conducting caste surveys**.

Caste system in India

- Caste is an institution uniquely associated with the Indian sub-continent.
- Caste is by definition a closed social system whose membership is acquired by virtue of birth.
- Many of the scriptural rules of caste are designed to prevent the mixing of castes – rules ranging from marriage, food sharing and social interaction to occupation.
- Although it is an institution characteristic of Hindu society, caste has spread to the major non-Hindu communities of the Indian subcontinent.
    - This is especially true of Muslims, Christians, and Sikhs.

Arguments for caste census	Arguments against caste census
• **Constitutional mandate:** Article 340 mandates the appointment of a commission to investigate the conditions of socially and educationally backward classes and make recommendations as to the steps that should be taken by governments. • **Social justice and reforms in reservation policy:** It will aid the government in determining the inclusion of new castes into existing categories or the graduation of advanced castes (creamy layer) out of these categories. o Census caste data may also enable a more equitable distribution of reservation benefits by making it possible to devise a **'quota-within-quota' (sub-categorization)** system. • **Policymaking:** Caste census data will help in the formulation of more informed and evidence-based policymaking to cater • to the needs and demands of the underprivileged and downtrodden.	• **Constitutional provisions:** Constitutions speak of backward classes and not backward castes. o The word caste is used in the constitution **only in relation to 'scheduled castes**. • **Difficulties in data enumeration:** Given **thousands of castes and sub-castes in India**, collecting caste data and making sense of the same is difficult. o Further, **mobilization and counter mobilization** by various groups seeking gains will inevitably influence the enumeration process and result in **bogus or biased data**. • Difficulties due to empirical complications of **inter-caste marriages**, **hypergamy migration**, etc., which over time have produced **multiple caste affiliations**. • **Potential for Political Misuse**: There are concerns that caste data could be exploited for political purposes, including vote bank politics and identity-based mobilization. • **Rise in demand for reservations**: Critics say a • caste-based census may give rise to the demand

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• **Promoting diversity and inclusivity**: It can be used to monitor the representation of different castes in elected bodies, civil services, and other institutions, thereby promoting diversity and inclusivity. • **Judicial requirement:** In the Indra Sawhney case, the Supreme Court held that the States must conclude the "backwardness" of a particular class of people only after proper assessment and objective evaluation. • The SC also held that such a conclusion must be subject to **periodic review** by a permanent body of experts. • **Annihilation of caste**: Many experts observe that to abolish caste, it is essential to first abolish caste-derived privileges, and to do that, the state must first map castes and their socio-economic status privileges/deprivations.	for more reservations in jobs and educational institutions from various communities. • **Risk of Resentment**: Focusing on caste-based statistics could lead to resentment among different groups. It may exacerbate inter-caste tensions and hinder efforts toward building a more inclusive and harmonious society.

History of Caste census in India

- Caste-wise enumeration of the population was **introduced under the British colonial administration in 1881** and **continued till the 1931 census**.
- In **1941**, the caste-based data was **collected but not published**.
- **After independence**, however, the Government of India **abandoned full caste enumeration** on the apprehension that it may strengthen caste divisions and perpetuate the caste system.
  - Every census in independent India has **published data on Scheduled Castes (SCs)** and **Scheduled Tribes (STs)**, but not other castes.
- **In 2011, Socio-Economic and Caste Census (SECC)** was conducted through a comprehensive programme involving
  - The Ministry of Rural Development, the Ministry of Housing and Urban Poverty Alleviation, the Office of the Registrar General and Census Commissioner, India, and State Governments/UT Administrations.
  - In 2016, the **SECC data, excluding caste data**, was finalized and published.
  - In 2021, the Central Government, in an affidavit submitted to the Supreme Court, stated that the caste/tribe data derived from the SECC 2011 is deemed "defective" and "not suitable for use."

Census in India

- Census is a **Union subject** (**entry 69 of the union list** under **Schedule VII**) under **Article 246** of the constitution.
- The **Census Act, 1948** provides a plan for conducting population census along with the duties and responsibilities of census officers.
- **Registrar General and Census Commissioner of India,** under the **Ministry of Home Affairs,** is entrusted with the responsibility to conduct decadal census.
- Later, this office was also entrusted with the task of implementation of the **Birth and Death Registration Act, 1969**.

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Way Forward

- **Create political consensus**: Decisions on such issues of broad socio-political concern should be taken through broad political consensus.
- **Inclusive Consultations:** Involve a wide range of stakeholders, including community leaders, activists, and experts, in the planning and execution of the caste census.
    - **Social scientists and research institutions** can be involved in the process of enumeration of caste data to ensure that the process remains unbiased.
- **Identify caste and subcaste:** A preliminary socio-anthropological study can be done at the State and district levels to establish all sects and sub-castes present in the population.
- **Use of technology**: Emerging technologies such as **Artificial Intelligence**, **Big Data Analytics**, etc., can be used to analyze and assess caste-based data and **derive meaningful conclusions**.
- **Periodic Review and Updating**: Recognize that social structures evolve over time, and caste identities may change. Design the census with the flexibility to adapt to these changes and plan for periodic reviews to update the data and ensure its relevance.

6. **HAKKI PIKKI TRIBE**

- **About Hakki Pikki Tribe**
    - They are a **semi-nomadic tribal group** from Karnataka.
    - The community is known as the **'bird catcher**,' which is their traditional occupation.
        - ✓ The word '**Hakki'** stands for **'bird'** and '**Pikki**' stands for the verb 'to **catch'**.
    - After their trade of bird hunting was outlawed, they were **rehabilitated in the 1970s.**
    - They are said to be **a matriarchal group**.
    - They communicate in **'Vaagri'**.
        - ✓ UNESCO has listed 'Vaagri' as **one of the endangered languages.**
        - ✓ They are renowned for **their indigenous medicines.**

7. DISABLED POPULATION AND DISASTER PREPAREDNESS

Context:

- A recent survey by the United Nations Office for Disaster Risk Reduction (UNDRR), released just ahead of the International Day for Disaster Risk Reduction observed on October 13, reveals a lack of progress in government policies for protecting people with disabilities during natural disasters over the last decade

What are the Findings of the UNDRR's Survey?

Findings of Survey:

- The 2023 survey, covering 6,000 respondents from 132 countries, shows that 84% of people with disabilities are not informed about evacuation routes, shelter homes, or personal preparedness plans, compared to 71% in 2013.
- Only 11% of respondents are aware of disaster management plans in their local areas, down from 17% in 2013, and less than half are aware of accessible disaster risk information.

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Concerns of Disabled:

- People with disabilities are at greater risk during disasters, with up to 16% of the global population having disabilities and being two-four times more likely to be killed by disasters.
- Despite increased interest in participating in community-level disaster planning, 86% of respondents still feel excluded, emphasizing the need for inclusion.

Suggestions of Survey:

- The report emphasizes the interconnectedness of disasters and inequality, with unequal access to services increasing the vulnerability of the most at-risk groups.
- The Sendai Framework for Disaster Risk Reduction 2015-2030 calls for disability inclusion, accessible disaster risk information, and inclusive early warning systems.
- Strengthening early warning systems is crucial, as half of the countries lack these mechanisms, and timely warnings can significantly improve evacuation rates
- Immediate action is needed to address these challenges and ensure meaningful inclusion of people with disabilities in community disaster risk reduction planning.

Actions to be taken in four Priority Areas:

Understanding Disaster Risk:

- To promote the collection, analysis, management and use of relevant data and practical information and ensure its dissemination.
- To systematically evaluate, record, share and publicly account for disaster losses and understand the economic, social, health, educational, environmental impacts.

Strengthening Disaster Risk Governance to Manage Disaster Risk:

- To carry out an assessment of the technical, financial and administrative disaster risk management capacity to deal with the identified risks at the local and national levels.
- To encourage the establishment of necessary mechanisms and incentives to ensure high level of compliance with the existing safety-enhancing provisions of sectoral laws and regulations.

Investing in Disaster Risk Reduction for Resilience:

- To allocate the necessary resources, including finance and logistics, as appropriate, at all levels of administration for the development and the implementation of disaster risk reduction strategies, policies, plans, laws and regulations in all relevant sectors.

Recovery, Rehabilitation and Reconstruction:

- To establish community centres for the promotion of public awareness and the stockpiling of necessary materials to implement rescue and relief activities.
- To train the existing workforce and voluntary workers in disaster response and strengthen technical and logistical capacities to ensure better response in emergencies.

Sendai Framework for Disaster Risk Reduction 2015-30:

About:

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- It was adopted at the Third United Nations World Conference on Disaster Risk Reduction, 2015 in Sendai, Japan.
- The present Framework applies to the risk of small- scale and large-scale, frequent and infrequent, sudden and slow-onset disasters caused by natural or man-made hazards, as well as related environmental, technological and biological hazards and risks.
- It aims to guide the multi hazard management of disaster risk in development at all levels as well as within and across all sectors.
- It is the successor instrument to the Hyogo Framework for Action (HFA) 2005-2015: Building the Resilience of Nations and Communities to Disasters.

Indian Efforts for Persons with Disability:

Constitutional Provisions:

- Article 41 of the Directive Principles of State Policy (DPSP) states that the State shall make effective provision for securing right to work, to education and to public assistance in cases of unemployment, old age, sickness and disablement, within the limits of its economic capacity and development.
- The subject of 'relief of the disabled and unemployable' is specified in the state list of the Seventh Schedule of the constitution.

Legislation for Disabled - Right of Persons with Disabilities Act, 2016:

- The Right of Persons with Disabilities Act, 2016 replaces the Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995.
- The types of disabilities have been increased from 7 to 21. The Act added mental illness, autism, spectrum disorder, cerebral palsy, muscular dystrophy, chronic neurological conditions, speech and language disability, thalassemia, hemophilia, sickle cell disease, multiple disabilities including deaf blindness, acid attack victims and Parkinson's disease which were largely ignored in earlier Act.
- Education and reservation increases the quantum of reservation for people suffering from disabilities from 3% to 4% in government jobs and from 3% to 5% in higher education institutes.
- Every child with benchmark disability between the age group of 6 and 18 years shall have the right to free education.

Accessible India Campaign (Creation of Accessible Environment for PwDs):

- Anation-wide flagship campaign for achieving universal accessibility that will enable persons with disabilities to gain access for equal opportunity and live independently and participate fully in all aspects of life in an inclusive society.

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POLITY AND GOVERNANCE

1. CAPACITY BUILDING OF URBAN LOCAL BODIES (ULBS)

Context:

- Recently, the Capacity Building Commission (CBC) in collaboration with MoHUA organized a National Workshop on Capacity Building of ULBs to foster a unified approach to capacity building ULBs across India.

More about:

- The primary focus of this workshop was to identify challenges and propose solutions to enhance capacity-building initiatives at the ULB level, thus strengthening their ability to contribute to national-level priorities.
- The Workshop marked the launch of three key initiatives, i.e.,
- Annual Capacity Building Plan (ACBP) to enhance the capabilities of MoHUA.
- ACBP for 6 pilot ULBs i.e. Ahmedabad, Bhubaneswar, Mysuru, Rajkot, Nagpur, and Pune.
- Comprehensive Toolkit for preparing Capacity Building Plans for ULBs for providing valuable resources to facilitate the growth and development of ULBs.

Need for Capacity Building for ULBS

- To deal with regional aspirations ie. economic and social development through bottom up planning.
- India's urban centres are considered 'engines of growth, as they account for nearly two-thirds of the country's economic growth.
- India's urban population is expected to almost double from 460 million in 2018 to 876 million by 2050.
- For successful and effective implementation of schemes like Smart City Mission, AMRUT Mission etc.
- Streamlining planning process and delineation of institutional roles, relationships for ULBs to meaningfully shape local and regional plans.

Measures taken for capacity building of ULBs

- Capacity Building Scheme for Urban Local Bodies (CBULB): It aims to strengthen urban local governments through capacity building for better governance and financial management as articulated in the 11th Five Year Plan.
- World Bank-assisted Capacity Building for Urban Development (CBUD) Project: Its objective is to build the capacity of select ULBs, which are centres of economic growth, improve their skills for better urban management and reduce urban poverty.
- National Urban Digital Mission: Launched in 2021 by MoHUA, it focuses on citizen-centric digital revolution in ULBs in India. It aims to create a shared digital infrastructure working across three pillars of 'People, Processes and Platform' to provide a framework for digital governance in the country.
- National Institute of Urban Affairs (NIUA) has been appointed to anchor this mission. Established in 1976, NIUA is a premier institute for research, training and information dissemination in urban development and management.

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- Jawaharlal Nehru National Urban Renewal Mission (JNNURM): Focuses efficiency in urban infrastructure and service delivery mechanisms, community participation, and accountability of ULBs/Parastatal agencies towards citizens.
- Municipal Bonds: These are financial instruments that municipal corporations and other associated bodies in India issue to raise funds

Challenges associated with Capacity Building of Urban Local Bodies:

- ***Lack of skills***: The personnel engaged in managing urban affairs and municipal services lacks specific skills, especially in areas like socio-economic planning, sustainable urban planning, financial management, and e-governance.
- ***Training Curriculam:*** Capacity gaps in municipal employees are augmented by capacity-building deficits in the training institutions. Training curricula are programme-centric or event-based, limiting their utility and further hampering the development of specific skills.
    - Also, States' training institutes focus more on general and rural administration rather than on urban governance.
- ***Lack of awareness and participation:*** The disconnect between citizens and ULBs hampers effective communication. This cuts the feedback channel from the citizens, which could act as a key motivator for capacity building.
- ***Partial Devolution:*** The 73 and 74th Amendment Act enlists the function of local governance bodies. However, in practice, there is a lack of devolution of financial authority resulting in local authorities having greater responsibilities without financial means to fulfill it.
- ***Urban planning:*** Urban planning is done at the state government level and municipalities have little or no role in it. Poor planning, poor accountability, and poor governance have led to disasters.
- ***Lack of coordination:*** Poor coordination among centre, state, and various departments at local level lead to poor implementation of urban policies.

Measures to strengthen urban local bodies in India:

- **Greater autonomy:** The urban local bodies should be given greater autonomy. India needs to follow a devolved model that empowers urban local bodies. Municipalities should be more autonomous in their functioning, so that they can deliver quality service.
- **Governance Reforms:** Governance reform are needed as catalyst for change. The Government may consider the adoption of a common categorisation of urban bodies across the country so as to assist a systematic planning process and devolution of funds. All areas having population more than 10 lakh should be defined metropolitan areas.
- **Timely elections and recruitment:** For strengthening ULBs, a minimum level of staffing should be provided in metropolitan areas. Elections to ULBs should not be, generally, delayed beyond six months.
- **Encouraging public-private partnership:** Successful PPP programs should be formulated at both state and city levels to fund city development. Role of the state should be to create an enabling environment with an aim to expand and deepen private sector investments in infrastructure.

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- **Training:** Quality training material offering a mix of classroom-based training and on-field training ought to be designed.
- **Professionalism:** Developing a cadre system and provide specific training to create a strong and efficient workforce in municipal departments engineering disciplines.
    - e.g. Also, lateral hiring of professionals with special skills can be explored into the municipal cadre, especially the larger ULBS for fostering greater municipal professionalism.
- **Awareness generation:** Steps should be taken to mobilize citizens, ensure active participation and generate awareness among the public by organising campaigns, engaging academic institutions, NGOs etc.
- **Fiscal Decentralisation:** The concept of financial decentralisation is a necessary aspect of effective functioning of Local Governance. The focus should be on providing autonomy in matters of expenditures along with resource mobilisation as far as possible.

About Urban Local Bodies

- ULBs are small local bodies that administer or govern a city or a town of a specified population.
- Urban governance (Local Government) is part of the state list (Entry number 5) under the Constitution. Thus, the administrative framework and regulation of ULBS varies across states.
- Constitution (74th Amendment) Act, 1992, formally recognised urban local governments as the third tier of government.

The Act provided for the establishment of three types of ULBs:

- Nagar panchayats for a 'transitional area' Municipal councils for a 'smaller urban area' and Municipal corporations for a larger urban area'.
- It empowered state governments to devolve certain functions, authority, and power to collect revenue from these bodies and made periodic elections for them compulsory.
- Functions of ULBs include urban planning including town planning, regulation of land use and construction of buildings, roads and bridges, urban poverty alleviation etc.

The main source of revenues of ULBs are as follows:

- Collection from tax and non-tax sources as assigned to them under Assam Municipal act, 1956.
- Devolution of shared taxes and duties as per recommendation of State Finance Commission.
- Grants-in-aid from the Government of Assam.
- Grants-in-aid from the Government of India under Centrally Sponsored Schemes.
- Share of State Govt. of Assam against Centrally Sponsored Schemes of Govt. of India.
- Award of Central Finance Commission Grant, GOI.

2. ‘UNLAWFUL ASSOCIATION' UNDER UAPA, 1967

Context:

- Ministry Of Home Affairs declared the ‘Jammu and Kashmir Democratic Freedom Party’ as an **'Unlawful Association' under the Unlawful Activities (Prevention) Act (UAPA) 1967.**

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- UAPA was enacted **for effective prevention of certain unlawful activities** of **individuals and associations,** for **dealing with terrorist activities,** and for matters connected therewith.
- **Key provisions**
  - Offences are **cognizable** (arrest could be made without a warrant).
  - **Penalty: Death or imprisonment for life,** and shall also be liable to **a fine if** such act has resulted in the death of any person
  - **Unlawful Association**
    - ✓ **Declaration of an association unlawful:** By the Centre through an official gazette notification, **by specifying the grounds.**
    - ✓ **Reference to Tribunal:** On the declaration of being unlawful, the notification should be **referred to Tribunal** within **30 days.**
    - Tribunal consists of **one person (a Judge of a High Court).**
    - ✓ **Other powers to centre**
    - To **prohibit the use of funds of** an unlawful association
    - To **notify places** used for the purpose of an unlawful association.
  - **Terrorist act:**
    - ✓ **Definition:** It includes any act **intended to threaten** the **unity, integrity, security or sovereignty of India** or **strike terror people in India or in any foreign country** among others.
    - ✓ **Forfeiture of proceeds of terrorism**: By the Investigating officer with the prior approval of the **designated authority.**

3. PARLIAMENTARY PRIVILEGES OF LAWMAKERS

Context:

- Chief Justice of India D Y Chandrachud set up a seven-judge bench that will reconsider the correctness of 1998 five-judge Constitution bench judgment in the P V Narasimha Rao case wherein the majority held that legislators were immune to prosecution on bribery charges for their speech or vote in Parliament.

More on the news

- The 1998 judgement of the PV Narasimha Rao vs. State case came in the backdrop of the 1993 JMM (Jharkhand Mukti Morcha) bribery case.
- As per the judgement, legal immunity granted to legislators under Articles 105(2) and 194(2) of the Constitution. protects them against criminal prosecution on bribery charges for any speech or vote in Parliament.

SC has now decided to reconsider this precedent

About Parliamentary Privileges

- Parliamentary privileges are a legal immunity enjoyed by members of legislatures, in which legislators are granted protection against civil or criminal liability for certain actions done or statements made in the course of their legislative duties.

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- Parliament is the sole authority to ascertain if there has been a breach or contempt of the House- no court is entrusted with this power.
- A member of the House can raise a question involving a breach of privilege with the consent of the Chairman or Speaker

What are the provisions that grant legislators immunity from prosecution?

- Article 105 deals with the powers and privileges of both Houses of Parliament and its members and committees.
- Similarly, Article 194 outlines the corresponding powers, privileges and immunities of State legislatures and their members and committees.
- Right to Prohibit Publication of Proceedings: Article 105(2) stipulates that no person shall be liable in. respect of the publication by or under the authority of either House of Parliament of any report, paper, votes or proceedings".
- It has dealt with two previleges Namely, Collective and Individual previleges.
- Freedom of Speech in Parliament: Freedom of speech available to the members on the floor of the House is different Maintain the authority, dignity of legislature from that available to the citizens under Article 19(2).
- Article 105(2) states that "No member is liable to any proceedings in any court for anything said or any vote given by him in Parliament or its committees". This freedom is subject to the provisions of the Constitution and to the rules and procedures of the parliament, as stated under Article 118 of the Constitution.
- However, Article 121 restricts members from discussing the conduct of judges of the Supreme Court and High Court.

Freedom from Arrest: Code of Civil Procedure, 1908 provides that members can enjoy freedom from arrest in any civil case 40 days before and after the adjournment of the house and also when the house is in session.
However, this privilege is limited to civil cases. An MP doesn't enjoy any immunity against action in a criminal case, during the session or otherwise.
Action on MP: Parliament reserves the right to receive immediate information of the arrest, detention, conviction, imprisonment, and release of a member on a criminal charge or for a criminal offence.
Right to Exclude Strangers: Members of the house have the power and right to exclude strangers who are not members of the house from the proceedings. This right is essential for securing free and fair discussion in the house. Also, as per the provisions of Article 122, the validity of any proceeding of Parliament can't be inquired into by a court on the grounds of alleged irregularity of procedure.

- ✓ The privileges are claimed only when the person is a member of the house.
- ✓ As soon as s/he ends to be a member, the privileges are said to be called off.
- ✓ Parliament has not made any special law to exhaustively codify all the privileges.

They are rather based on five sources:

- Constitutional provisions
- Various laws made by Parliament
- Rules of both the Houses
- Parliamentary conventions

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- Judicial interpretations

Breach of privilege

If an individual or authority disregards or undermines a parliamentary privilege of a member or the House, it is called a 'Breach of privilege'.

Contempt of the House

- Breach of privilege is different from Contempt of the House. It defined as "any act or omission which- obstructs or impedes either House of Parliament in the performance of its functions, or
  - ✓ which obstructs or impedes any member or officer of such House in the discharge of his duty, or which has a tendency directly or indirectly, to produce such results".
  - ✓ Punishment for a Breach of privilege or Contempt of the house A person found guilty of breach of privileges or contempt can be reprimanded, warned or sent to prison.
  - ✓ The period for which the House can commit an offender to custody or prison.
  - ✓ for contempt is limited to the duration of the session of the House. In case its member is found guilty, the MP can be suspended from the House or face expulsion.

Rationale Behind Parliamentary Privileges

Maintain the authority, dignity of legislature

Ensure attendance of parliamentary sessions

Ensure freedom of expression of the legislators without fear of legal consequences

Carry out functions Independently and effectively of both the houses without any interference

What is the View of Supreme Court?

- The Supreme Court in the State of Kerala Vs. K. Ajith and Others (2021), observed, that "privileges and immunities are not gateways to claim exemptions from the general law of the land, particularly as in this case, the criminal law which governs the action of every citizen."
- In July 2021, the Supreme Court rejected Kerala government's plea to withdraw criminal cases against its MLAs who were charged in the assembly.
- The Supreme court stated that Parliamentary Privileges are Not Gateways of Immunity and the legislators who indulge in vandalism and general mayhem cannot claim parliamentary privilege and immunity from criminal prosecution.

Need for reform in Parliamentary Privileges.

- **Applicability:** The scope and limitations of parliamentary privilege are yet to be ascertained. In some instances, lawmakers from prosecution as civil cases cannot be initiated when the House is in session.
- **privileges shield Misuse:** There have been instances of misuse of powers and rights by the members of the Parliament and Legislative Assembly resulting in violation of fundamental rights of citizens.
- **Lack of oversight:** Absence of a clear mechanism to prevent members of the house from using privileges for personal or official gains/interest.
- **Lack of procedure:** Parliament has yet to lay down a set of procedures to deal with instances of breach of privilege and is solely guided by exigencies.

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- For example, lack of clarity on whether a hearing must be given to the accused or whether he/she must be given a right of legal representation etc.
- **Against Natural justice:** Breach of privilege laws allows politicians to judge their own cases. it leads to a conflict of interest, violates the principle of separation of Power under Article 50 and goes against the tenants of a fair trial.
- **Violates constitutionalism:** The absence of codified privileges gives unlimited power to the house to decide when and how a breach of privilege occurs.

Way Forward

- Providing immunity to parliamentarians is essential. However, urgent steps are required to ensure constitutionalism such as codifying privileges, establishing standard operating procedures in case of breach of privilege etc.

Note:

- This Committee consists of 15 members (10 members in case of Rajya Sabha) nominated by the Speaker (Chairman in case of Rajya Sabha). Its function is to examine every question involving breach of privilege of the House or of the members of any Committee thereof referred to it by the House or by the Speaker.

4. INTER-STATE WATER DISPUTE

Context:

- Recently, the Union Cabinet approved the terms of reference to Krishna Water Disputes Tribunal-II (KWDT-II) under the Inter-State River Water Disputes (ISRWD) Act, 1956.

More on news

- KWDT-II will distribute the Krishna water, allocated to 'undivided' Andhra Pradesh, between Telangana and Andhra Pradesh.
- Krishna is an east-flowing river that originates at Mahabaleshwar in Maharashtra and merges with the Bay of Bengal, flowing through Maharashtra, Karnataka, Telangana and Andhra Pradesh.

About Krishna Water Dispute Tribunals setup under ISRWD Act, 1956

- In 1969, Krishna Water Disputes Tribunal-I (KWDT) was set up under. the ISRWD Act, 1956. It divided 2060 TMC (Thousand Million Cubic feet) of Krishna water at 75% dependability.
- 75% dependability of al catchment implies that 2060 TMC of water can be reliably extracted from a catchment area 75% of the time, considering the natural variability in water availability due to factors such as precipitation, evaporation, and infiltration.
- KWDT-II, instituted in 2004, made allocations of Krishna water at 65% dependability and for surplus flows.
- In 2014 after the creation. of Telangana as a separate state, Andhra Pradesh asked to include Telangana as a separate state in tribunal so that the allocation of Krishna waters be reworked among four states, instead of three.

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- However, Maharashtra and Karnataka are now arguing that Telangana was created following bifurcation of Andhra Pradesh. Therefore, the allocation of water should be from Andhra Pradesh's share which was approved by the tribunal.

Factors Contributing to Inter-State Water Disputes

- **Asymmetrical Access to River Water**: When a river flows across state boundaries, the upstream state often has an advantage, creating an imbalance between upstream and downstream states.
- **Rising Water Demand:** Projections indicate a 22% and 32% increase in India's total water demand by 2025 and 2050, respectively. This heightened demand exerts pressure on limited water reserves, exacerbating inter-state water disputes.
- **Ambiguity in Water Usage Rights:** The allocation of water usage rights is outlined in Schedule VII of the Indian Constitution, with states having authority over aspects like storage, electricity, and irrigation. However, these powers are interrelated, leading to ambiguity and potential conflicts over water usage.
- **Lack of an Integrated Approach:** The existing water governance structure in India follows a fragmented, piecemeal approach, relying heavily on quantitative measures like arithmetic hydrology. This approach neglects the intricate social, ecological, and cultural dimensions associated with water.

Conflictual federalism:

- Despite the fact that 'interstate water' has been explicitly mentioned in the Union List, there is no such direct acknowledgement in the State List.
- This allows the states to delineate the "user rights" over waters in ways deemed best by them.

Fragmented and reductionist approach

- The water governance architecture in India is based on a fragmented piecemeal approach, rather than integrated basin approach that takes a holistic view of the land-water-food nexus.
- MSP:MSPs of rice and wheat led to a manifold increase in water demand, thereby resulting in interstate water conflicts (e.g. Krishna, Cauvery, Teesta basins or SYL between Punjab and Haryana).

Mechanism to deal with Inter-State Water Dispute

- Under Seventh Schedule of Constitution, Entry 17 of State List reads "Water, that is to say water supplies, irrigation and canals, drainage and embankments, water storage and water power subject to the provisions of entry 56 of List I (Union List)". Entry 56 of List I provide that "Regulation and development of inter-State rivers and river valleys to the extent to which such regulation and development under the control of the Union is declared by Parliament by law to be expedient in the public interest".
- Article 262: It says that Parliament by law may provide for the adjudication of any dispute or complaint with respect to the use, distribution or control over the waters of, or in, any inter-state river or river valley.

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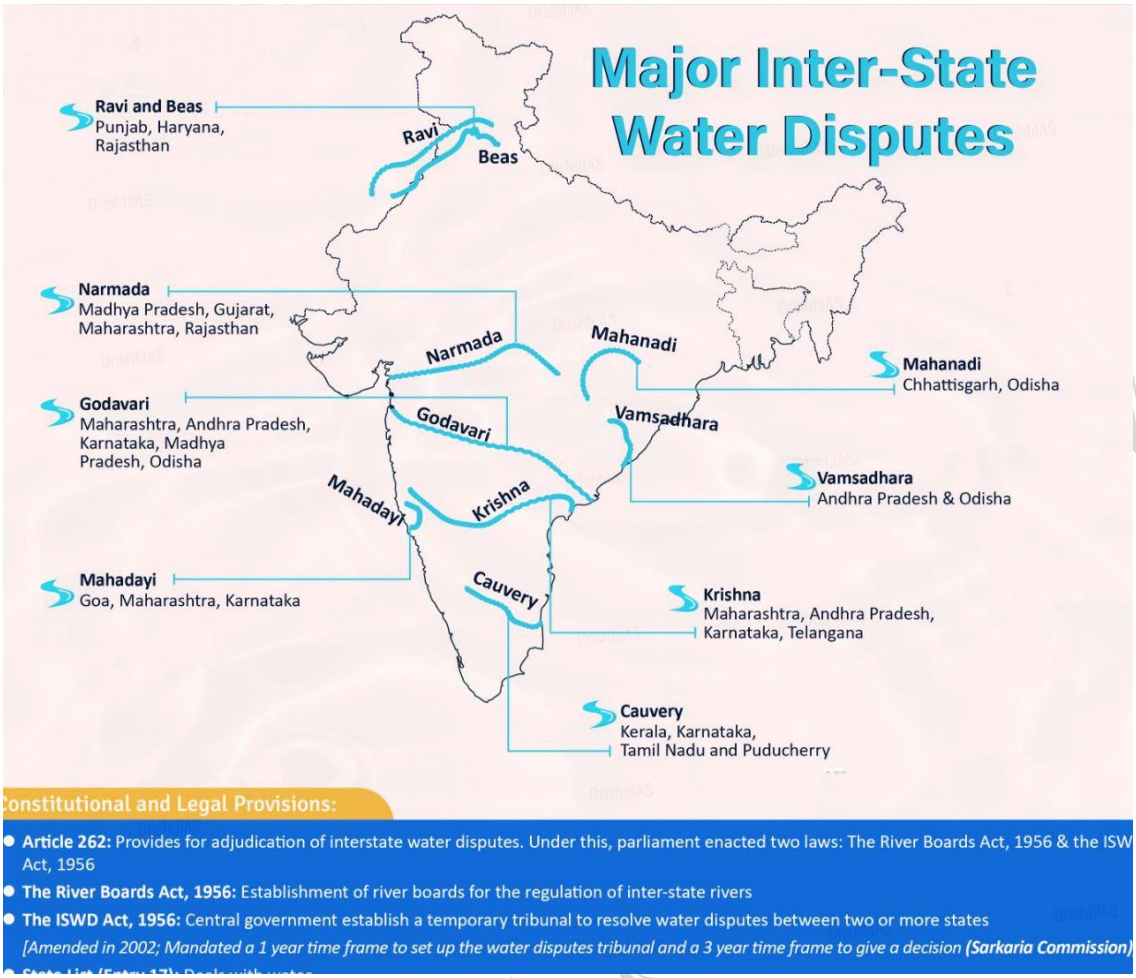


In the exercise of the power conferred by Article 262 of the Constitution, Parliament has enacted two laws:

- **Inter-State Water Disputes (ISWD) Act, 1956:** Under it, a State Government which has a water dispute with another State Government may request the Central Government to refer the dispute to a tribunal for adjudication.
- **River Boards Act, 1956**: It was made for the setting up of River Boards by the central government for the regulation and development of inter-state rivers and river valleys.
- **National Water Policy 2012:** It seeks to address issues such as scarcity of water, inequities in its distribution and the lack of a unified perspective in planning, management and use of water resources.

Challenges in Resolving Inter-State Water Disputes

- **Delayed Resolution**: Prolonged proceedings and extended delays in resolving river water disputes contribute to inefficiencies. An illustrative example is the 11-year duration for the Godavari water dispute tribunal to reach a decision.
- **Ambiguity:** Article 262 prevents the Supreme Court from directly adjudicating inter-state river water disputes. However, Article 136 empowers the Supreme Court to hear appeals against tribunal decisions, leading to ambiguity in the execution of tribunal orders.
- **Politicization of Disputes:** Some political parties exploit inter-state water disputes as platforms to pursue political objectives, complicating the resolution process.
- **Lack of Multidisciplinary Approach:** Tribunals in India predominantly comprise judicial members, lacking input from specialists such as ecologists. This gap hampers the quality of orders and decisions.

Way Forward

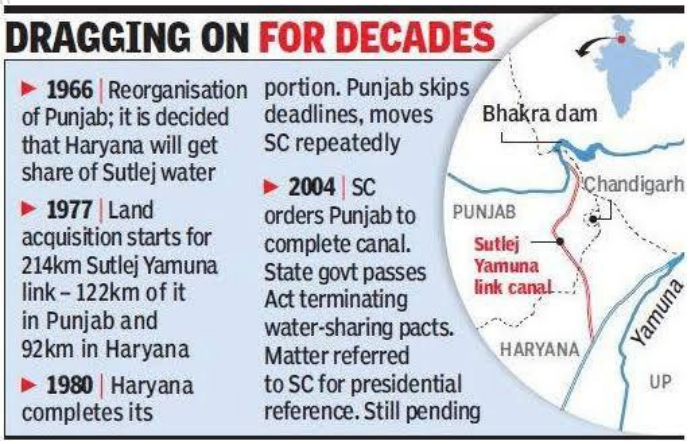
- **Enabling Cooperation**: A fundamental shift is needed from the current conflict-centric approach towards a cooperative one. Deeper integration of states in deliberative processes and reinforcing cooperative federalism are essential.
- **Basin Approach:** Emphasis on ecological restoration, conservation of river ecosystems, balancing water supply and demand for human use, and adopting a regional approach for effective river water management.
- **Multidisciplinary Approach**: Institutional structures, such as Water Management Boards, should include experts from various disciplines, including environmentalists and geographers. This inclusion enhances the efficacy of water boards in providing ecologically and environmentally friendly solutions.
- **Water Policy:** Parameters such as the extent of the river basin drainage area in each state, contribution of water to the river basin by each state, climate, dependent population in the river basin, and the extent of arid and semi-arid areas in each state should be integral components of the water policy. These parameters contribute to resolving water disputes on reasonable and equitable lines.

5. SUTLEJ- YAMUNA CANAL LINK:

- Supreme Court criticised the Punjab government for its slow progress in constructing the Sutlej-Yamuna Link (SYL) canal and asked the Centre to conduct a survey of the land designated for the canal to assess the work's status.

About SYL canal and the associated issue:

- SYL is a 214-km long canal for sharing waters of Ravi and Beas rivers between Haryana and Punjab, of which 122 km was to be in Punjab and 92 km in Haryana.
- It was planned in 1966 after Haryana was carved out of Punjab.
- Haryana completed its stretch of SYL Canal in 1980, while Punjab kept citing Riparian Principles and non-availability of its water.
- Riparian Principles states that owner of land adjacent to a water body has the right to use water.
- Punjab argues that many areas in state may go dry after 2029 due to over-exploitation of groundwater.
- Haryana argues that its southern parts of state are facing water. problem due to depleted groundwater. It claims that it has been denied its rightful share in water.



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What is the Significance of Satluj Yamuna Link Canal?

Facilitating Equitable Water Sharing:

- The SYL Canal aims to facilitate the equitable sharing of river waters between Haryana and Punjab. Once completed, the canal would enable the distribution of waters from the Ravi and Beas rivers, which are vital water sources in the region.

Addressing Historical Water Disputes:

- It can address long standing water disputes between Haryana and Punjab. By providing a defined pathway for water transfer, it aims to settle disagreements related to water allocation and usage.

Enhancing Agricultural Productivity:

- The SYL Canal, by facilitating better water distribution, can contribute to enhanced agricultural productivity and sustainability.

Socio-Economic Development:

- The SYL Canal can play a significant role in promoting overall socio-economic development in both states.

What are the Sustainable Solution for Water Sharing Issues?

Water Conservation and Efficiency Measures:

- Implementing water-saving technologies and promoting water conservation practices in agriculture, industry, and households can significantly reduce water demand.

Modernizing Irrigation Systems:

- Upgrading irrigation infrastructure to more efficient systems like drip irrigation can minimize water wastage in agriculture, a sector that consumes the majority of water resources.

Real-time Monitoring and Forecasting:

- Utilizing technology for real-time monitoring of reservoir levels, river flows, and weather patterns can aid in effective water management and timely decision-making, especially during climatic uncertainties.

Conflict Resolution Mechanisms:

- Establishing efficient conflict resolution mechanisms, possibly outside the legal framework, can help states resolve water-sharing disputes more expediently and collaboratively.
- An atmosphere of cooperation and understanding among neighboring states is necessary to address water disputes amicably.

River Basin Ecosystem Restoration:

- Focusing on restoring and preserving river basin ecosystems can enhance the sustainability of water resources. Healthy ecosystems contribute to the quality and availability of water.
- Ensuring comprehensive EIAs (Environmental Impact Assessment) before initiating any water-related project can prevent or mitigate adverse effects on water sources and ecosystems.

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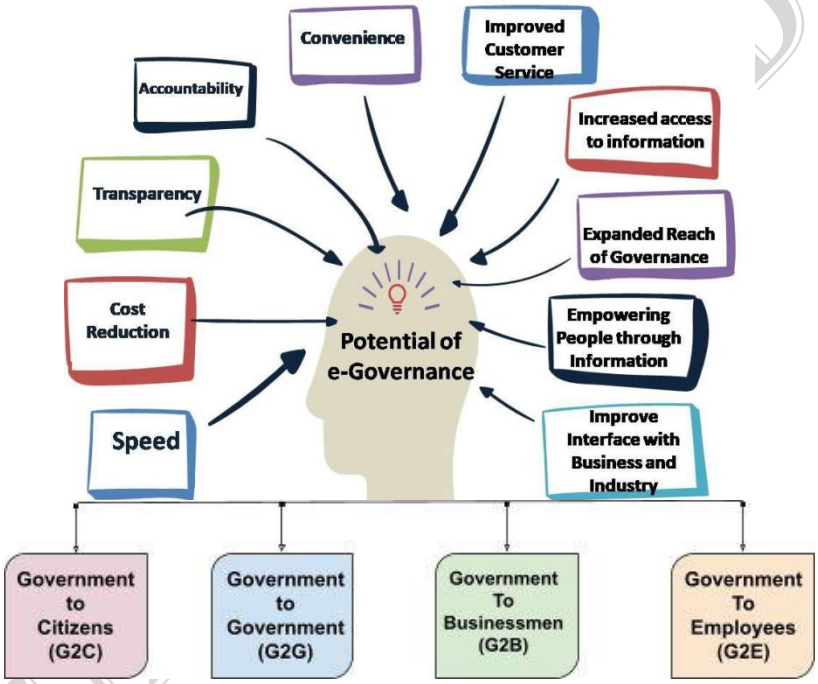
6. ROLE OF TECHNOLOGY IN PUBLIC SERVICES DELIVERY

Context:

- The Comptroller & Auditor General (CAG) of India has emphasized on the need for increased use of IT systems and technology in service delivery to the citizens.

Technology and Linkage with public service delivery

- Digital government services (also called e-government) are defined as service delivery within government as well as between. Government and the public - using information and communication technologies.
- Traditionally, government services have been delivered in person, by individual departments in different locations, and often using paper forms.
- Access to e-delivery of transactional services providing entitlement to subsidized social services
- With digital government can services, deliver information and services to citizens anytime, anywhere, and on any platform or device.



Significance

- Saves time and money for the Citizens as they need not travel to different government offices and stand in queues to get their work done
- e-Hastakshar service facilitates instant e-signing of documents online by citizens in a legally acceptable.
- Increases the efficiency of Government departments as the digital records can be shared easily and maintained for later references
- Vehicles Data from different State Registers are collected and processed in VAHAN platform
- Eliminates the Ghost beneficiaries and leakages to a larger extent as the digital records can be updated dynamically and the leakages can be traced back easily
- Increases the accountability and reduces corruption, as the origin or initiator of a particular transaction can be traced back to the system from where it began.

- It reduces the leakages as the government tranfer money to the beneficiaries bank account via direct benifit transfer.
- Community involvement Better allocation of development expenditure Greater accountability challenges in service delivery.
- Digital divide among the people, where a majority of them are yet to get accustomed to digital world and its applications
- Lack of skilled workforce within the government, which makes it difficult for them to adapt technology at a major scale.
- Cyber security threat, is a major concern as these services are also to handle important data of government and public.
- Lack of sufficient digital infrastructure in the government establishments across the country.

7. ETHICS COMMITTEE OF LOK SABHA

Context:

- Lok Sabha Speaker has referred **a "cash-for-query" complaint** made by a BJP MP against a Trinamool Congress member to **the Ethics Committee of the Lower House**.
- **The complaint is based on evidence from an advocate, which he claims shows the exchange of bribes between the accused and a businessman.**
- **He also pointed out that a significant number of recent parliamentary questions were focused on the Adani Group, a conglomerate she has accused of malpractices.**

The **Lok Sabha Ethics Committee examines complaints of unethical conduct** by members of the Lok Sabha. The committee **was established in 2000 by the late Speaker G M C Balayogi**. It became a **permanent part of the House in 2015**. The committee was established in **Rajya Sabha in 1997.**

The committee's functions include:

1. **Examining complaints of unethical conduct by members of the Lok Sabha**
2. **Making recommendations**
3. **Formulating a code of conduct for members**
4. **Suggesting amendments or additions to the code of conduct**

About Cash for Query Complaint:

A "cash-for-query" **complaint is an accusation that someone took money in exchange for asking questions in Parliament**.

For example, in 2005, 11 former MPs were put on trial for a "cash-for-query" scam. The sting showed them taking **cash to raise questions in Parliament**

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8. THE BHARATIYA NYAYA SANHITA, 2023

Context:

- Recently, a Parliamentary Committee has reviewed the Bharatiya Nyaya Sanhita (BNS) 2023 Bill, proposing significant changes to India's Criminal Justice System, recommendations including a gender-neutral provision criminalizing adultery.
- The BNS Bill, introduced by the Ministry of Home Affairs, seeks to replace the colonial-era IPC (Indian Penal Code).

What are the Key Highlights of the Proposed Changes in BNS?

Adultery and Gender-Neutral Provision:

- The parliamentary committee has recommended including a gender-neutral provision that criminalizes Adultery.
- This move comes after the Supreme Court (SC) declared Section 497 of the Indian Penal Code (IPC), which criminalized adultery, as unconstitutional in 2018..
- The panel seeks to protect the institution of marriage but in a gender-neutral way.
- Non-Consensual Sex and Bestiality: The committee is considering a clause to criminalize non-consensual sex between men, women, or transpersons, as well as acts of bestiality. This indicates an effort to address various forms of sexual offenses comprehensively.

Definition of Terms:

- The committee has suggested better definitions for terms like "community service" and "life imprisonment" in the bill.

Positive Changes:

- The new draft code has included the removal of Section 124A (Sedition) and provisions for prosecuting offenses committed in foreign countries.

What are the Arguments for Legalizing and Criminalizing Adultery?

Legalizing Adultery:

- ***Individual Autonomy and Privacy:*** They Supreme Court, in Joseph Shine vs. The Union of India, 2018 judgment recognized the importance of individual autonomy and the right to privacy.
- ***Doctrine of Curvature:*** Section 497 of the IPC (Indian Penal Code) is based on the Doctrine of Coverture.
- This doctrine, not recognised by the Constitution, holds that a woman loses her identity and legal right with marriage, is violative of her fundamental rights.
- ***Human Liberty***: According to the Supreme Court (SC), Marriage does not mean ceding autonomy of one to the other Deterrence Effect: Legalization could eliminate the chilling effect of the law on individuals who may be reluctant to leave abusive or unhappy marriages due to the fear of legal consequences.

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Criminalizing Adultery:

- **Preservation of Marital Sanctity:** Adultery can harm the institution of marriage, leading to broken families and emotional trauma for the spouse and children. Criminalizing it can be seen as a means to protect the sanctity of marriage.
- **Gender Protection**: It is argued that criminalizing adultery is a means to protect women from unfaithful spouses who might otherwise abandon them, leaving them economically vulnerable. Moral and Societal Values: It is argued that the adultery law upholds traditional moral and societal values, which are still important to many in Indian society.
- Criminalizing adultery could be viewed as a way to protect and preserve the family structure, which is considered a fundamental building block of society.

9. HATE SPEECH

Context:

- A recent analysis by the Association for Democratic Reforms (ADR) and National Election Watch (NEW) reveals that a concerning number of lawmakers in India have hate speech cases against them.
- A total of 107 Members of Parliament (MPs) and Members of Legislative Assembly (MLAs) have hate speech cases registered against them.
- Such findings highlight the need for ethical conduct among those in positions of power.

Hate Speech:

- In general, it refers to words whose intent is to create hatred towards a particular group, that group may be a community, religion or race.This speech may or may not have meaning, but is likely to result in violence.
- The Bureau of Police Research and Development recently published a manual for investigating agencies on cyber harassment cases that defined hate speech as a language that denigrates, insults, threatens or targets an individual based on their identity and other traits (such as sexual orientation or disability or religion etc.).
- In the 267th Report of the Law Commission of India, hate speech is stated as an incitement to hatred primarily against a group of persons defined in terms of race, ethnicity, gender, sexual orientation, religious belief and the like.
- In order to determine whether a particular instance of speech is a hate speech or not, the context of the speech plays an important role.

Reasons to Curb Hate Speech

- It undermines social equality as it reaffirms historical marginalization, oppression & discrimination.
- It is enacted to cause psychological and physical harm to its victims as it incites violence.
- It is used to provoke individuals or society to commit acts of terrorism, genocides, ethnic cleansing etc.
- It is a tool to create panic through rumour mongering against targeted people. For example, the Northeast exodus.

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Laws and regulations on hate speech

About: In India, hate speech is regulated by several laws and acts, including the Indian Penal Code (IPC), the Code of Criminal Procedure (CrPC), and the Indian Information Technology (IT) Act.

Indian Penal Code (IPC): It contains provisions that prohibit hate speech, such as :

- **Section 153A:** It deals with actions promoting enmity between different groups on grounds of religion, race, place of birth, residence, language, etc., and doing acts prejudicial to maintenance of harmony.
- **Section 295A**: It deals with deliberate and malicious acts, intended to outrage religious feelings of any class by insulting its religion or religious beliefs.
- **Court Judgements**: In the past, The Supreme court of India has issued several judgments on hate speech.
- **Shreya Singhal v. Union of India (2015**): The court struck down Section 66A of the IT Act, which had criminalized online speech, stating that it violated the right to freedom of speech and expression.
- **Sukumar v. State of Tamil Nadu (2019**): The court held that hate speech on social media platforms is not protected by the right to freedom of speech and expression.

Representation of People's Act (1951):

- **Section 8:** It prevents a person convicted of the illegal use of the freedom of speech from contesting an election.
- **Sections 123(3A) and 125 of the RPA:** It bars the promotion of animosity on the grounds of race, religion, community, caste, or language in reference to elections and includes it under corrupt electoral practices.
- **Freedom of speech:** The right to freedom of speech is protected under Article 19 of the Constitution but it is not absolute and can be limited in certain circumstances, such as when it incites violence or discrimination.

Challenges to Hate speech:

- ***Defining hate speech***: There is no universally accepted definition of hate speech, and different countries and cultures have different norms and expectations in this area.
- ***Balancing free speech and hate speech:*** Hate speech laws are often viewed as a restriction on free speech. This can lead to legal challenges and pushback from civil liberties groups.
- ***Identifying and removing hate speech online:*** The vast majority of hate speech takes place online, and it can be difficult to identify and remove this content.
- ***Addressing hate speech in non-English languages:*** Hate speech is not limited to English-speaking countries, and it can be difficult to identify and remove hate speech in other languages.
- ***Lack of resources and legal framework***: Many countries lack the resources and legal framework to effectively address hate speech.

Way Ahead

- India has a diverse population with different languages, religions, and cultures, thus there is a need to curb incidents of hate speech and crimes that can have a detrimental impact on individuals and communities.
- It is a complex and multifaceted issue that poses significant challenges for regulators and policymakers which will require a multifaceted approach that includes education, technology, and legal enforcement.
- Thus, it becomes important for governments, civil society organizations, and individuals to work together to combat hate speech and promote a more inclusive and tolerant society.

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10. SCHEDULED TRIBES AND OTHER TRADITIONAL FOREST DWELLERS (RECOGNITION OF FOREST RIGHTS) ACT, 2006

Context:

- Recently it has been reported that the states have rejected nearly 40% of the land claims under Forest Right Act.

About Forest Right Act (FRA), 2006

- Before the enactment of this act, earlier acts did not recognize the symbiotic relationship of the STs with the forests and their dependence on the forest.
- Section 3(1)(a) of the FRA recognizes the right of the forest dwelling tribal communities (FDSTs) and other traditional forest dwellers. (OTFDs) to hold and live in the forest land for habitation or for self- cultivation for livelihood.

Types of Rights under Section 3 of FRA Act

- ***Individual Forest Rights (IFR):*** Right to hold and live in the forest land under the individual or common occupation for habitation or for self-cultivation for livelihood.
- ***Community Forest Rights (CFR):*** Seeks to restore all customary and traditional usufruct rights of forest-dwelling communities
- ***Community forest resource management rights***: Right of ownership, access to collect, use, and dispose of minor forest produce which has been traditionally collected within or outside village boundaries. Nodal Agency: As per Act, the responsibility for implementation of the Act lies with State Governments/UT Administrations.
- ***Role of Gram Sabha:*** The Gram Sabha is the authority to initiate the process for determining the nature and extent of individual community forest rights or both.
- ***Land titles:*** Act recognises the rights of an individual or family ar community on the land however claim should not exceed more than four hectares.
  - ✓ Land title given under the FRA is a legal title.
  - ✓ Land Rights conferred by the Act were heritable (Section 4(4) of FRA), but not transferable or alienable.
  - ✓ Diversion of forest land for local development rights: Establishment of schools, dispensaries, or hospitals, Anganwadi centres, etc.

Three-tier approval process:

- Gram sabha is the primary authority for initiating the whole process by receiving and verifying the claims.
- Aggrieved person from the resolution of the Gram Sabha may file a petition to the Sub-division-level committee (SDLC)
- Any person aggrieved by the decision of the SDLC may file a petition to the District-level committee (DLC)-Decision is Final and binding.
- Scheduled Areas: In act means the Scheduled Areas referred to in article 244 of the constitution.
- Protected Areas: FRA is applicable in National Parks, Wildlife Sanctuaries, and Tiger Reserves.

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Concerns related to the Act

Land Claims Related

- **Document of Proof:** Many IFR claims were rejected because applicants did not provide adequate documentary evicence of this use of the land.
- **Inconsistency in acreage claimed and acreage allocated**: For e.g As per World Bank report, in Narmada District (Gujarat) around 70% claimants reported that the IFR claim was approved for lesser acreage.
- **Low awareness:** The Gram Sabha, which initiates the verification of FDSTS/OTFDs claims, are low on awareness about how to deal with them.
- **Forest land encroachment:** Misuse of Gram sabha for approval for ineligible claimants and regularizing encroachments made after 13.12.2005 (Cut-off date of recognition).
- **Violation of FRA Provisions**: Earlier titles were randomly issued in the name of JFM committees or panchayat bodies.
- **Destruction of forests and wildlife:** Environmental Conservationists raised concern that FRA act due to its land rights and minor forest produce use, might affect the biodiversity of the forest.
  - ✓ In several cases, trees on the forest land are chopped and claims are made under the FRA.

Way forward

- **Issuing Directives to states:** Under the FRA Act, the Centre can issue directives to states to ensure a review exercise in line with the law in case of such a high rejection rate of claims.
- **Learning from State Government**: Odisha government's Mo Jungle Jami Yojana (MJJY), implementation of the scheme will provide ownership of land and access to forest resources to the beneficiaries.
- **Awareness Generation:** Awareness generation among gram sabhas, forest rights committees (FRCs), and IFR/CFR claimants about FRA and its rules and regulations need to be improved.
- **Capacity building of Gram Sabha:** As Gram sabha is the primary authority of approval, there is a need to improve capacity through training and effective use of local bureaucracy.
- **Others:** Involving marginal sections like women; increasing role of Civil Society, etc.

INTERNATIONAL RELATIONS

1. ISRAEL-HAMAS WAR

Context:

- Israel declared war on Hamas militants following their unprecedented attack under "Operation Toofan Al-Aqsa (Al-Aqsa Flood).
- The attack by Hamas on Israel coincided with the fiftieth anniversary of Yom Kippur War the fourth Arab-Israel war (1973).

More about the Conflict:

- Operation Toofan Al-Aqsa coincided with Sabbath which is the Jewish day of worship and rest.

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- Hamas fired 5,000 rockets in just 20 minutes, overwhelming the Iron Dome Defense System's interception capabilities.
- Operational since 2011, the 'Iron Dome' is a short-range air defense system of Israel.
- With a 70-kilometer range, it can detect, and intercept incoming missiles, rockets, and UAVs mid-air based on radar data.
- In response, Israel has launched 'Operation Iron Swords' against Hamas militants in the Gaza Strip. Amidst the war, India launched Operation Ajay to evacuate its citizens stranded in Israel..

About Yom Kippur War (Fourth Arab-Israel War)

In October 1973, a coalition of Arab nations, led by Egypt and Syria, launched a surprise, coordinated attack on Israel on Yom Kippur, a Jewish holy day.

- **Purpose of war:** Unlike the previous three wars Egypt and Syria did not go to war in support of the Palestinians, rather they hoped to reclaim lost territory after Israel's victory in the Six-Day War of 1967.
- **Involvement of Superpower:** The US supported Israel, and the Soviet Union supported Egypt and Syria, leading to heightened tensions between these nuclear superpowers.
- **Ceasefire Attempts:** A ceasefire was achieved with the involvement of the United Nations

Background of the Yom Kippur War

- **1948- First Arab-Israeli War:** Immediately after Israel declared independence, it was attacked by a coalition of Arab states and Palestinian factions who were against the establishment of the Jewish State and the UN partition plan. In the war, Israel gained control of a larger portion of the territory and a large number of Palestinians were driven from their land. This forced expulsion of Palestinian Arabs is referred to as the "Nakba," or "catastrophe" in Arabic.
- **1956-Second Arab-braeli War (Suez War)**: The Suez War involved Israel, the UK, and France on one side against Egypt on the other.
  - ✓ The war marked the decline of British and French influence in the region, paving the way for the United States to become the most influential power.
- **1967-Third Arab-Israel War (Six-Day War):** Israel initiated pre-emptive air strikes and a successful ground offensive.
  - ✓ Israel took control of Egypt's Sinai Peninsula and Gaza Strip, Jordan's West Bank and East Jerusalem, and Syria's Golan Heights.
  - ✓ The war ended with a U.N.-brokered ceasefire but reshaped the Middle East map

Consequences of the Yom Kippur War

- Setback to Syria: Syria did not gain anything positive from the war.
- -Israel took control of more of the strategically important and fertile Golan Heights.
- Shift of Egypt's allegiance to US: After the war, Egypt that had expelled the Soviet Union's military advisers in 1972 placed itself squarely within the US orbit.
- Oil Embargo against US -U.S. support for Israel during the war prompted Arab countries to halt oil shipments to the U.S

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- It had substantally increased the global oil price increase

Background of Israel-Palestine Conflict

- The root of the latest war predates the establishment of the state of Israel 75 years ago on territory which is also claimed by Palestinian Arabs as their homeland.
- Palestinians (Arabs) and Israelis (Jews) alike consider the territory between the Jordan River and the Mediterranean Sea as their own.
- Central to this conflict is the city of Jerusalem which hold immense significance for Judaism, Islam, and Christianity the three major Abrahamic religion.

The city has

- Al-Aqsa Mosque (the 3rd holiest Islamic site, believed to be the place from where the Prophet Muhammad ascended to Heaven).
- Western Wall (holiest Jewish Site, located adjacent to the sacred compound known to Jews as Temple Mount)
- Church of the Holy Sepulchre (Central to Christian beliefs, the church marks the place where many Christians believe Jesus was crucified, entombed, and resurrected).

Possible impacts of the current war

Centrality to the Palestinian cause:

Arab countries increasingly move to normalise ties with Israel, with the signing of the Abraham Accord, many saw the Palestinian cause take a back seat in the Arab-Israeli conflict.

- **Peace negotiation:** The current conflict may unintentionally strengthen Hamas and weaken Palestinian Authority's position in the West Bank. This could negatively impact peace negotiations between Israel and the Palestine.
- **Involvement of Israel in Gaza:** Back in 2005, the Israelis had chosen to voluntarily leave Gaza in accordance with a disengagement plan.

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- However, now the Israeli Prime Minister has said that Israel will have an 'overall security' role in Gaza indefinitely.
- **Regional instability**: Saudi Arabia suspended talks on potentially normalising ties with Israel.
- Bahrain has also recalled its ambassador from Israel whereas Bolivia officially severed its ties with Israel.
- **Economic:** The aftermath of the conflict could impact global and regional economies, already grappling with Ukraine's war and pandemic stimulus-induced inflation..
- **Global Commodity Markets**: Escalation could impact oil prices (since OPEC countries contribute to around 32% of global oil production), disrupting commodity markets.
- **Trade:** The war may also impact the Suez Canal trade, which is a key maritime route between Asia and Europe and accounts for 12% of global trade by value.
    - Involvement of Iran in the conflict may disrupt trade with landlocked Central Asia, a significant producer of agriculture, raw materials, and minerals.
- **Food supply:** Fertiliser movement from Israel's Port of Ashdod accounts for 3% of global potash supply. Any disruption on this front will also be a dampener.
- **Humanitarian Crisis**: The war has reportedly resulted in life-threatening shortages, impacting water, electricity, fuel, food, and medical supplies in Gaza while also causing human causalities.

What will be the impact of the Israel-Palestine Conflict on India?

India through its support for Israel has chosen sides in the recent conflict. However any prolonged conflict will not augur well for India.

Impacts our De-hypenation and West Asia Policy- India had been successfully implementing its de-hyphenation policy in the region. India’s relation with both the Arab World and Israel has improved. However the current conflict puts India in a diplomatic tightspot to choose one side. India cannot afford to loose either.

Increase in Inflation- Any prolonged conflict in the Middle East will impact the oil and gas production. Inflation in the country will further increase as India is heavily dependent upon imported oil and gas.

Depreciation of the Indian Rupee- The conflict will impact the inflow of FPI and FDI in the Indian financial market. Increase in oil prices will further increase India’s Current Account Deficit(CAD). All these will lead to depreciation of the Indian rupee.

Effect on the India Israel Trade- Israel is a major defence and strategic partner of India. Involvement of Israel for a long period in the conflict will drastically reduce the trade between India- Israel. In FY23, India’s total exports to Israel stood at $8.4 billion while India’s imports from Israel were at $2.3 billion.

Reduction of the remittances from West Asia and safety of Indian emigrants- India has a large diaspora and emigrant population in West Asia.

Connectivity efforts: The war has cast its shadow on the India-Middle East-Europe Economic Corridor (IMEC), announced recently by the leaders of India, Saudi Arabia, the US, and the UAE.

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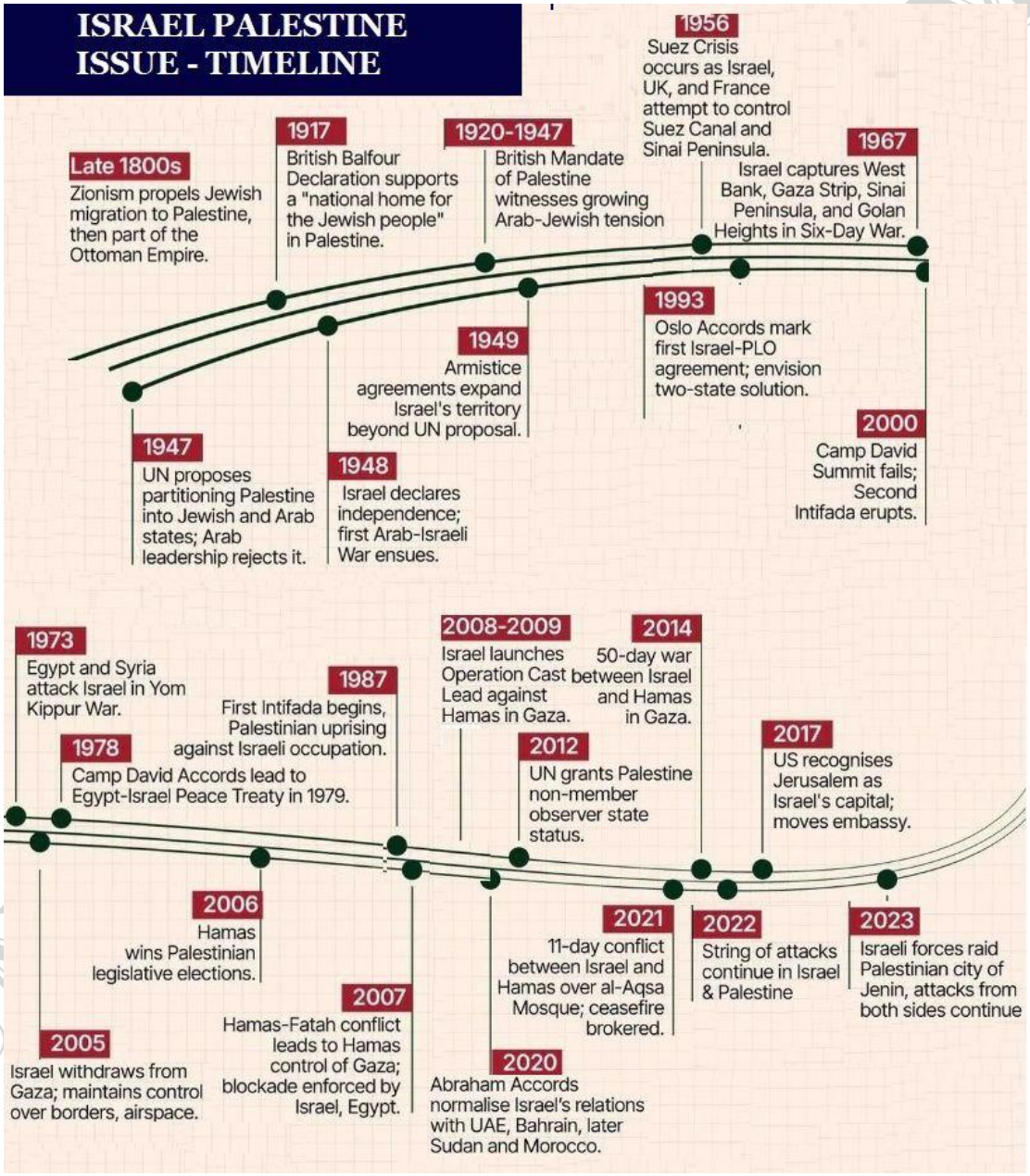
India's stance on the current Conflict

- India abstained (chose not to vote) on the Arab resolution calling for a humanitarian truce in Gaza. With it, India has underlined its concerns on international terrorism. India was right in pointing out that the Arab resolution did not condemn the October 7 attack by Hamas on Israel.
- Additionally, India supported a Canadian resolution condemning the Hamas attack on Israel. Prime Minister Narendra Modi has called the Hamas attack on Israel as "terrorist attacks" and conveyed "solidarity with Israel".
- India also reiterated its continuous support for a two-state solution between Israel and Palestine.
- This signals a replacing of the traditional defensive politically correct foreign policy with a policy rooted in a hard-headed realistic assessment of the shifting regional dynamic.



Landmark Peace Agreements between Israel and Arabs

- **1978 Camp David Accords**: The Accords between Egypt and Israel, mediated by the US marked a historic peace treaty between Israel and Egypt.

- **Oslo Accords (1993):** Signed between Israel and PLO, these agreements established the Palestinian Authority to manage West Bank administrative matters.
- **Jordan-Israel Peace Treaty (1994):** With this Jordan became the second Arab country, after Egypt, to make peace with Israel. This treaty settled territorial disputes and covered diplomatic relations, economic cooperation, etc.
- **Abraham Accords (2020):** Israel, the UAE, and Bahrain signed the US-brokered Abraham Accords in 2020. Morocco and Sudan have also joined the accord (Sudan is yet to sign an agreement with Israel).

2. GAZA STRIP

Context:

- The recent escalation of conflict between Israel and Hamas militants has thrust the Gaza Strip into the global spotlight.
- Amidst this turmoil, Israel's defense minister, declared a "complete siege" of the Gaza Strip, cutting off essential resources. This move has highlighted the long-standing and contentious issue of the Gaza blockade, which has been in place since 2007.

What are the Significant

Aspects Regarding the Gaza Strip?

- About: The Gaza Strip is situated in the eastern.
- Mediterranean basin, sharing borders with Egypt in the southwest and Israel to the north and east. To the west, it is bounded by the Mediterranean Sea.
- Gaza is encircled by walls on three sides, and its western border is controlled by Israel, restricting access by sea.
- Three functional border crossings exist - Karem Abu Salem Crossing and Erez Crossing controlled. byIsrael, and Rafah Crossing controlled by Egypt.
- These crossings have been sealed in response. to recent hostilities.

What should be the way forward?

- The recent Israel-Palestine dispute can turn into a major crisis if the global leadership does not act in time. Following methods should be adopted for early resolution of the dispute.
- Adoption of the Arab Peace Initiative offer- This offer was proposed by the Saudi Arabia in the name of all Arab countries in 2002. This offer required the creation of a Palestinian state on the lands Israel occupied in the Six-Day War of 1967. In return, Israel would be fully recognised and accepted. .This offer can be the only basis for a lasting peace between Israelis and Palestinians.
- Need to treat it as Israel-Arab conflict rather that Israel-Palestine(Hamas) conflict- The conflict is not only between Israel and Palestine but also with other Arab countries such as Egypt, Jordan, Iran, Syria. All of them should participate in the negotiations and the final agreement should be recognized formally by each one of them along with UN general assembly and security council.
- UNSC must step up- UNSC must broker a peace talk between the two warring fractions. Global leadership platforms must be used to not let middle east become another theatre for warfare.

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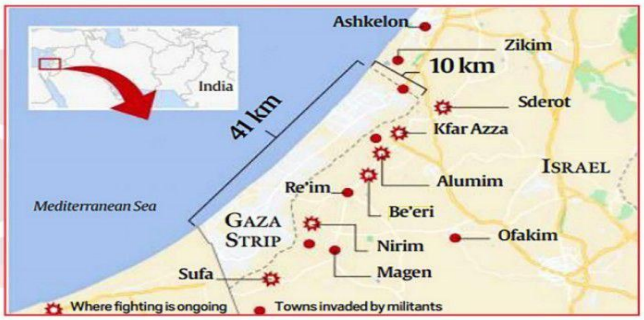
- Ensure proper adherence to UNSC resolution 2334- UNSC resolution 2334 concerns the Israeli settlements in Palestinian territories occupied since 1967, including East Jerusalem. The illegal Israel settlements in West Bank must be removed at the earliest.
- Follow the ICC ruling of February 2021- The February 2021 International Criminal Court (ICC) ruling should be implemented in spirit. It allows the ICC to investigate persons committing war crimes in the Palestinian Territories of the West Bank and Gaza Strip.
- India should act as a mediator- India has good relations with both the Arab World and Israel. Instead of India choosing side in the war, it must use its soft power and diplomatic outreach to solve the dispute.

➢ **Associated Places in Spotlight:**



3. INDIA- SOUTH KOREA RELATIONS

Context:

- The historic Camp David Summit held in August 2023 gives India and South Korea a unique opportunity to enhance their strategic partnership.
- It is the fiftieth year of anniversary of diplomatic relations since, Both established diplomatic relations on 1973.

What is the history of India-South Korea relations?

- Historical relation- According to the 13th century Korean historical text "SamgukYusa" or "Heritage History of the Three Kingdoms", Princess Suriratna from Ayodhya (India) came to Korea in the year 48 AD.
- Literature- Nobel Laureate Rabindranath Tagore composed a short but evocative poem titled 'Lamp of the East' in 1929 about Korea's glorious past and its promising bright future.
- Political relations- India played an important role in the Korean peninsula after Korea's independence in 1945.
- Former Indian diplomat Shri K P S Menon was the Chairman of the 9-member UN Commission set up in 1947 to hold elections in Korea.
- In 2018, both countries issued a statement outlining a "Vision for People, Prosperity, Peace and our Future"
- Diplomatic relations- Consular relations were established in 1962. Both established diplomatic relations on 1973.
- Economic relations- They both formed a "Strategic Partnership" in 2010, which was elevated to "Special Strategic Partnership" in 2015.
- Korea plus- This initiative aims to facilitate Korean investments in India.
- Bilateral trade- In 2022, it reached record levels of 27.8 billion dollars.
- India's import volume stands 18.8 billion dollars, while the export volume is 9 billion dollars.
- Defence- In 2020, India and South Korea signed a Roadmap for Defence Industries Cooperation.

Significance

South Korea's New Indo-Pacific Strategy:

- South Korea launched its first Indo-Pacific vision document, namely the "Strategy for a Free, Peaceful and Prosperous Indo-Pacific".
- The latest strategic document, lists India as the main actor in Seoul's South Asian outreach, foreshadows an enhanced strategic partnership based on better communication and upgrading defence, diplomatic, and economic security ties.

Regional Stability:

- The regional tensions in South Asia especially between India and China create a common interest for India and South Korea.
- This could be a collaborative approach for regional stability.

Engagements in global issues:

- The new, emerging threats posed by an increasingly militant China, with its growing divergence with the United States, and convergence with Russia.

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- India, Japan, and South Korea to step up their engagement, with one another most of all.

Global supply chains:

- In view of difficulties faced due to the supply chain overdependence on China during the COVID-19 pandemic, India and South Korea have also agreed to work together on creating resilient and robust global supply chains.

Challenges

Inadequate Trade:

- In the last few years, India and South Korea have faced serious blockades to their economic ties.

Indian Diaspora:

- Within South Korea, the integration of Indians in the local population is far from complete, with some instances of racial prejudice or discrimination toward Indians

Inadequate acknowledgment of Korean Culture:

- To a certain extent Indians are unable to distinguish between the cultural and social characteristics of South Koreans from that of Japanese/Chinese.

Unfulfilled potential of Cultural Centres:

- Indian Culture Centre (ICC) was established in Seoul to promote people-to-people contacts.

India- South Korea Relationship

Context: The Camp David summit between the United States, Japan, and South Korea offers a unique opportunity for India to enhance its strategic partnership with South Korea, particularly in the Indo-Pacific.

Area of Cooperation	India-South Korea Status	Examples
Political Relations	Strong and friendly	Regular high-level visits: E.g. 2+2 dialogue
		Joint Commission Meetings: Coordinating India's 'Act East Policy' with South Korea's 'New Southern Policy'
		Strategic Partnership (Upgraded to 'special strategic partnership' in 2015 with defence cooperation
Economic & Commercial	Growing trade ties	2022 bilateral trade: Over USD 27 bn (Target: USD 50 bn by 2030)
		India-South Korea Comprehensive Economic Partnership Agreement (CEPA) (2010)
		'Korea Plus' initiative to promote Korean Investments in India (joint ventures in electronics, automobiles, and shipbuilding)
Energy	Growing energy cooperation	Civil Nuclear Energy Cooperation (2011)
Defence & Security	Defence cooperation	Joint military exercises - Defence equipment procurement
		South Korea's evolving strategic outlook and alignment with the U.S., Japan, and Australia make it a valuable partner for India in advancing its interests in the Indo-Pacific.
Cultural Exchanges	Vibrant cultural exchanges	Buddhist Connection
		"SamgukYusa" text (13th CE) mentions a Princess from Ayodhya marrying a Korean Prince in 48 AD
		Cultural festivals showcasing Indian and Korean arts and heritage
People-to-People Ties	Growing	Significant Korean ex-pat community in India
		Growing Indian community in South Korea

Camp David Summit

- Countries- It is held among the leaders of the United States, Japan, and the Republic of Korea (ROK)
- Need- To consult promptly with each other during crises and to coordinate responses to regional challenges, provocations and threats affecting common interests.
- Cooperation- It committed to hold trilateral military training exercises annually and to share real-time information on North Korean missile launches by the end of 2023.

- **Project**- They would launch supply-chain early warning system pilot project to expand information-sharing and fight economic coercion together.

What is the significance of Camp David meet?

- Regional security- It indicates a much-needed repair in South Korea and Japan relations.
- Strengthen US alliance structure- The summit reflect the multipolar urges of the contemporary international system in East Asia along with groupings such as AUKUS- U.S, United Kingdom, Australia Quad -India, Japan, Australia, **U.S CHIP 4 Alliance**- U.S., Japan, Taiwan, and South Korea
- **New strategic direction**- It has the potential to set South Korea on strategic direction in Indo-Pacific with Improved relations with Japan
- More synergy with the American view on China
- Enhance the engagement of Indo- Pacific
- China challenge- It marks a strategic shift in Seoul's traditional approach of not offending China at any cost.

What lies ahead?

- **Political cooperation**- The two sides should consider establishing an annual summit at the level of Foreign Ministers Meet 2+2 format dialogue
- **Foster technology-** Both could explore the possibility of negotiating a South Korea-Japan-India-U.S. initiative on Critical and Emerging Technology (iCET), along the lines of the recently-concluded India-U.S. iCET.
- **Defence** -South Korea's willingness and ability to cater to India's defence needs within the ambit of India's 'Make in India' programme must be utilised.
- **Example-**The K9 Vajra, a 155 mm self-propelled howitzer, built by L&T with technology from South Korea's Hanwha Defense
- **South Korean-**built K2 Black Panther tanks could also be co-produced in India for the Indian Army or third countries.
- **Nuclear energy**- Given Seoul's remarkable track record in supplying cheaper and faster nuclear reactors India could consider purchasing Korean-built reactors so as to expand the share of nuclear energy in the country's energy basket.
- **Multilateral cooperation:** Multilateral forums like IORA, ASEAN, and the Indo-Pacific Economic Forum (IPEF) offers more opportunities for collaboration including collaboration in third country.
- Both can collaborate in supply chain resilience, infrastructure, clean energy, and decarbonization engagement in third-party countries located in Southeast Asia.

Conclusion

- India and South Korea are middle powers and growing economies that need regional stability, and for this, they must work together. The strategy and partnership should move beyond the normative approach towards a robust and strengthened bilateral relationship.

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4. RUSSIA AND COMPREHENSIVE

Nuclear Test Ban Treaty

Context:

- Russia has recently revoked its ratification of the Comprehensive Nuclear Test Ban Treaty (CTBT).

What is Comprehensive Nuclear Test Ban Treaty (CTBT)?

- It is a multilateral treaty that bans all nuclear explosions, for both civilian and military purposes, in all environments.
- Adopted by- The United Nations General Assembly (UNGA) in 1996.
- Structure - The CTBT itself includes a Protocol in 3 parts.
- Part I detailing the International Monitoring System (IMS)
- Part II on On-Site Inspections (OSI)
- Part III on Confidence-Building Measures (CBMs)

There are also 2 Annexes to the Protocol.

- Annex 1 detailing the location of various Treaty monitoring assets associated with the IMS
- Annex 2 detailing the parameters for screening events
- CTBTO - The Treaty establishes a CTBT Organization (CTBTO), located in Vienna, to ensure the implementation of its provisions

The CTBTO consists of 2 organs,

- Preparatory Commission (a plenary body) and
- Provisional Technical Secretariat (PTS)
- Administered by - Preparatory Commission for CTBTO
- Condition- For the treaty to enter into force, 44 “Annex 2” States must sign and ratify the Treaty.
- Signed but not ratified- China, Egypt, Iran, Israel and the United States
- Non-signatories- India, North Korea and Pakistan

Russia ratified the CTBT agreement in 2000

What is the status since the signing of CTBT?

- Timely information - Post 2011 Fukushima nuclear accident, CTBTO data provided timely information on the radioactive emissions from the crippled plant and their global dispersion.
- Monitoring - International Monitoring System monitors the Earth’s crust, listens in the atmosphere and in the oceans and sniffs the air for traces of radioactivity.
- Nuclear testing- Since the CTBT, 10 nuclear test have taken place in countries such as Pakistan, India and North Korea.
- Superpowers- The United States last tested in 1992, China and France in 1996 and the Soviet Union in 1990.
- Russia, which inherited most of the Soviet nuclear arsenal, has never conducted a nuclear test.

What is India’s stand on CTBT?

- "Standstill agreement- It was launched by India in 1954, by then Prime Minister Jawaharlal Nehru.

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- Testing of all nuclear weapons was to be immediately suspended, pending an agreement on their complete prohibition.
- LTBT- Nehru played an important role in building international momentum for the 1963 Limited Test Ban Treaty, which India joined.
- CTBT - India did not support the treaty in 1996 and still does not, but it had been very supportive during negotiations.
- Security concerns - India considers the enforcement of the treaty as a threat to national security.
- Discriminatory - US has already conducted more than 2000 tests suddenly realizes that here was no need to test nuclear devices any more.
- Time limit - No time-bound disarmament schedule for nuclear weapon states
- Limited Coverage- CTBT would not help towards nuclear disarmament since it only banned nuclear explosive testing, but not other activities related to nuclear weapons, such as sub-critical (non-nuclear explosive) experiments, or computer simulations."

Current Position:

- It has been signed by 187 nations and ratified by 178. However, the treaty cannot formally enter into force until it is ratified by 44 specific nations. Eight of these nations have yet to ratify the treaty:
- China, India, Pakistan, North Korea, Israel, Iran, Egypt, United State.

Treaties Against Nuclear Weapons

Nuclear Weapons

- The most dangerous weapons on earth: a bomb or missile that uses nuclear energy to cause an explosion.
- Nuclear weapons release energy either by nuclear fission (atomic bombs) or nuclear fusion (hydrogen bombs).
- Even a single weapon is potent of destroying a whole city, potentially killing millions, jeopardizing the natural environment and lives of future generations.
- They were used for the first and last time in WW-II by the US in 1945 on Hiroshima and Nagasaki.

Treaty on the Non-Proliferation of Nuclear Weapons (NPT 1970)

- **Objective:**
  - Prevent the spread of nuclear weapons and its technology
  - Foster peaceful uses of nuclear energy
  - Further the goal of nuclear disarmament
- **Member states**:
  - 191 with 5 nuclear-weapon states (NWS) (US, Russia, UK, France & China)
- **Nuclear –Weapon States**:
  - Those who manufactured & exploded a nuclear weapon or nuclear explosive device before 1st January 1967
- **Significance:**
  - Only binding treaty to the goal of disarmament by the NWS
- **India and NPT**:
  - India (along with Pakistan, Israel, North Korea, and South Sudan) is not a member.

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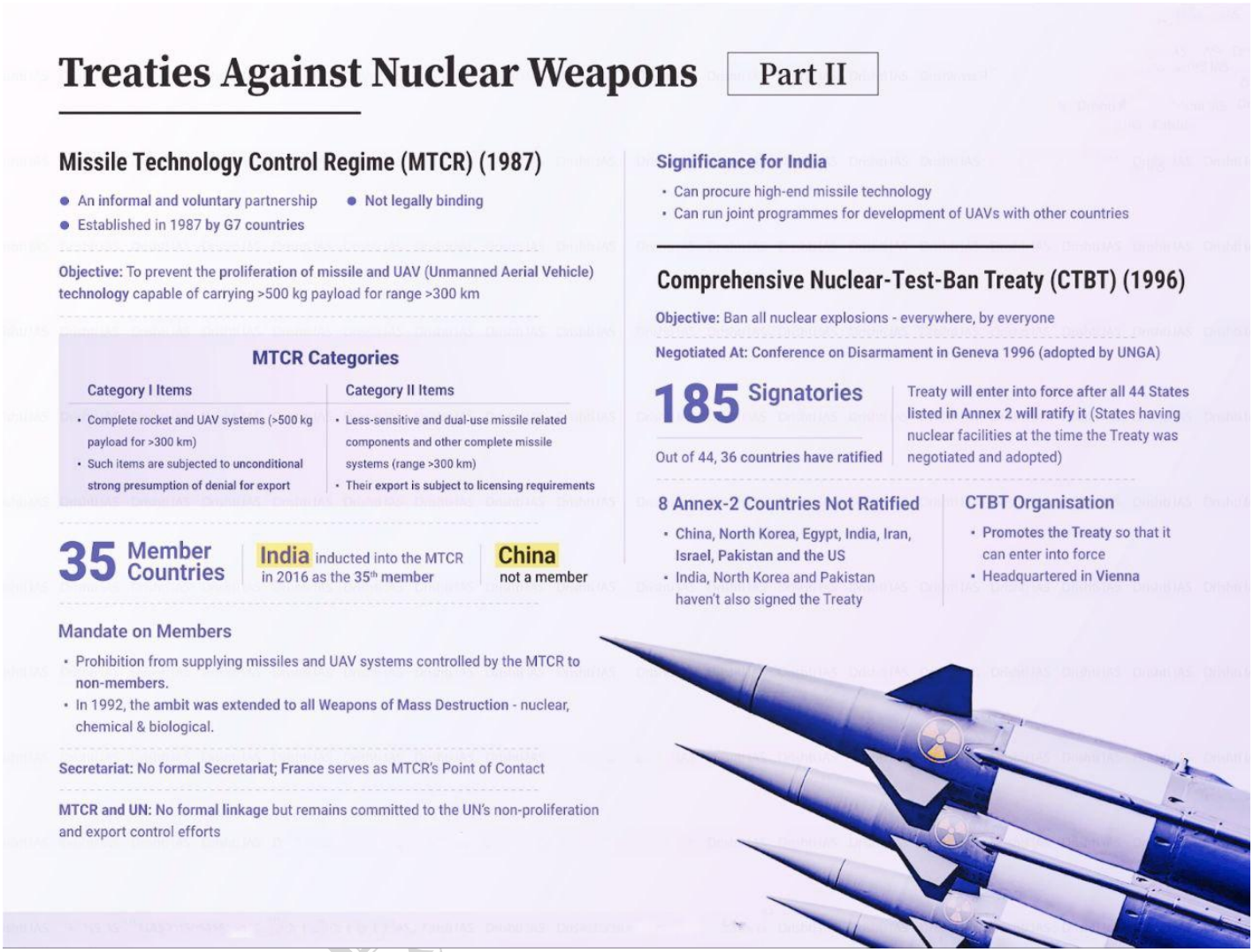
- Opposes it as a discriminative disarmament policy
- India's Policy- No first Use against NWS and no use against non-NWS

- **NPT Review conference**:
  - Undertakes review of the treaty's implementation quinquennially



5. INDIA MALDIVES:

Context:

- Maldives' new President-Elect has pitched to end the presence of Indian troops in the islands in accordance with his pre-poll promise made under "India Out" campaign.

More on the news

- The "India Out" campaign, led by the Progressive Party of Maldives (PPM), played a pivotal role in its recent electoral victory against the incumbent MDP.
- The campaign strongly opposed the Indian military's presence in the Maldives, expressing concerns that this presence might compromise the sovereignty of the Maldives
- It began in response to India's gift of two Dhruv

Advanced Light Helicopters (ALH) in 2010 and 2015.

- These helicopters were provided for purposes like maritime weather surveillance and ocean search-and-rescue operations.
- Around 70 Indian military personnel maintain India-sponsored radar stations and surveillance aircraft. Indian. warships help patrol Maldives' Exclusive Economic Zone.

What is the significance of Maldives to India?

- **Geographical Location**: Maldives is geographically located in a position that makes it resemble a 'toll gate' between the chokepoints of the western Indian Ocean (Gulf of Aden and the Strait of Hormuz), and the eastern Indian Ocean (Strait of Malacca).
- **Economic Significance:** It is strategically located at the crossroads of several important trade routes that run through the Indian Ocean. Through this region passes more than 97% of India's total international trade by volume and 75% by value.
- **Strategic Significance**: The significance of the Maldives has steadily increased since China's naval expansion into the Indian Ocean. Maldives is now at the centre of geopolitical affairs on a global scale. The Republic of Maldives is a party to the South Asian Association for Regional Cooperation (SAARC) and the South Asia Subregional Economic Cooperation (SASEC).
- **Security:** Under the Presidency of Abdullah Yameen, there was a rapid increase in radicalization. I
- **Indian Diaspora**: There is a sizeable population of people descended from India living in Maldives. There are numerous Indians employed in the Maldives' education and medical care systems, as well as in the tourism and hospitality sector.
- **First line of defence**: Due to its proximity to India, Maldives serves as the first line of defense against various maritime threats such as terrorism, piracy, drug trafficking, and other. Reducing influence of China in the IOR: Beyond diplomatic and trade partnerships, China has begun a consistent military presence in the India Ocean Region (IOR)

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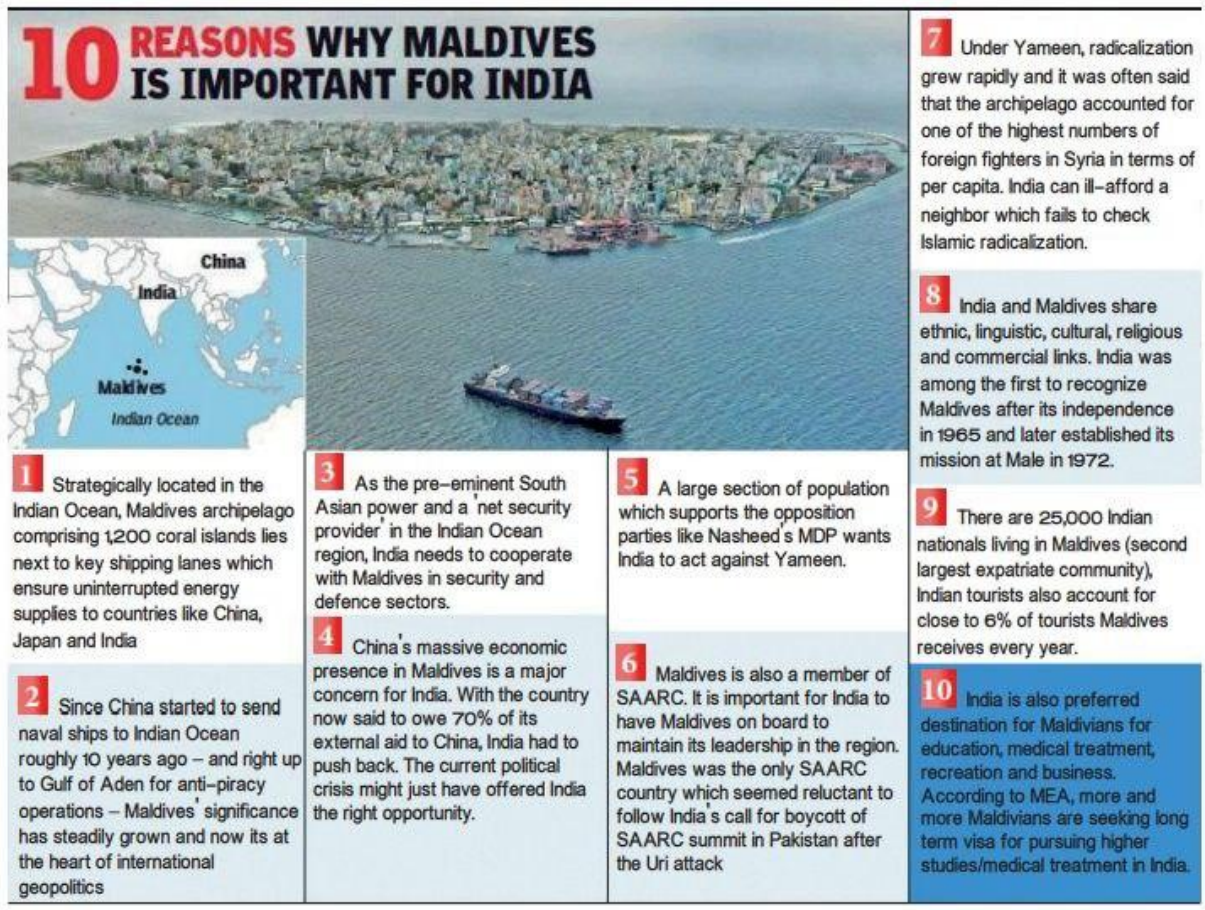

Dimension	**Example**
Historical	India and the Maldives share a historical connection. The Maldives became independent in 1965, following British colonial rule.
Security Partnership	Both countries engage in joint military exercises like "Ekuverin," "Dosti," "Ekatha," and "Operation Shield." India plays a crucial role in providing training opportunities for the Maldivian National Defence Force, fulfilling a significant portion of their defense training requirements.
India's Operation in Maldives	Operation Cactus(1988) (Indian Armed Forces aided the Maldivian government in thwarting a coup attempt); Operation Neer(2014) (drinking water assistance to address a water crisis); Operation Sanjeevani (essential medicines support against COVID-19
Economic Cooperation	India is the Maldives second-largest trading partner. Indian companies, such as Afcons, are involved in projects like the Greater Male Connectivity Project (GMCP), emphasizing economic cooperation between the two nations.
Infrastructure Projects	Indian credit lines support infrastructure development in the Maldives, as seen in projects like the Hanimaadhoo International Airport Development. India also inaugurated the National college for Policing and Law Enforcement (NCPLE) in 2022.
Grant Assistance	India provides grant assistance, including 100 million Rufiyaa, for projects like the High impact community Development Project (HICDP) scheme in the Maldives, Highlighting financial support for community development.
Sports and Education	Development of a sports complex in Gahdhoo and academic partnerships between Maldives National University and Cochin University of Science and Technology.
Rehabilitation Centre	Indian Assistance contributed to the construction of a drug detoxification and

	rehabilitation center in Addu, addressing critical healthcare needs in the Maldives

What are the areas of cooperation in India-Maldives Relationship?

- Both India's policy of 'Neighbourhood First' and the Maldives' policy of 'India First' appear to be perfectly coordinated with one another.
- **Security Cooperation**: Maldives relies heavily on trilateral maritime security cooperation with India and Sri Lanka purpose of such collaboration is to counter common maritime security threats and challenges such as illicit trafficking, piracy, and illegal and unregulated (or unreported) fishing.
- **Military Cooperation**: (a) India has donated Landing Assault Craft and 24 Utility Vehicles to Maldives in order to bolster maritime security; (b) A grant assistance of US$ 50 million Line of Credit facility has also been approved for carrying multiple defense projects;
- **Economic Cooperation**: (a) India and the Maldives have also signed multiple bilateral agreements in recent years, including US$ 500 million in grants and financing to support maritime connectivity (b) From 4th in 2018, India has become Maldives' 2nd largest trading partner; (c) In 2021, there was a rise of 31% in bilateral trade compared to the 2020;
- **Infrastructure Cooperation**: (a) India is the partner for the ambitious Greater Male Connectivity Project. This is one the largest project infrastructure project in Maldives. The project aims to connect Male to Villingili, Gulhifalhu and Thilafushi islands through a series of bridges, causeways and roads.
- **Humanitarian Assistance**: (a) In 2019, an MoU for grant assistance for High Impact Community Development Projects (HICDPs) was signed. A number of socio-economic development projects are planned to be implemented throughout the country under this funding; (b) India provided 100,000 Covishield vaccines to Maldives in January 2021, during the peak of the pandemic;
- India also helped address the shortage of drinking water in 2014; (f) Water and Sanitation in 34 Islands: The project seeks to improve water supply and sewerage facilities in 34 identified islands by installing proper water supply distribution network
- **Education and Technology Cooperation**: (a) The National Knowledge Network is a multi-gigabit national network for research and education. It has recently established connections with the academics and research institutions of the Maldives.

What are the challenges in the India-Maldives Relationship?

- **Political:** (a) While the incumbent President Ibrahim Mohamed Solih has a very prominent pro-Indian approach, the political opposition under former President Abdulla Yameen is seen as anti-India.
- **Radicalisation:** A large number of Maldive citizens had joined violent extremist organisations such as the Islamic State (IS). There has been a steady rise in recruits joining jihadi groups in Pakistan over the last decade.
- **Chinese Influence**: China has enhanced its influence in Maldives (and in Indian Ocean). Maldives is an essential 'pearl' in China's 'String of Pearls' initiative in South Asia.

What can be done to enhance India-Maldives Relationship?

- First, India should increase development assistance to Maldives. India should target projects that have larger impact on general population of Maldives. This will enhance India's goodwill among the people of Maldives.

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- Second, India should also engage with political opposition of Maldives. The concerns of the opposition can be addressed through suitable discussions.
- Third, It should be ensured that India is not seen as interfering in the internal politics of Maldives including Presidential elections. Political interference by India will be exploited by opponents to India's detriment.
- Fourth, As part of India's Neighbourhood First policy, the exemplary bilateral cooperation between India and Maldives could serve as a useful template for developing our ties with other This would be in keeping with India's commitment to putting its neighbours first.

About Maldives

- Maldives' position in the northern Indian Ocean keeps it in the vicinity of waters patrolled by Indian Navy warships.
- It is just 70 nautical miles away from India's Minicoy Island and 300 nautical miles away from India's Western Coast.

6. NAGORNO-KARABAKH CONFLICT

Context:

- The European Union lawmakers has urged the bloc to impose sanctions on Azerbaijan for carrying ethnic cleansing against Armenian residents of Nagorno-Karabakh region.

Where is Nagorno-Karabakh located?

- Location- Nagorno-Karabakh is a landlocked, mountainous and forested region falling within the boundaries of Azerbaijan.
- It is located in the South Caucasus region, which straddles the border between Eastern Europe and western Asia.
- It is roughly made up of modern-day Armenia, Azerbaijan, and Georgia.

- Predominant population-Nagorno-Karabakh, called Artsakh in Armenian, hosts a predominantly ethnic Armenian population (1.2 Lakh) having close cultural, social, and historical ties with Armenia.
- The conclave is connected to Armenia through the 5-km Lachin Corridor.
- Religion- The Armenians are Christians, while Azeris are Muslims.
- Places - The capital of Nagorno-Karabakh is Stepanakert, with Susha being another major city in the region.

What is the conflict about?

- The conflict between Armenia and Azerbaijan over Nagorno-Karabakh is called one of the "frozen conflicts" of the world.
- **1921 -** When Czarist Russia gave way to the Soviet Union in 1921, Nagorno-Karabakh was part of the Azerbaijan SSR (Soviet Socialist Republic).
- **1988 -** Nagorno-Karabakh legislature passed a resolution declaring its intention to join Armenia, despite being geographically located within Azerbaijan.
- **1991-** With the collapse of Soviet Union in 1991, Armenia and Azerbaijan achieved statehood while Nagorno-Karabakh officially declared independence.
- **1994 -** Bishkek protocol (a ceasefire) was brokered by Russia making Nagorno-Karabakh de facto independent with a self-proclaimed government in Stepanakert, but still it relied on Armenia.
- **2020 -** Both countries went to war again and Azerbaijan managed to seize control of the territory around Nagorno-Karabakh.
- **2022-** The Lachin Corridor was blockaded by Azerbaijan, causing severe shortages of essential goods including food, fuel and water in Nagorno-Karabakh.

What is India's stand on the conflict?

- **Diplomacy**- Post 2020 conflict, India believes that any lasting resolution of the conflict can only be achieved peacefully through diplomatic negotiations.
- **Peaceful resolution**- India supports the OSCE Minsk Group's continued efforts for a peaceful resolution of the conflict between Armenia and Azerbaijan.
- **Strategic ties-** The geographical location of the countries make the region a viable corridor for connecting with Russia and Europe through Central Asia and Iran.
- Armenia and Azerbaijan are members of the International North South Transport Corridor (INSTC), which India is keen to develop.
- India supports Armenia's proposal to include Iran's Chabahar port in INSTC.
- The tensions in the region directly impact India's plans to bypass Pakistan as the gateway to Europe and Russia.

India-Armenia Ties

- **Historical relation -** Indian settlements in Armenia were established by two princes (Krishna and Ganesh escaping from Kannauj) in 149 BC.
- Emperor Akbar, who is believed to have an Armenian wife Mariam Zamani Begum, granted Armenian traders privileges and considerable religious freedom.

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- Today, the Armenian community is mainly settled in Kolkata.
- **Diplomatic relations -** With Armenia, India opened its embassy in 1999, has a treaty relationship, and has received as many as 3 Heads of State. There have been 2 visits from India at the level of Vice President.
- **Political relations-** Armenia publicly endorses India's position on the resolution of the Kashmir issue on a bilateral basis and supports India's aspiration for a permanent seat in the expanded UN Security Council.
- **Defence ties-** In 2022, the India signed a deal to supply Armenian with PINAKA multi-barrel rocket launchers, anti-tank munitions, and ammunitions worth US 250 million dollars.

India Azerbaijan Ties

- **Historical ties-**The 'Ateshgah' fire temple in the vicinity of Baku is an 18th-century monument that has wall inscriptions in Devanagari and Gurmukhi.
  - ✓ Silk route is a surviving proof of the hospitality that Indian merchants to Europe enjoyed in Azerbaijani cities such as Baku and Ganja.
- **Diplomatic relations** -After the collapse of the Soviet Union, India recognised the independence of Azerbaijan and established diplomatic relations.
  - ✓ However, Azerbaijan's proximity to Pakistan has been perceived as an irritant in the ties and there has not been a single visit at the level of the Head of State/ Government between the two countries.

What about the global response?

- Former International Criminal Court Chief Prosecutor warned that there was a reasonable basis to believe Azerbaijan was committing a genocide in Nagorno-Karabakh region using starvation as "invisible genocide weapon".
- The European Parliament approved a resolution saying it considers that the current situation amounts to ethnic cleansing and strongly condemns threats and violence committed by Azerbaijan troops.
- The lawmakers called on EU's 27 member states to adopt targeted sanctions against individuals in the Azerbaijani government over the assault and alleged human right violations in Nagorno-Karabakh.

7. INDIAN OCEAN RIM ASSOCIATION- A KEY BLOC FOR INDIA

Context:

Recently Indian Ocean Rim Association's Council of Ministers meeting was held under the theme 'Reinforcing Indian Ocean Identity'.

What is Indian Ocean Rim Association (IORA)?

- A dynamic inter-governmental organisation and a regional forum.
- It is a tri-partite forum that brings together representatives of government, business and academia.
- Established in- 7 March 1997.
- Objective- Strengthening regional cooperation and sustainable development within the Indian Ocean Region.
- Apex body- Council of (Foreign) Ministers (COM) which meets annually
- Membership- 23 Member States and 11 Dialogue Partners
- Non-members- Pakistan, Myanmar

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- Latest member- France
- Dialogue Partners –Italy, Japan, Germany, China, USA, UK, Russia, Turkey, Korea and Egypt
- Saudi Arabia has been admitted as the 11th Dialogue Partner in IORA in 2023.
- Troika- It was established by the Council of Ministers which consists of
- Chair- Sri Lanka
- Vice Chair- India
- Previous chair-Bangladesh

Comprises

✓ 1/3rd of world's population

✓ 80% of global oil trade

✓ Produces ~$1 trillion in goods and services

✓ Intra-IORA trade is around $800 billion

Why does Indian Ocean Region matter?

- Strategic location - It enjoys a privileged location at the crossroads of global trade, connecting the major engines of the international economy in the Northern Atlantic and Asia-Pacific.
- Its littoral is vast, densely populated, and comprised of some of the world's fastest growing regions.
- Trade- The region produces a combined total of 1 trillion dollar in goods and services and intra-IORA trade is billed at around $800 billion.
- It is a major conduit for international trade, especially energy.
- Resources - The Ocean is also a valuable source of fishing and mineral resources.
- Mineral resources with nodules containing nickel, cobalt, and iron, and sulphide deposits of manganese, copper, iron, zinc, silver, and gold are present in sizeable quantities on the sea bed.

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What is the role of India?

- Major revitalization-There has been a growing direction and determination to strengthen institutions and capacities within IORA when India became the IORA Chair for the period 2011-2013.
- Priority areas- During India's chairmanship it identified 6 Priority and 2 Focus Areas to promote sustained growth and balanced development in the Indian Ocean Region.
- Foster research- The Chair of Indian Ocean Studies was revived in 2014 after a gap of almost 15 years which is jointly sponsored by India and Mauritius.
- It plays a bridging role in fostering research activities and studies in IORA priority areas with other academic institutions of IORA Member States.
- Counter China- Through this forum, Indian Ocean can be maintained as a free, open and inclusive space where there was respect for soverignity and territorial integrity based on UN Convention on the Law of the Seas.
- This would prevent the unviable projects, hidden agenda and unsustainable debt to the countries in Indian Ocean Region.
- Focus on SAGAR- It is an important instrument for pursuing the vision for a sustainable and prosperous future in the region with commitment to, Security and Growth for All in the Region (SAGAR).
- However, exclusion of Pakistan makes IORA a less contentious space for India, compared to groupings like Shanghai Cooperation Organisation (SCO).

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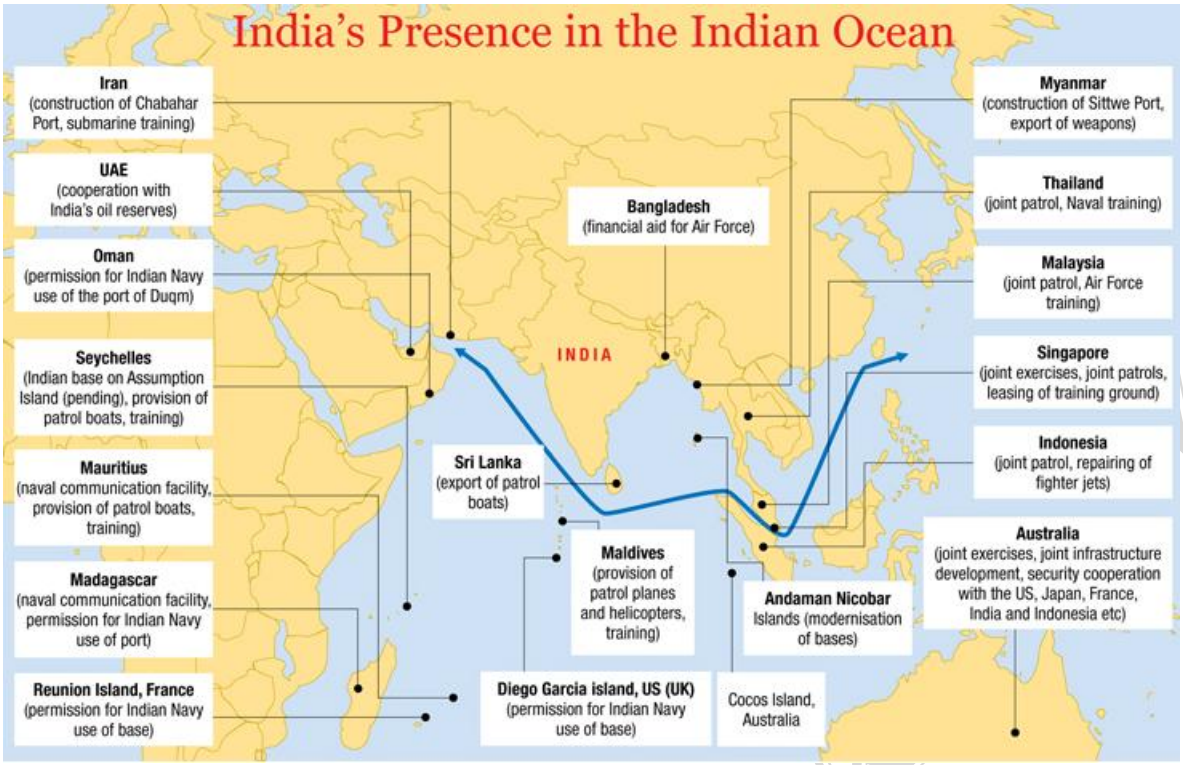


8. SOUTH CHINA SEA

Context:

- Recently, the Philippines Coast Guard removed barriers placed by Chinese vessels at the entrance to a lagoon off the Scarborough Shoal.
- This incident came after Chinese Coast Guard ships placed a 300-meter-long barrier to prevent boats from the Philippines from entering, adding to the long-running tensions in the South China Sea.

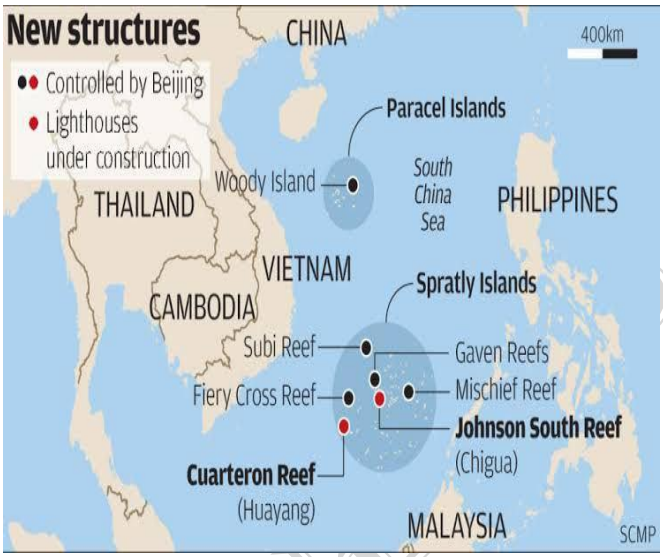
What is the Significance of the South China Sea?

- **Strategic Location**: The South China Sea is bordered by China and Taiwan to the north, the Indo-Chinese peninsula (including Vietnam, Thailand, Malaysia, and Singapore) to the west, Indonesia and Brunei to the south, and the Philippines to the east (referred to as the West Philippine Sea).
- It is connected by the Taiwan Strait with the East China Sea and by the Luzon Strait with the Philippine Sea (both marginal seas of the Pacific Ocean).
- **Trade Importance**: Approximately USD 3.37 trillion worth of trade passed through the South China Sea in 2016, making it a crucial global trade route.
- According to the Center for Strategic and International Studies (CSIS), 80% of global trade by volume and 70% by value is transported by sea, with 60% of it passing through Asia and one-third of global shipping moving through the South China Sea.
- China, the world's second-largest economy, relies heavily on the South China Sea, with an estimated 64% of its trade passing through the region. In contrast, only 14% of U.S. trade traverses these waters.
- India relies on the region for approximately 55% of its trade.
- **Fishing Ground**: The South China Sea is also a rich fishing ground, providing a vital source of livelihood and food security for millions of people in the region

What are the Major Disputes in the South China Sea?

Dispute:

- The heart of the South China Sea dispute revolves around territorial claims to land features (islands and reefs) and their associated territorial waters.
- The major island and reef formations in the South China Sea are the Spratly Islands, Paracel Islands, Pratas, the Natuna Islands and Scarborough Shoal.
- As many as 70 disputed reefs and islets are under contention, with China, Vietnam, the Philippines, Malaysia, and Taiwan all building more than 90 outposts on these disputed features.
- China claims up to 90% of the sea with its "nine-dash line" map and has physically expanded islands and constructed military installations to assert control.
- China has been particularly active in the Paracel and Spratly Islands, engaging in extensive dredging and artificial island-building, creating 3,200 acres of new land since 2013.
- China also controls the Scarborough Shoal through a constant Coast Guard presence.



Efforts to Resolve the Dispute:

- **Code of Conduct (CoC):** Talks between China and the Association of Southeast Asian Nations (ASEAN) have aimed at establishing a CoC to manage the situation, but progress has been slow due to internal ASEAN disputes and the magnitude of China's claims.
- **Declaration on the Conduct of Parties (DoC):** In 2002, ASEAN and China adopted the DoC, affirming their commitment to peaceful dispute resolution in accordance with international law.
- The DoC was meant to pave the way for a CoC, which remains elusive.
- **Arbitral Proceedings**: In 2013, the Philippines initiated arbitral proceedings against China under the UN Convention on the Law of the Sea (UNCLOS).
- In 2016, the Permanent Court of Arbitration (PCA) ruled against China's "nine-dash line" claim, stating it was inconsistent with UNCLOS.
- China rejected the arbitration ruling and asserted its sovereignty and historical rights, challenging the PCA's authority.

Way Forward

- Multilateral Engagement: Encourage active involvement from the international community, including countries outside the region, to facilitate diplomatic efforts and ensure that any resolution is fair, impartial, and in line with international norms particularly the United Nations Convention on the Law of the Sea.
- Environmental Protection: There is need for collaboration on efforts to protect the marine environment in the South China Sea, including measures to combat illegal fishing, reduce pollution, and preserve biodiversity because the total fish stocks in this region have been depleted by 70 to 95% since the 1950s and coral reefs, have been declining by 16% per decade, according to a report from the Center for Strategic and International Studies.
- Maritime Peace Parks: Explore the concept of creating maritime peace parks or protected areas within the South China Sea. Similar to terrestrial national parks, these areas could be designated for peaceful purposes, such as conservation, research, and ecotourism, transcending political disputes.

9. UNITED NATIONS HUMAN RIGHTS COUNCIL (UNHRC)

Context:

The UN General Assembly elected 15 Member States to the Human Rights Council (HRC) and declined **Russia's bid to rejoin** the same.

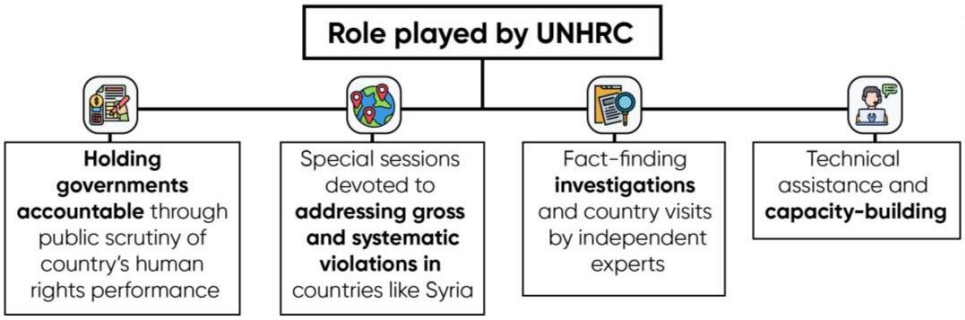
More on the News

- The 15 new members were **elected by secret ballot** according from different regions for the **2024-2026 term.**
- Countries need a minimum of **97 votes to get elected.**
- Russia was competing against **Albania and Bulgaria** for two seats representing the **East European regional group.**
    - Russia was **ousted** from UNHRC **after it invaded Ukraine**.
- **Other countries** which got **elected** under other regional groups include **China, Japan, Kuwait Burundi, France, Cuba, Brazil, e**tc.

About UNHRC

- **HQ:** Geneva

- **About:** It is the **principal intergovernmental body** within the UN system responsible for strengthening the **promotion and protection of human rights** around the globe.
- **Genesis:** It was **created by the UN General Assembly (UNGA) in 2006** as its **a subsidiary organ** replacing the Commission on Human Rights.
- Council adopted **an 'institution-building package', in 2007** to set up the Council's procedures and mechanisms.
- **Institutional structure**
  - **Bureau**: It consists of a **President and four Vice-Presidents** who represent **each of the five regional** groups. It is responsible for the **procedural and organizational leadership of the Council.**
  - **Working groups:** It has several **working groups studying human rights issues** and maintains the Special Rapporteur projects of the Commission on Human Rights.
  - **Secretariat:** Staff from the **Office of the High Commissioner for Human Rights** (OHCHR) serve as the secretariat providing its members with technical, substantive and administrative support.
    - ✓ **Created by the UNGA in 1993** UN OHCR works to **promote and protect the enjoyment and full realization, by all people, of all human rights.**
    - ✓ United Nations High Commissioner for Human Rights is **accountable to the Secretary-General.**
  - **Observers:** Non-member States, inter-governmental organizations, and NGOs.
  - **Power:** It can also establish **international commissions of inquiry and fact-finding missions** investigating and responding to human rights violations, to help expose violators and bring them to justice.
  - The **decisions** of the Council are **not legally binding**.



Criticism of HRC

- **Membership criteria**:
- Many of the Council **seats have been held by countries with human rights concerns**, such as Saudi Arabia, China, and Syria. Such members use their position to **block scrutiny of themselves and others.**
  - **Suspension of the membership** of States committing human rights violations is also **a rare phenomenon.**
- **Selectivity and politicization**: For example, the **focus on Israel**, highlighted by a **dedicated council** item since 2007, raises que stions about selectivity and politicization.
  - Also, **country-specific mandates are declining** and many states allege they **unfairly target developing countries**
- **Accessibility barrier**: The **substantial costs** associated with **attending HRC's sessions** is a hurdle, particularly for civil society and human rights defenders in the Global South.

- Concerns persist regarding **inability to adequately address participation needs for specific groups**, including children (victims/survivors).

- **Participation of civil society:** Human rights defenders and NGOs representatives **often face interruptions and reprisals.**
  - Additionally, the **UN NGO Committee** is accused of **not effectively following the accreditation process for civil society organizations**. This affects the credibility of these organizations.
- **Implementation Deficiencies:**
  - **Non-binding recommendations**: Countries with poor human rights records can **easily dismiss recommendations** from the UPR since they are non-binding.
  - **Tendency to vote in blocs**: The tendency for **blocs,** such as the Organization of the Islamic Conference and Africa, to **vote collectively weakens the Council's ability to address each issue individually.**

Way ahead

- **Enhancing credibility:** There is a need for **deeper scrutiny of candidate countries** and of the human rights records of Council Members throughout their terms.
  - A Council Member State violating human rights should be **given a set timeframe to comply with its membership obligations.** Failure to do so may result in the **suspension of their membership.**
- **Enhancing accessibility:** States should consider creating **funds or offering technical assistance** to **civil society organizations**, helping them actively participate in the Council.
  - Adopt **a zero-tolerance policy on reprisals, harassment and intimidation** against civil society and human rights defenders to make the Council a safe space for their engagement.
- **Accreditation of civil society:** Revamp the UN NGO Committee's accreditation system by moving it from diplomats to **qualified professional experts**.
- **Enhancing effectiveness in functioning**:
  - **Proactive approach:** Reduce the time between country visits and report presentations at the Council.
    - ✓ If early signs of severe human rights violations are detected, expedite consideration through **informal briefings or urgent debates** to fulfil the Council's **preventive mandate.**
  - **Cooperative approach:** Make human rights standards central to the planning and delivery of all UN operations.
    - ✓ Foster a closer relationship between the **HRC, UN Security Council** (UNSC) and **regional human rights bodies.**
- **Enhancing visibility:** Better communicate Council mechanism, and outcomes to a wide range of stakeholders working at the local, national and regional levels.

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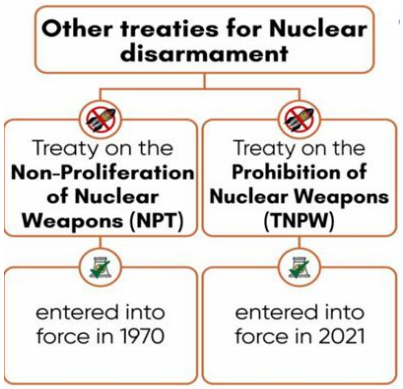
10. **INTERNATIONAL CRIMINAL COURT (ICC)**

- Armenia's Parliament voted to join the International Criminal Court.

11. **COMPREHENSIVE NUCLEAR TEST BAN TREATY (CTBT)**

- **Russia indicated towards revoking its Ratification of the (CTBT).** It says that withdrawal from ratification of nuclear weapons test ban treaty aims to place Russia on 'equal footing' with the US, which has signed but not ratified the pact.
    - The US has not ratified the CTBT by citing the **difficulty in verifying whether or not participant States meet the rules of the Treaty.**
- CTBT is a multilateral treaty which **prohibits any nuclear weapon test explosion** or any other nuclear explosion anywhere in the world.
    - It **bans all nuclear explosions**, whether for **military or peaceful purposes**.
- The treaty was opened for signature in September 1996 and has been **signed by 187 nations and ratified by 178.**
- The treaty cannot formally enter into force **until it is ratified by 44 specific nations**, eight of which have yet to do so: **China, India, Pakistan, North Korea, Israel, Iran, Egypt, and the United States**



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- **Reasons for India not signing and ratifying CTBT**
  - CTBT did **not insist on a complete disarmament**.
  - As a party to the CTBT, India cannot test and develop nuclear weapons whereas China would retain its arsenal as per the NPT.

12. 10 YEARS OF BELT AND ROAD INITIATIVE (BRI)

Context:

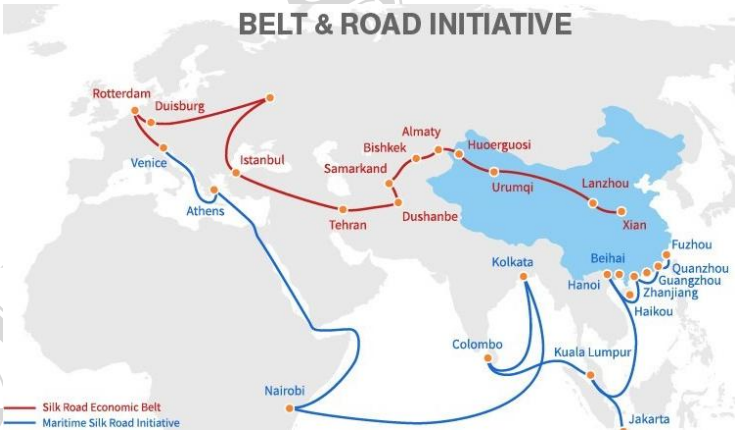
- The Belt and Road Initiative (BRI), led by **Chinese President Xi Jinping**, marked its **10th anniversary.**

What is the Belt and Road Initiative **(BRI)?**

- The **Belt and Road Initiative (BRI) is** a global infrastructure development strategy launched by **China in 2013**. It aims to invest in **over 150 countries and international organizations**, creating **road, rail, and sea routes** for trade and connectivity. The initiative, often referred to as **"One Belt One Road" (OBOR),** is a key part of China's foreign policy and has been compared to the **American Marshall Plan**.

Objective of BRI:

- The BRI is seen as a way for **China to transition to a global power and reshape** the global economic order. It further aims to enhance **global connectivity through infrastructure development** and economic cooperation.
- BRI includes various **infrastructure projects like ports, railways, roads, and power stations**. It is set to be **completed by 2049**, coinciding with the centennial of the People's Republic of China. The initiative includes two principal components: **the Silk Road Economic Belt and the Maritime Silk Road.**



Geographic Corridors for BRI Development:

- China-Pakistan Economic Corridor (CPEC)
- New Eurasian Land Bridge Economic Corridor
- China-Indochina Peninsula Economic Corridor
- China-Mongolia-Russia Economic Corridor
- China-Central Asia-West Asia Economic Corridor
- **China-Myanmar Economic Corridor** (Initially, BRI involved the BCIM Economic Corridor, but India's opposition to the CPEC led to its withdrawal from BRI and later BCIM was replaced by the China-Myanmar Economic Corridor)

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India's Objection to BRI:

- **India opposes the BRI** due to **sovereignty and transparency concerns**. It boycotted BRI summits in **2017 and 2019** and hasn't endorsed **BRI joint statements by the SCO**. The main objection is the China-Pakistan Economic Corridor **(CPEC)** passing through the Gilgit Baltistan region of India, which India claims.

Benefits of BRI for China and Other Countries:

Benefit	Description
Enhanced trade and economic influence	BRI expands China's trade networks and bolsters its role in global economic affairs.
	Countries participating in the BRI have witnessed growth in trade and investments with China, leading to preferential treatment and policy benefits.
Outlet for excess capacity	BRI projects provide markets for **Chinese industries**, particularly in construction.
Geopolitical and strategic influence	BRI **increases China's influence** in participating countries and on the world stage.
Currency internationalization	Promotes the use of the **Chinese yuan (RMB)** in international trade and finance.
Energy security	BRI projects secure access to **crucial energy resources** for China.
Technological innovation and knowledge sharing	BRI facilitates t**echnology transfer and knowledge exchange** between China and its partners.
Examples	**Pakistan**: China-Pakistan Economic Corridor (CPEC)
	Kenya: Standard Gauge Railway project
	Greece: The Piraeus Port project has turned Greece into a major transport hub, increasing trade and creating jobs.
	Laos: The China-Laos Railway
	Sri Lanka: Hambantota Port
	Egypt: Suez Canal Economic Zone

Concerns Related to the Belt and Road Initiative (BRI):

Concern	Description
Sovereignty concern	India and other countries express sovereignty concerns over BRI projects like the China-Pakistan Economic Corridor **(CPEC**).
Strategic concern	India is worried about the strategic implications of BRI, including the **impact on its maritime capabilities and regional influence**.
Lack of Transparency	Concerns have arisen due to **the lack of transparency in BRI projects**, particularly related to **debt and loan conditions**.
	BRI infrastructure project has encountered **major implementation problems, such as corruption scandals, labour violations**, environmental hazards, and public protests.
Project Monopoly concern	**Chinese state-owned enterprises** dominate BRI investments, limiting competition and opportunities for other companies.
Economic Viability	The lack of **competition and high interest rates** on loans have raised concerns about corruption and **economic viability**

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Delays in Project	Some BRI projects **face delays and challenges**, leading to questions about the feasibility and impact of China's ambitious strategy.
Debt Trap	China is criticized for practising **"**debt-trap diplomacy," where it lends money to countries like **Sri Lanka and Zambia,** who struggle to repay, leading to China acquiring strategic assets or political concessions.
Multilateral Governance	Unlike initiatives like the **Asian Infrastructure Investment Bank (AIIB), the BRI** lacks a centralized governing structure, making it difficult to address issues collectively
Political Tensions	Geopolitical rivalries and disputes have affected BRI project implementation, potentially undermining progress.
Environmental Concerns	BRI infrastructure projects have faced **criticism for their environmental and social impacts**, requiring sustainable development.
Geostrategic Concerns	BRI projects **will enhance China's stature and undermine India's influence** over smaller South Asian countries and Indian Ocean littoral states.

Alternatives to address concerns about BRI:

Initiative	**Description**
B3W Initiative	Led by G7 countries, it aims to address the infrastructure deficit in developing and lower-income countries
Blue Dot Network (BDN)	A multi-stakeholder initiative by the US, Japan, and Australia to promote high-quality standards for global infrastructure development.
India's Efforts	**India's "IDEAS" plan**: India's counter to BRI, supported by Lines of Credit (LOCs) to countries in Asia, Africa, CIS, and Latin America. It includes initiatives like IMEC and INSTC.
	India-Middle East-Europe Economic Corridor **(IMEC)** initiative during the recent G20 summit
	International North-South Transport Corridor **(INSTC**) for connecting India to the Middle East and Russia
Global Gateway	Launched by the European Union to compete with BRI, focusing on various sectors, including climate change, digitalization, health, and education.
Partnership for Global Infrastructure and Investment (PGII)	A repackaged version of B3W. It is a G7 effort to fund infrastructure projects in developing nations. India supports it.

Conclusion

China, in order to go ahead and protect its own interests, has put in place a network of investments which has led to several low- and middle-income countries in severe debt hence the global initiatives have provided a counter block for monopoly and taken steps to focus on more inclusive and sustainable development.

13. UNITED NATIONS CONVENTION AGAINST TRANSNATIONAL ORGANIZED CRIMES (UNTOC)

Context:

- The Minister of State for Home Affairs attended a two-day conference in **Palermo, Italy**, marking the **20th anniversary of the United Nations Convention against Transnational Organized Crimes** (UNTOC).
- The **United Nations Convention against Transnational Organized Crime (UNTOC)** is a **global and legally binding instrument** adopted by the UN General Assembly **in 2000** and enforced in **2003**.

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- It is the **first comprehensive treaty aimed at combatting transnational organized crime including** human trafficking, migrant smuggling, and illicit firearms trafficking.
- Currently, there are **191 parties to the Convention**, including **India (who joined it in 2002 and** ratified it in **2011)**. Central Bureau of Investigation as the national Nodal Authority from India. India also enacted the Criminal Law Amendment Act in 2013, which specifically defines human trafficking.

About Transnational Organized Crime:

Transnational organized crime refers to **criminal activities that operate across national borders**, involving organized groups engaged in various illegal activities such as drug trafficking, human trafficking, money laundering, and cybercrime.

ECONOMY

1. RUPAY DOMESTIC CARD SCHEME

Context:

- NPCI International Payments Limited(NIPL), a subsidiary of the National Payments Corporation of India (NPCI) has signed an agreement with Al Etihad Payments (AEP), an indirect subsidiary of the Central Bank of UAE.

What is the purpose of the agreement signed between NIPL and UAE?

- As per the agreement, NIPL and AEP will work together to build, implement and operationalize UAE's national Domestic Card Scheme(DCS).
- The DCS will aim to facilitate the growth of e-commerce and digital transactions in the UAE, bolster financial inclusion, support UAE's digitization agenda, reduce the cost of payments and enhance UAE's competitiveness and position as a global payments leader.
- The services that will be offered by NIPL consists of a RuPay stack and value-added services like fraud monitoring services and analytics.NIPL will also assist AEP in formulating the operating regulations for their domestic card scheme.

What is Rupay?

- RuPay is an indigenous, highly secure, and widely accepted card payment network in India. RuPay cards have debit, credit, and prepaid propositions.
- More than 750 Million RuPay cards are in circulation as of date. RuPay cards make up more than 60% of total cards issued in India, with every second Indian having a RuPay card now.
- These cards are issued through the entire banking spectrum, including public sector, private, and small banks.

What is the significance of India's Digital Public Infrastructure (DPI)?

- India's Digital Public Infrastructure (DPI) framework consisting of digital identity, digital payments and digital data exchange layers has played a crucial role in revolutionizing the payment industry.
- This infrastructure has provided nearly every Indian adult with access to banking services, remote authentication through Aadhar, and affordable mobile internet connectivity.

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- As a result, India has become the world's third-largest fintech ecosystem, with significant growth in digital transactions and a customer base exceeding 340 million

2. CONTRIBUTIONS OF MS SWAMINATHAN

Context:

- Mankombu Sambasivan Swaminathan, popularly known as M.S. Swaminathan, the legendary agricultural scientist passed away recently.

About M.S. Swaminathan

- A plant geneticist, he is regarded as the father and key architect of India's green revolution and is also often referred to as the "Farmers' Scientist".
- He was the recipient of the first World Food Prize in 1987 for his leadership in India's Green Revolution.
- He is also a recipient of Padma Vibhushan, the Ramon Magsaysay Award and several other national and international recognitions

Career

- IARI: MS Swaminathan joined the Indian Agricultural Research Institute (IARI) as a faculty. He later served as the director of IARI from 1961 to 1972.
- ICAR: He was the Director-General of the Indian Council of Agricultural Research from 1972 to 1979, and the principal secretary of the Indian Ministry of Agriculture and Irrigation from 1979 to 1980.
- Planning Commission: From 1980 to 1982, he was in charge of India's Planning Commission's agriculture and rural development.

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Contributions of MS Swaminathan

- His pioneering work in agriculture and specific sectors such as wheat breeding resulted in a significant increase in wheat production, transforming India from a food-deficient country to a self-sufficient one.

Green Revolution

- **Green Revolution**: The Green Revolution (began in the mid-1960s) was a transformative period in Indian agriculture characterised by the adoption of high-yielding crop varieties, and the use of modern agricultural practices.
- MS Swaminathan was instrumental in his pivotal role in the Green Revolution in India during the 1960s and 1970s.
- **Development of high-yield varieties**: MS Swaminathan invited Dr. Norman Borlaug to India after learning about his newly developed Mexican dwarf wheat variety.
- The two scientists collaborated to develop wheat varieties that would yield more grain while also developing stalk structures that would be strong enough to support the increased biomass.
- **Administering and Collaborating for Farmer Adoption of HYV**: MS Swaminathanestablished thousands of demonstration and test plots in northern India in 1965, demonstrating to small-scale farmers that the new, genetically superior grain could thrive in their own fields.
- He not only directed the experiments that resulted in the development of the High Yielding Varieties (HYV) but also competently administered and collaborated with the government machinery to create greater awareness and adoption among the farming community.
- **Outcome:** As a result of the introduction of these new high-yield varieties of wheat, India's wheat production skyrocketed from 12 million tonnes to 23 million tonnes in four crop seasons, reducing its reliance on grain imports.

Food Security and Farmer Welfare

- **Food security**: MS Swaminathan's work was not limited to increasing crop yields but also encompassed the broader goal of achieving food security for India.

- MS Swaminathan advocated for an effective public distribution system to ensure that food grains reach poor consumers in order to end hunger.
- Due to the efforts of MS Swaminathan, India went from being drought-stricken and reliant on US imports in the 1960s to being declared food self-sufficient in 1971.
- In 1987, he was awarded the World Food Prize for his notable contributions to agricultural science and food security. From the proceeds of this prize, he established the MS Swaminathan Research Foundation (MSSRF).
- **National Commission on Farmers**: As the chairman of the commission, MS Swaminathan issued five reports recommending minimum crop support prices, faster and more inclusive growth, and a comprehensive national policy to address farmer suicides.
- He played an instrumental role in developing the Protection of Plant Varieties and Farmers' Rights Act of 2001.

Sustainable Agriculture

- Later in his career, MS Swaminathan shifted his focus and made significant contributions to the promotion of sustainable agriculture and rural development using cutting-edge paradigms like ecotechnology-based bio-villages and contemporary information and communication-based Village Knowledge Centres (VKCs).
- He promoted the idea of an "evergreen revolution", which called for a continuous improvement in agricultural productivity without harming the environment.

Research

- ***Cryogenetics***: MS Swaminathan pioneered his research with cryogenetics studies (study of chromosomes) in potato crops.
  - ✓ He was successful in preventing crop infestations and in making crops resistant to cold weather.
  - ✓ He also studied inter specific hybridization, induced radiation, chemical mutagenesis, and the use of plant growth regulators.
- ***Hexaploid wheat:*** Swaminathan did basic research on the cytogenetics of hexaploid wheat, one of the widely cultivated cereal crops.
  - ✓ Through collaboration with Dr. Borlaug modified grains in laboratories to better suit Indian soil, resulting in higher yield and free of infestation.
- ***C4 rice plant***: During his tenure as Director General of the IRRI, research on the C4 rice plant was started for photosynthesis more efficiently.
  - ✓ Awards and Recognition Received by MS Swaminathan
  - ✓ MS Swaminathan's extraordinary contributions to agriculture and food security have earned him numerous awards and honours.
- **Following are some of the notable awards and recognition of Swaminathan:**
  - ✓ He has received over 80 honorary doctorates from universities all over the world.
  - ✓ He served as a Member of Parliament in Rajya Sabha from 2007 to 2013.
  - ✓ He chaired the Task Force (of the Ministry of External Affairs) to oversee agricultural projects in Afghanistan and Myanmar
- **International awards:**
  - ✓ Ramon Magsaysay Award for Community Leadership, 1971

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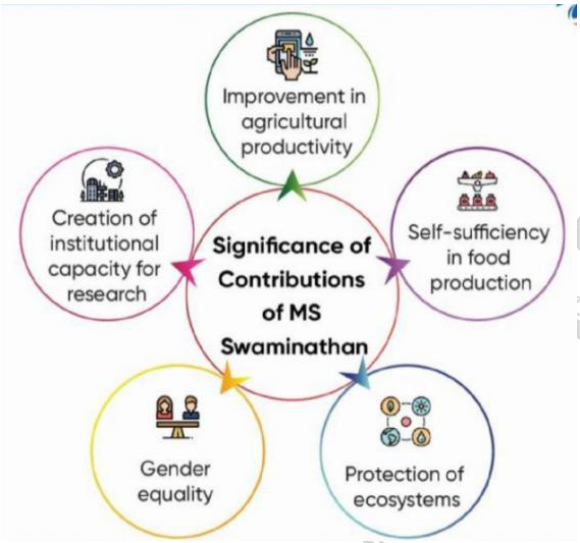
- ✓ Albert Einstein World Science Award, 1986
- ✓ World Food Prize, 1987
- ✓ UNEP Sasakawa Environment Prize, 1994

National awards:

- S.S. Bhatnagar Award for his contribution to biological sciences in 1961
- Padma Shri in 1967, Padma Bhushan in 1972 and Padma Vibhushan in 1989
- Indira Gandhi Prize for Peace, Disarmament and Development, 2000
- Lal Bahadur Shastri National Award, 2007



Conclusion

- MS Swaminathan championed the cause of farmers, ensuring that the fruits of scientific innovation reach the roots of our agricultural expanse, fostering growth, sustainability, and prosperity for generations to come. His ideas, research and vision for Indian agriculture still guides the policymakers to create a resilient, self-sufficient, and scientific agriculture ecosystem.

3. INDIAN COUNCIL OF AGRICULTURAL RESEARCH (ICAR)

Context:

- Recently, International Research Conference on From research to impact: Towards Just and Resilient Agri-Food Systems', hosted by the Indian Council of Agricultural Research (ICAR) and Consultative Group on International Agricultural Research (CGIAR) GENDER Impact Platform was inaugurated.

Role of ICAR towards better and resilient agri-food systems

- **Crop varieties:** Played a pioneering role in ushering Green Revolution through developing new high yielding varieties of different crops:
  - Rice varieties like Jaya (first rice variety released in India), Swarna, Pusa Basmati 1121, (world's longest basmati rice), Wheat varieties like HD 2967, DBW 187, HD 3086 etc, Fruit varieties like Amrapali, Pomegranate Bhagwa etc.
- **Seed programs**: deposited seeds in the Svalbard Global Seed Vault as safety duplicates.

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- Genomics: Helped establish the National Gene Bank in New Delhi, (second largest gene bank in the world), having more than 450 thousand indigenous and exotic accessions of crop species and a large cryopreservation bank
- ICAR partnered in the global genome sequencing of rice, wheat, tomato and potato and independently sequenced the genome of pigeonpea, jute, mango and fishes.

- **Integrated Farming**: Promotion of Integrated Farming System with its added advantage of waste recycling, climate. resilience and risk minimization.
  - Developed models of agro-forestry to promote agri-horti, agri-silvi and silvipastoral systems for raising farmers' income. Improving productivity of indigenous breeds of cattle through field progeny testing and selection. Indigenous breeds include Sahiwal cow, Tharparkar bull, Gir cattle, Banni buffalo and Kankrej cow.
  - Improved poultry farming with increasing productivity of desi birds such as CARI Nirbheek, Kadaknath, Ankaleshwar etc.
- **Health:** Vaccines and diagnostics developed by ICAR contributed to improved health management and enhanced livestock productivity.
  - Animal diseases namely Rinderpest, contagious bovine pleura-pneumonia, African horse sickness and Dourine eradicated from the country. Climate Smart Farming: It is being promoted through rainwater harvesting, community ponds, climate resilient varieties such as Rati ML 365, Pigeonpea BRG 1, BRG 2 and BRG 5, and hydroponic cropping. Bio-technology solutions: ICAR undertook crop biofortification to tackle malnutrition.
  - Biofortified crops include Solapur Lal (first biofortified pomegranate variety), Groundnut Girnar 4 and 5, Pusa Double Zero Mustard 31 (first canola quality Indian mustard variety) etc. Developed Pusa decomposer for in situ and ex situ crop residue decomposition to mitigate residue burning problems.
  - India developed first cloned buffalo in the world and Pratham, the world's first in-vitro fertilized buffalo calf.
- **Blue Revolution**: Promoted cage culture a low volume high density fish farming system which raised per unit productivity.
  - ICAR developed Ecosystem Health Index (EHI) to monitor coastal ecosystem, identified biofence to mitigate effects of ocean pollution and intensified identification of invasive alien species.
  - ICAR is working towards development of coldwater fisheries sector in all the Himalayan states.
- **Agricultural mechanization**: Developed technologies in agricultural engineering including millet mill, drone remote sensing, mulch laying machine etc.

4. NATIONAL TURMERIC BOARD (NTB)

Context:

- Recently, the Government of India notified the constitution of the National Turmeric Board in the state of telengana

About National Turmeric Board:

- It will focus on the development and growth of turmeric and turmeric products in the country.

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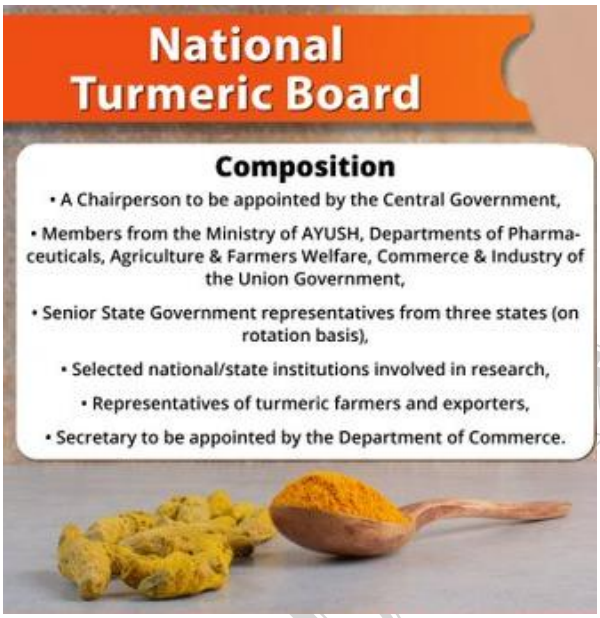
- It will especially focus on capacity building and skill development of turmeric growers for harnessing greater benefits out of value addition.
- The Board will also promote quality and food safety standards and adherence to such standards.

Composition

- The Board shall have a Chairperson, who will be appointed by the Central Government.
- It will have members from the Ministry of AYUSH, Departments of Pharmaceuticals, Agriculture & Farmers Welfare, Commerce & Industry of the Union Government, senior State Government representatives from three states (on rotation basis).
- Select national/state institutions involved in research, representatives of turmeric farmers and exporters.
- It will have a Secretary to be appointed by the Department of Commerce.
- The Ministry of Commerce will be the nodal department providing funds and infrastructure for the NTB, which will look into increased demand, usage, production, research, market linkage, exports and so on.



Key Objectives of the board

- Create demand in domestic and international markets through promoting new product and value addition.
- Create and improve infrastructure and logistics for exports of turmeric and turmeric products.
- Ensure quality and safety standards across the supply chain of turmeric.
- Document the traditional knowledge related to use of turmeric and its applications.
- Encourage studies, clinical trials and research on medicinal, health and wellness enhancing properties of turmeric

Turmeric (Curcuma Longa) in India

- India is the largest producer, consumer and exporter of turmeric in the world.
- Key Features:
  - ✓ Tropical plant belonging to the ginger family (Zingiberaceae)

- ✓ Temperature range: 20 to 35 °C
- ✓ Rainfall: 1500 mm or more
- ✓ Soil: Well drained red loamy soil
- ✓ Duration: Rhizomes are harvested 9 to 10 months after planting
- ✓ It contains a natural active ingredient called "Curcumin" which gives the turmeric its colour and has antioxidant and anti-inflammatory properties.
- ✓ The largest producing states of Turmeric are Maharashtra, Telangana, Karnataka and Tamil Nadu.
- ✓ With its strategic approach, it aspires to propel turmeric exports to a staggering USD 1 Billion by 2030, ultimately benefiting both growers and consumers.

5. NOBEL PRIZE 2023

- The Nobel Prizes for 2023 have recently been announced. The Swedish Academy has given the prize for literature, the Karolinska Institute for physiology or medicine, and the Royal Swedish Academy of Sciences has given the prizes for physics, chemistry, and economics

About Nobel Prize

- The Nobel Prize is an international award administered by the Nobel Foundation in Stockholm, Sweden, and based on the last will of Alfred Nobel (in 1895).
- Alfred Nobel, a Swedish inventor, and entrepreneur, is popularly known for inventing dynamite, blasting cap, and smokeless gunpowder
- Categories: Instituted in 1901, the prize is awarded annually from the bulk of fortune left by Alfred Nobel in five categories: Physics, Chemistry, Physiology or Medicine, Literature and Peace Economic Sciences, was instituted in. 1968 by the Royal Bank of Sweden and was first awarded in 1969.

What do the winners receive?:

- A Nobel diploma, each of which is a unique work of art;
- A Nobel medal;
- A cash prize of 10 million Swedish kronor. (They have to deliver a lecture. to receive the money).

Awarded By:

- The Royal Swedish Academy of Sciences awards the Nobel Prize in Physics, Chemistry and Economics. The Nobel Prize in Literature is awarded by the Swedish Academy, Stockholm, Sweden. The Nobel Assembly at Karolinska Institute, Stockholm, Sweden awards the Nobel Prize in Me (Physiology).
- The Norwegian Nobel Committee is responsible for the selection of eligible candidates and the choice Nobel Peace Prize laureates.

Nobel Prize in Economic Sciences 2023

- The "Royal Swedish Academy of Sciences" has recently decided to give the Nobel Prize in Economy 2023 (Sveriges Riksbank Prize in Economic Sciences) to Claudia Goldin, a Harvard University labour economist and economic historian, for working on the "women's labour market outcomes."

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- Claudia Goldin provided for the first time a comprehensive account of women's earnings and their labour market participation since the centuries.
- She revealed the key drivers of the gender gap in labour market and employment.
- She presented new and surprising facts that women's choices have been limited by marriage and domestic responsibility, family, etc.
- Although she accumulated the data from the United States, her insights and model reached across the world due to the findings of similar patterns in many countries.
- She showed that the female labour participation forms a U-shaped curve in the entire period (of 200 years).
- The participation of married ones has decreased with the transition from agrarian to industrial society due to the Industrial revolution in the 19th century, but increased due to the growth of the service sector in the early 20th century.
- The gap in the labour participation has increased after the birth of the first child.

Status of Gender Differences

- **Global Status**: Globally, around 50% women are in paid employment, while the equivalent figure for men is 80%.
  - ✓ In South Asia, only around 25% of women participate in labour market.
- **Status in India**: In India, the labour force participation rate among females is 24% and among males is 73.6% for 2022.
- **U-shaped relationship**: There is a posited U-shaped relationship between development (proxied by GDP per capita) and female labour force participation.
  - ✓ Women's labour force participation is high for the poorest countries (higher share of agriculture), lower for middle income countries, and then rises again among high income countries.
- **Earnings Gap**: When women work, they usually earn less. In India, the gender earnings gap is most skewed amongst self-employed workers.
  - ✓ In India, the earnings gap has reduced, and women earned 76% of what men did in 2017, compared to 70% in 2004. Since then, the gap has remained constant till 2021-22.
- **Opportunities:** Women are less likely to work in formal employment and have fewer opportunities for business expansion or career progression

Need for reducing gender differences:

- Most efficient use of society's resources
- Improved economic efficiency
- Improved labour productivity
- Increase in income levels and decrease in poverty
- Achievement of SDGs

What are the Favorable female labour force participation?

- **U-shaped curve**: Previously, it was concluded that there was a clear positive association between economic growth and the number of women in paid employment.

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- **Social norms**: Legislation or customs known as "marriage bars" often prevented married women from continuing their employment despite increased demand for labour.
- **Technological innovations**: Innovation of the contraceptive pill resulted in women delaying marriage and childbirth, thus increasing their education and career prospects
- **Monthly pay system**: Despite economic growth, increasing education levels among women and a doubling in the proportion of women working for pay, the earnings gap essentially stayed the same between 1930 and 1980.
- **Parenthood effect**: Women taking greater responsibility than men for childcare (care economy) makes their career. progression and earnings increases more difficult

Measures taken for reducing gender gap in India

- **Code on Social Security 2020**: Enhancement in paid maternity leave to 26 weeks, mandatory crèche. facility in the establishments having 50 or more employees, permitting women workers in the night shifts with adequate safety measures, etc. Code on Occupational Safety, Health and Working Conditions (OSH), 2020: Employment of women in the aboveground mines including opencast workings and in below ground working in technical, supervisory and managerial work where continuous presence may not be required.
- **Code on Wages 2019:** No discrimination in an establishment among employees on the ground of gender.
- **Training and skill development**: Training to women through network of Women Industrial Training institutes, National Vocational Training Institutes and Regional Vocational Training Institutes.

Mission Shakti : Mission Shakti comprises of two sub-schemes 'Sambal' and 'Samarthya' for safety and security of women and the empowerment of women respectively

- National Conference on Skilling in Non- Traditional Livelihood for Girls "Betiyan Bane Kushal"
- The Ministry in partnership with the Ministry of Skill Development and Entrepreneurship (MSDE) and the Ministry of Minority Affairs organized an inter-ministerial conference on Non-Traditional Livelihoods
- **Reducing gender differences in the workforce Assessment**: Policymakers who want to affect these differences must first understand why they exist.
- **Collective action**: Collective, coordinated and bold action. by private- and public-sector leaders will be instrumental in accelerating progress towards gender parity.
- **Investment:** Investments in providing women equal access to information, education and healthcare reaps large dividend in terms of gender parity.
- **Congenial environment:** Reforms to taxation, public spending, financial infrastructure and regulations, as well as labour markets that removes institutional barriers.
- **Access to microfinance**: An International Growth Centre (IGC) project in India found that greater access to microfinance loans led to a significant increase in female labour force participation with the effect driven by self- employment and not by salaried jobs.

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6. INDIA'S AVIATION INDUSTRY

Context:

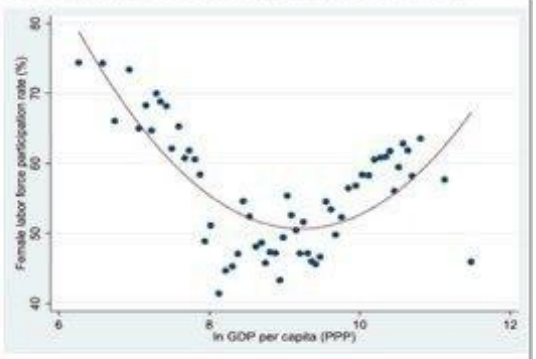
- India's aviation industry has witnessed remarkable growth in recent years. However, this rapid expansion. has also highlighted critical issues including severe. shortage of experienced pilots.

What is the Status of the Aviation Industry in India?

About: India's aviation industry is a collective sector encompassing all aspects of civil aviation within the country. It includes various components, such as airlines, airports, aircraft manufacturing, aviation services, and regulatory authorities.

Status:

- India has become the third-largest domestic aviation market in the world. India's airport capacity is expected to handle 1 billion trips annually by 2023.
- According to the data released by the Department for Promotion of Industry and Internal Trade (DPIIT), FDI inflow in India's air transport sector (including air freight) reached USD 3.73 billion between April 2000-December 2022.

Aspect	Key findings of her research
Historical Perspective 	Goldin's research challenged the belief that women's labour force participation always increased with economic growth. She looked at historical data spanning 200 years and found that women's involvement in economic activities varied.
	Before industrialization, more women worked in agriculture and cottage industries.
	With industrialization, work shifted to factories, limiting women's opportunities to work outside their homes.
	Goldin's research revealed a U-shaped curve in female labour force participation over time, influenced by structural changes and evolving social norms 
Marriage and Employment 	Goldin's work highlighted the impact of marriage on women's employment
	"Marriage bars" legislation often restricted married women from certain professions.
	Women's career decisions were influenced by the expectations based on their mothers' experiences.
Contraceptive Pills 	The availability of contraceptive pills in the 1960s allowed women to plan careers and motherhood.
	This led to greater educational and career opportunities in fields like law, economics, and medicine.
Gender-Based Pay Gap 	Despite progress in education and career choices, the gender-based pay gap persisted.
	The pay gap for women widened after the birth of the first child
	Women faced slower career advancement and lower earnings compared to men,

Status of the Industry

- India is now the world's third-largest domestic aviation market
- Number of Operational Airports in India has doubled from 74 in 2014 to 148 in 2023.
- Number of PPP airports is likely to increase from 5 in 2014 to 24 in 2024
- FDI Investment has reached to USD 3.73 billion from April 2000 to December 2022.

Potential of the Sector

- Increased Global Market share will boost India's growth and GDP
- Promotes balanced regional economic growth. For ex-Development of North East by air connectivity.
- Promotes the Growth of Indian Tourism sector
- Boost to manufacturing sector like the growth of maintenance, repair and overhaul (MRO) facilities.
- It has attracted significant FDI to the tune of around 3 bn dollars in the aerospace infrastructure.
- Increased Employment opportunities like the requirement of 10,900 additional pilots by FY30.

Challenges

- Increase in number of Grounded Unsafe Aircrafts.Over 160 aircraft are currently grounded (25% of the total fleet size)
- Supply chain Disruptions causing delays in aircraft deliveries and original equipment manufacturing.
- Duopoly in Indian Aviation Market with IndiGo (60% market Size) and Tata group airlines (20% market size).
- Heavy Financial Losses to the tune of $1.6 to 1.8 billion in FY24.
- Operational Disruptions like increase in turn-around time of airlines due to crew shortage
- Inflated projections causing bankruptcy. Failure of Kingfisher, Jet Airways and Go first on this front.

Way Forward

- Initiate reforms in the Directorate General of Civil Aviation (DGCA) like the head of DGCA must be a aviation professional rather than bureaucrats.
- Promote 'Start-up India' initiative in the field of maintenance, repair, and overhaul (MRO) facilities aviation sector.
- Rationalisation of taxes like the aviation fuel taxes which is the highest in the world.
- Modification of the India's Aircraft Act, 1934 and Aircraft Rules, 1937 to keep pace with the modern technology in aerospace, growth of industry and passenger traffic.

Significance of Aviation Infrastructure

- In India, there are large plains that make for good landing sites. It provides an excellent transition from railways
- Compared to other forms of transportation, it is the fastest way to move both people and cargo.
- Transporting expensive, light, and perishable items that cannot be moved by road or rail is made simple by the availability of air transportation.
- Physical impediments, such as rivers, mountains, and valleys, are absent in air transport, thus allowing for smooth movement around the world.
- It improves connectivity to smaller cities and the northeastern states. Thus increasing regional connectivity.
- Air travel is widely used during earthquakes, floods, accidents, and starvation while trains and roads are not very useful for rescue operations.
- It has significant strategic implications. It can be used to advance both internal and external security.

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Associated Challenges:

Infrastructure Constraints:

- **Airport Congestion**: Many major airports in India, including those in Mumbai and Delhi, face severe congestion, leading to delays and operational inefficiencies
- **High Operating Costs**: High taxes on aviation turbine fuel (ATF) and airport charges contribute to increased operating costs.
- **Pilot Shortages**: Airlines in India often struggle to recruit and retain experienced pilots, leading to disruptions and increased labor costs
- **Security Threats:** Beyond terrorism and hijacking, security concerns are increasingly associated with cyber threats to aviation infrastructure, which can disrupt operations and compromise passenger data.
- **Other Challenges**: Critics argue that the management of medical standards by Indian Air Force doctors has led to the grounding of a significant number of civilian pilots.

What Steps can be Taken to Re-energize the Aviation Sector in India?

- **Eco-Friendly Initiatives**: There is a need to Incentivize the development and use of electric or hybrid aircraft for short-haul flights, reducing emissions and operational costs.
- **Digital Twins for Maintenance:** There is a need to implement digital twin technology to create virtual replicas of aircraft, enabling predictive maintenance and reducing downtime.
- **Public-Private Partnerships (PPPs):** There is a need to foster collaboration between the government and private sector to co-invest in airport infrastructure development, ensuring world-class facilities.
- The number of PPP airports in India is likely to increase from five in 2014 to 24 in 2024.
- **Reducing the Pilot Gap**: There is a need to establish subsidized pilot training programs in collaboration with aviation. schools and academies.
- **Aviation Tourism Packages**: To make India a hub of Aviation tourism, our aviation industry can collaborate with the tourism industry to create innovative aviation-based tourism packages, offering scenic flights, adventure experiences, and aerial photography tours

7. BIDENOMICS

Context:

- The Year 2024 will be highly significant for the global economy due to elections in major influential economies: India, Russia, the UK, the EU, and the US; where in the US, the Bidenomics is supposedly going to be a major electoral plank.

About:

- Bidenomics is a term that is used to refer to any and every policy choice made by the Biden administration in the US.

According to the White House, Biden's economic vision is centered around three key pillars:

- Making smart public investments in America
- Empowering and educating workers to grow the middle class
- Promoting competition to lower costs and help entrepreneurs and small businesses thrive

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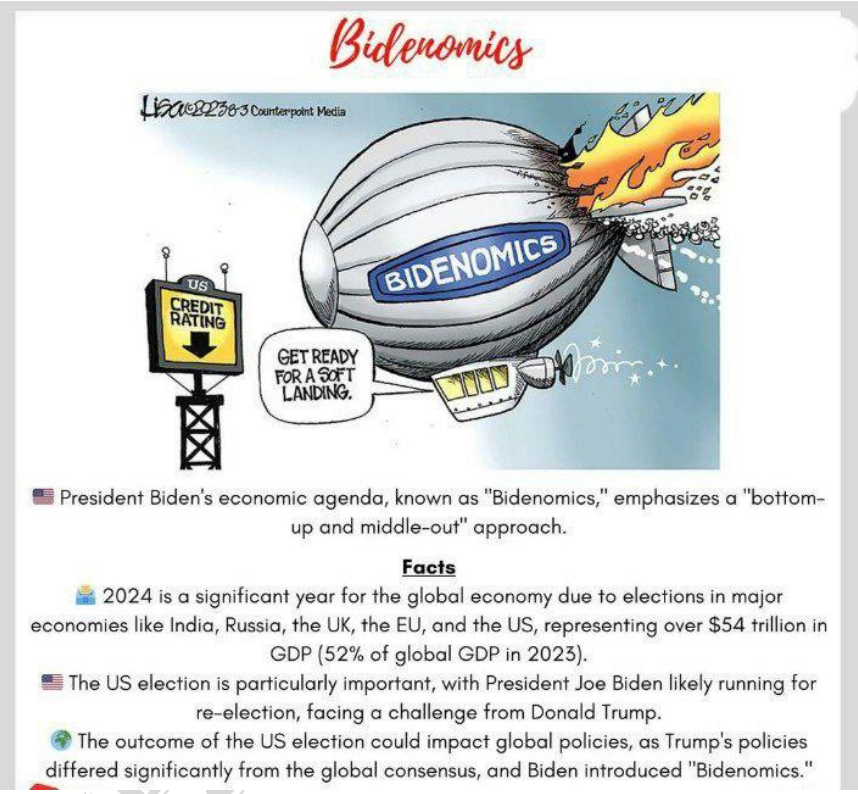
Features:

- Bidenomics involves policies that improve USA's physical and digital infrastructure, reduce its trade dependence on rivals such as China,
- Raise the living standards and opportunities available for the middle 40% and the bottom 50% of the US population and, boost job creation within its borders.
- Implementation:
- Bidenomics aimed to raise revenue via more and higher taxation, while on the other, it decided to make massive spending towards investments in clean energy and in reducing healthcare costs.



What is the Rationale Behind Bidenomics?

Reagan's Top Down Model:

- With the failure of Reagan's Top-Down model and trickle down approach, it was envisaged that similar initiatives can not bring results on the ground and groundbreaking initiatives are required to mitigate covid crisis.
- Present Context:
- The US recognized that some of Post-Covid challenges were rooted in a failed trickle-down theory which led to the proposition of a new Economic Model called Bidenomics to alter the trickle-down theory based on Reaganomics.

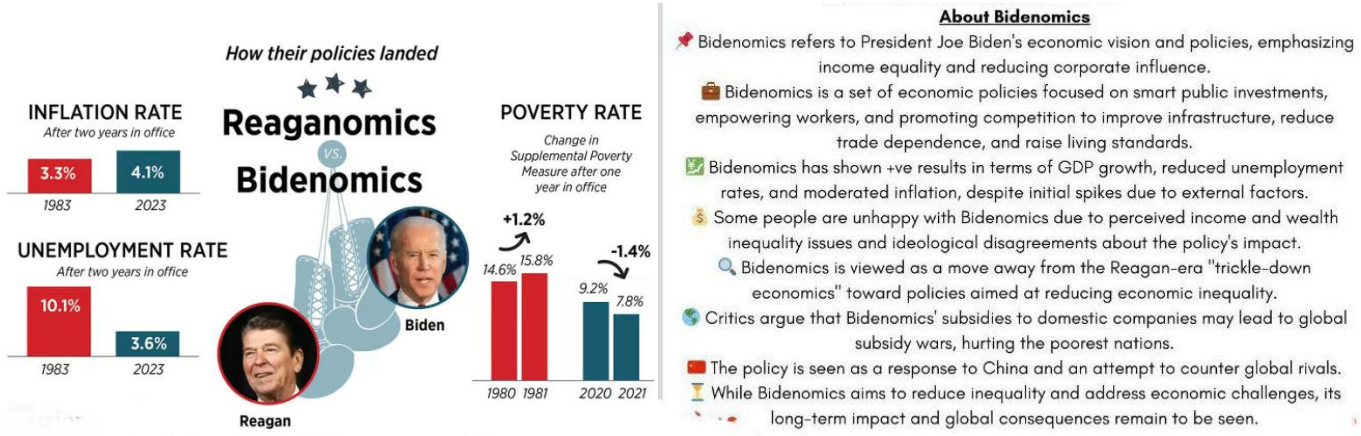
Did Bidenomics Work?

Macro-Indicators:

- As things stand, if one looks at the macro indicators — GDP, unemployment and inflation — the Biden administration seems to have done quite well.

Economic Recovery:

- The US economy continues to create millions of jobs at such a fast pace that there are two vacancies for every unemployed person in the economy.



What are the Economic Revival Initiatives Undertaken by India?

Faced with uncertainty in the last two years, the Government of India adopted strategies that combined a bouquet of safety-nets to cushion the impact of Covid Pandemic on vulnerable sections of society/business. Some of the initiatives are:

New Economic Policy:

- India announced a new economic policy in 2020, in response to the Covid-19 pandemic and its impact on the economy.
- The policy consists of a stimulus package of Rs 20 lakh crore, equivalent to 10% of GDP, to support various sectors and segments of the economy.

Production-linked Incentive (PLI) Scheme:

- India launched a PLI scheme in 2020, to boost manufacturing and exports in key sectors, such as automobiles, electronics, pharmaceuticals, textiles, and renewable energy.
- The scheme offers financial incentives to eligible manufacturers based on their incremental sales and investment over a period of five years.

Labour Codes:

- These are four codes that aim to consolidate and simplify central labor laws into four broad categories: wages, industrial relations, social security, and occupational safety and health.

Atmanirbhar Bharat Mission:

- Atmanirbhar Bharat Abhiyan (or Self-reliant India Mission)' with an economic stimulus package — worth Rs 20 lakh crores aimed towards achieving the mission was announced

8. CHIP SUPPLY CHAIN PARTNERSHIP

- Recently, the Union Cabinet has approved a Memorandum of Cooperation (MoC) between India and Japan on developing a semiconductor supply chain partnership.

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- In recent times, India is looking to establish itself as a reliable presence in the semiconductor supply chain, especially at a time when companies are looking to diversify from China, which has been the hub of electronics manufacturing.

What is the Significance of the Present Memorandum of Cooperation?

India-Japan Semiconductor Cooperation:

- The Memorandum of Cooperation (MoC) between India and Japan in the semiconductor supply chain recognizes the significance of semiconductors for industry and digital advancements.
- This MoC was initially signed in July between India's IT Ministry and Japan's Ministry of Economy, Trade, and Industry.

India's Semiconductor Ambitions:

- India is determined to establish a dependable presence in the global semiconductor supply chain while banking on its India Semiconductor Mission, particularly as companies seek alternatives to China, post Covid pandemic.
- India has initiated a $10 billion plan to bolster local chip production, with companies like Micron Technology setting up assembly and packaging facilities in Gujarat.

India-US Collaboration in Semiconductor Industry:

- India and the United States are collaborating to strengthen chip supply chains. Both the countries reaffirmed their commitment to building resilient global semiconductor supply chains.

Major Investments in India's Semiconductor Sector:

- US chip companies like Microchip Technology and AMD are investing millions of dollars in India to expand their operations and set up research and development facilities.
- Additionally, Lam Research and Applied Materials are planning substantial investments in engineering and training programs in India's semiconductor sector.

What is the India Semiconductor Mission (ISM)?

About:

- The ISM was launched in 2021 with a total financial outlay of Rs 76,000 crore under the aegis of the Ministry of Electronics and IT (MeitY).
- It is part of the comprehensive program for the development of sustainable semiconductor and display ecosystems in the country.
- The programme aims to provide financial support to companies investing in semiconductors, display manufacturing and design ecosystem.

Components:

Scheme for setting up of Semiconductor Fabs in India:

- It provides fiscal support to eligible applicants for setting up of Semiconductor Fabs which is aimed at attracting large investments for setting up semiconductor wafer fabrication facilities in the country.

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Scheme for setting up of Display Fabs in India:

- It provides fiscal support to eligible applicants for setting up of Display Fabs which is aimed at attracting large investments for setting up TFT LCD / AMOLED based display fabrication facilities in the country.

Design Linked Incentive (DLI) Scheme:

- DLI scheme offers financial incentives, design infrastructure support across various stages of development and deployment of semiconductor design for Integrated Circuits (ICs), Chipsets, System on Chips (SoCs), Systems & IP Cores and semiconductor linked design.

What are the Challenges Regarding Semiconductor Manufacturing in India?

Extremely Expensive Fab Setup:

- A semiconductor fabrication facility (or fab) can cost multiples of a billion dollars to set up even on a relatively small scale and lagging by a generation or two behind the latest in technology.

Higher Investment:

- Semiconductors and display manufacturing is a very complex and technology-intensive sector involving huge capital investments, high risk, long gestation and payback periods, and rapid changes in technology, which require significant and sustained investments.

Minimal Fiscal Support from Government:

- The level of fiscal support currently envisioned is minuscule when one considers the scale of investments typically required to set up manufacturing capacities in the various sub-sectors of the semiconductor industry.

Lack of Fabrication Capacities:

- India has a decent chip design talent but it never built-up chip fab capacity. The Indian Space Research Organisation (ISRO) and the Defense Research and Development Organisation (DRDO) have their respective fab foundries but they are primarily for their own requirements and are also not as sophisticated as the latest in the world.
- India has only one old fab which is located in Mohali, Punjab.

Resource Inefficient Sector:

- Chip fabs are also very thirsty units requiring millions of litres of clean water, an extremely stable power supply, a lot of land and a highly skilled workforce.

What can be the Way Forward?

Consistent Fiscal Support for All the Elements:

- Considering India's considerable talent and experience, it may be best if the new mission focuses fiscal support, at least for now, on the chip-making chain including design centres, testing facilities, packaging, etc.

Maximising Self-Reliance:

- Future chip production shouldn't be a one-trick pony and must develop an ecosystem from design to fabrication, to packing and testing. India must also improvise research and development in this sector where it is currently lacking.

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Collaboration:

- Besides the US, India should also explore similar opportunities to collaborate with other countries such as Taiwan or other technologically advanced, friendly nations to promote the Domestic manufacturing and reduce import dependency in the Semiconductor Sector.

9. GLOBAL TAX EVASION REPORT, 2024

Latest Context:

Recently, the 'Global Tax Evasion Report 2024' was released by the European Union Tax Observatory.

More about the news:

- Many issues were highlighted in the report like tax evasion, the Global Minimum Tax (GMT) and the measures to tackle tax evasion.
- The report also mentioned the effects of international reforms adopted in the last 10 years.

What is Tax Evasion?

1) It is an illegal act of underreporting the income, hiding money in offshore (outside country) accounts, or engaging in other fraudulent activities to reduce the amount of taxes owed to the government.

2) It is a criminal offense, as it involves intentionally evading the payment of taxes that a person or entity legally owes. Tax evasion is considered a serious financial crime and is punishable by fines, penalties, and even imprisonment in many countries.

3) It is distinct from tax avoidance, which is the legal practice of minimizing one's tax liability through legitimate means such as taking advantage of tax incentives, deductions, and exemptions provided by tax laws.

Key Highlights of the Report are:

- Offshore Tax Evasion: Offshore tax evasion has come downin the last decade. In 2013, almost 10% of the world's GDP was stored in global tax havens (countries having very low tax rates), but now only 25% of this 10% remains untaxed.

Tax Rates:

- Many global billionaires have effective tax rates in between 0% to 0.5% of their wealth, due to the high use of shell (only exist in papers) companies to avoid income taxation.
- The billionaires in US have an effective tax rate of 0.5% of their wealth, while it is 0% in case of French billionaires.
- Profit Shifting by MNCs: Almost USD 1 trillion was shifted to tax havens by Multinational Corporations (MNCs) in 2022, which is equal to 35% of the profits they earned outside their home countries.
- Policy Choices: Things liketax evasion and profit shifting to tax havens are not natural occurrences but result of loopholes in policies. There is a need to analyse the consequences of tax policies and make improvements for better tax systems.

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Recommendations:

- The report advocates for a global minimum tax on billionaires, proposing a rate of 2% of their wealth. Institute mechanisms to tax wealthy people who have been long-term residents in a country and choose to move to a low-tax country.
- This measure is seen as essential for governments worldwide to increase their revenue, address wealth inequality, and fund critical services like education, healthcare, and infrastructure.
- Reform the international agreement on minimum corporate taxation to implement a rate of 25% and remove the loopholes in it that foster tax competition.
- Implement unilateral measures to collect some of the tax deficits of multinational companies and billionaires in case global agreements on these issues fail.
- Move towards the creation of a Global Asset Registry to better fight tax evasion.
- Strengthen the application of economic substance and anti-abuse rules.

Indian Measures to curb tax evasions:

- E-Invoicing
- Fugitive Economic Offenders Act, 2018
- The Black Money (Undisclosed Foreign Income and Assets)
- Imposition of Income Tax Act, 2015
- Prevention of Money Laundering Act, 2002
- Treaties such as Double Tax Avoidance Agreement (DTAA)
- Tax Information Exchange Agreement (TIEA)
- The Benami Transactions Informants Reward Scheme
- Reduced base corporate tax for existing companies to 22 per cent and new manufacturing firms to 15 per cent.

International Reforms to Combat Tax Evasion

- Global Minimum Tax (GMT): Applies a standard minimum tax rate globally, discouraging tax competition.
- OECD proposed a 15% corporate minimum tax on foreign profits of large multinationals.
- In October 2021, 136 countries, including India, set a 15% minimum global tax rate to prevent tax avoidance.
- Automatic Exchange of Information (2017): Introduced to combat offshore tax evasion by wealthy individuals.

Crop Switching to Millets

- This article is based on the news ”Shifting to millets increases groundwater recharge more than drip irrigation in India’s northern plains” which was published in the Hindustan Times. A new study published in the journal Nature Water highlighted benefits of switching to millets from cereal crops.

Crop Switching: A Path to Sustainable Agriculture

- The government has branded the grain ‘Shree Anna’, featuring it in menus across events such as the G20 summit, while the United Nations has designated 2023 as the Year of Millets
- The Ganga basin has seen a significant groundwater depletion in recent years, raising questions about the sustainability of present agricultural practices.

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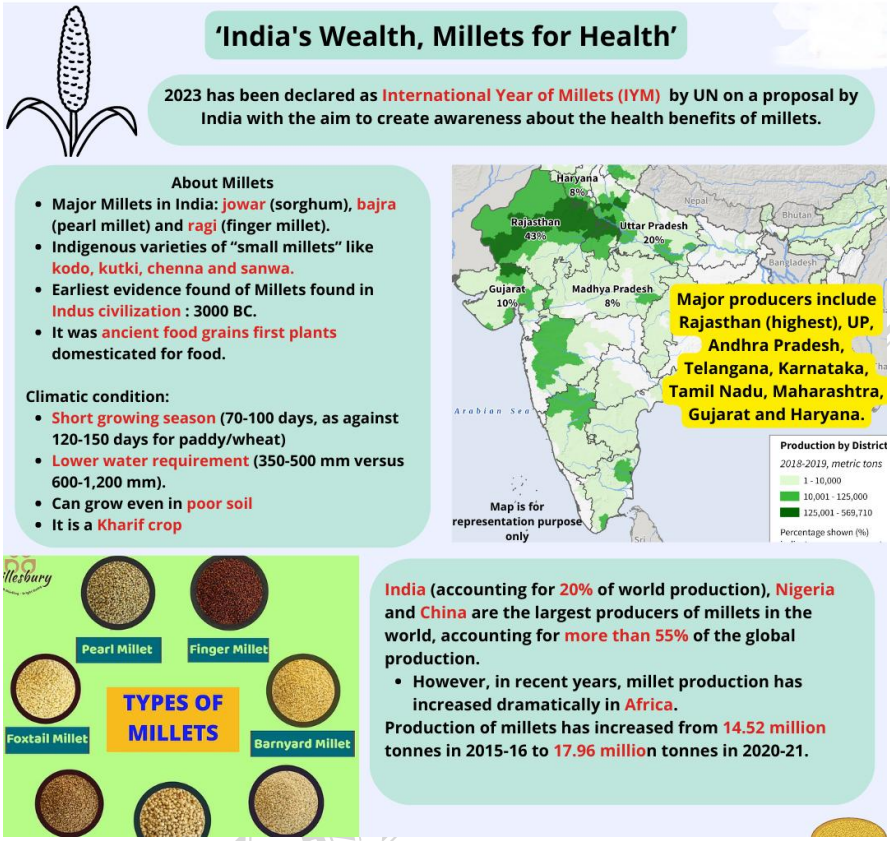
- Crop switching has garnered increasing attention as a viable solution to tackle the issue of unsustainable water consumption.
- However, its potential to produce co-benefits or trade-offs for other dimensions of sustainability i.e., food supply and farmers' profits remains largely unquantified.



Ecological Benefits:

- **Water savings**: Crop switching to millets lead to reduction in groundwater depletion and energy savings with.
- With crop replacement, there could be 55 per cent and 9 percent water savings in the Kharif and Rabi seasons, respectively compared with present practice.
- A combination of crop switching and drip irrigation reduced groundwater depletion by 78 per cent.
- A study on water productivity mapping of major Indian crops indicates that rice, wheat, and sugarcane consume 80% of the freshwater available in India.
- Drip irrigation improves net groundwater recharge by 34%, while crop switching achieves a 41% improvement.
- Drought resistant: Millets are hardy, low-cost, and climate- and drought-resilient crops.
- They require less water compared to many other crops, positioning them as a sustainable choice for agriculture in arid and semi-arid regions.
- Climate change: As native crops, they are ideal for farmers affected by climate change. Because they grow on arid terrain.
- **Economic Benefits**: The increases in farmers profit from the crop switching are 139 per cent and 152 per cent for the Kharif and Rabi seasons, respectively.

- ✓ Therefore, millet farming, besides conserving biodiversity and water use, also supports the most vulnerable of food growers such as women, tribal, small, and marginal farmers.
- ✓ They can be grown in dry land areas using farmyard manures, thus reducing the dependence on synthetic fertilisers.

- **Health and Nutritional Benefits**: Shifting from the rice–wheat system to nutri cereals provides more micronutrients and proteins than rice and wheat.
  - ✓ Millets are called Nutri-cereals and Superfoods because they are rich in niacin, zinc, and Vitamin A.
  - ✓ This combination is especially helpful in treating skin disorders, acne, and hormonal issues.
  - ✓ Including millet in diet can contribute to managing diabetes, lowering cholesterol, aiding weight management, and promoting digestive health.

What are the Millets/Nutri-cereals/Super foods?

- Definition: Millet is a collective term referring to a number of small-seeded annual grasses that are cultivated as staple crops in semi arid regions of Africa and Asia.
- Major millet varieties include sorghum (jowar), pearl millet (bajra), and finger millet (ragi/mandua)
- Minor millets encompass foxtail millet (kangani/kakun), proso millet (cheena), kodo millet (kodo), barnyard millet (sawa/sanwa/jhangora), little millet (kutki)
- Pseudo millets—buckwheat (kuttu) and amaranthus (chaulai).

Climatic conditions

- Millets are primarily a kharif crop in India, predominantly cultivated in rainfed conditions, requiring less water and agricultural inputs than other staple crops.

Largest producers States in India

- ✓ According to the latest NABARD report, millet cultivation is prominently concentrated in Rajasthan (35.5%), Maharashtra (20%), Karnataka (13.3%), and Uttar Pradesh (8.8%).

- **Largest Productivity in India**
  - ✓ Andhra Pradesh stood in the first place in the country in millet productivity in 2022, as per the National Bank For Agriculture And Rural Development (NABARD) annual report 2022-23.
- **Largest producing country:**
  - ✓ India is the largest millet producer in the world, with a share of 44%, followed by China (~9%) and Niger (~7%).
  - ✓ India produces 80 per cent of Asia's and 20 per cent of the globe's production that is led by Africa and the Americas.
  - ✓ India is the second-largest exporter of millets.

What are the challenges associated with Millet cultivation?

- **Demand side issue:** Taste perceptions, reduced per capita consumption due to urbanization and longer preparation times are the biggest barriers in millets consumption.

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- **Supply side issues**: Relatively low-profit margins, guaranteed minimum support price (MSP) for wheat and rice, short shelf life leading to spoilage concerns, and public distribution of wheat and rice.
- **Low yields**: Compared to wheat, rice and maize, millets have lower productivity due to their cultivation in marginal lands in rainfed farming and non-adoption of improved cultivars.
- **Poor shelf life:** The relatively short shelf life of millets increases risks of spoilage in the absence of appropriate storage.
- **Minimum support price (MSP):** The low margins associated with millet production are exacerbated by the guaranteed MSP for wheat and rice, vis-à-vis other crops, creating disincentives.
- **Infrastructure and value chain**: The infrastructure for millet cultivation, processing, and marketing is often inadequate, particularly in rural areas.

What initiatives has the government taken to promote millet production?

- **Global Millets (Shree Anna) Conference**: To stimulate the exports of millets from India and provide market linkage to the producers.
- **Millet International Initiative for Research and Awareness(MIIRA):** It aims to connect millet research organisations across the world while also supporting research on these crops.
- **GST on millets**: Food preparation of millet flour containing at least 70 per cent of composition by weight, will have nil GST when sold loose without branding.
- **Raichur Declaration**: The conclave initiated by NABARD outlined a series of commitments like enhancing production and productivity of millets.
- **Millet Challenge**: Through the Atal Innovation Mission, it aimed at addressing value chain challenges.

Way Forward

- **Quality inputs:** This entails providing quality seeds, with better efficiencies in processing so that the recovery improves from about 55 per cent in the case of minor millets to over 70 per cent.
- **Millet FPOs:** For farmers to realise higher prices for millets, better post-production linkages, promotion of farmer producers' organisations (FPOs) and stronger processing value chains for millets are needed.
- **Focus on women and indigenous communities**: Awareness among women and tribal farmers could help to achieve national goals of millet output and global goals related to sustainable agriculture, production, and consumption.
- **Diversification of the PDS basket**: It would improve prices of millets and, in turn, encourage the diversification of cropping patterns.
- **Strategic marketing and export promotion**: There is a need for linking small and marginal millet farmers to online marketing platforms, such as e-NAM.

10. FOSTERING SUSTAINABLE AGRIFOOD SYSTEM

Context:

- Recently, the Ministry of Agriculture & Farmers Welfare has inaugurated the 16th Agricultural Science Congress (ASC) in Kochi, Kerala in order to promote Sustainability in the Agri-Food System.

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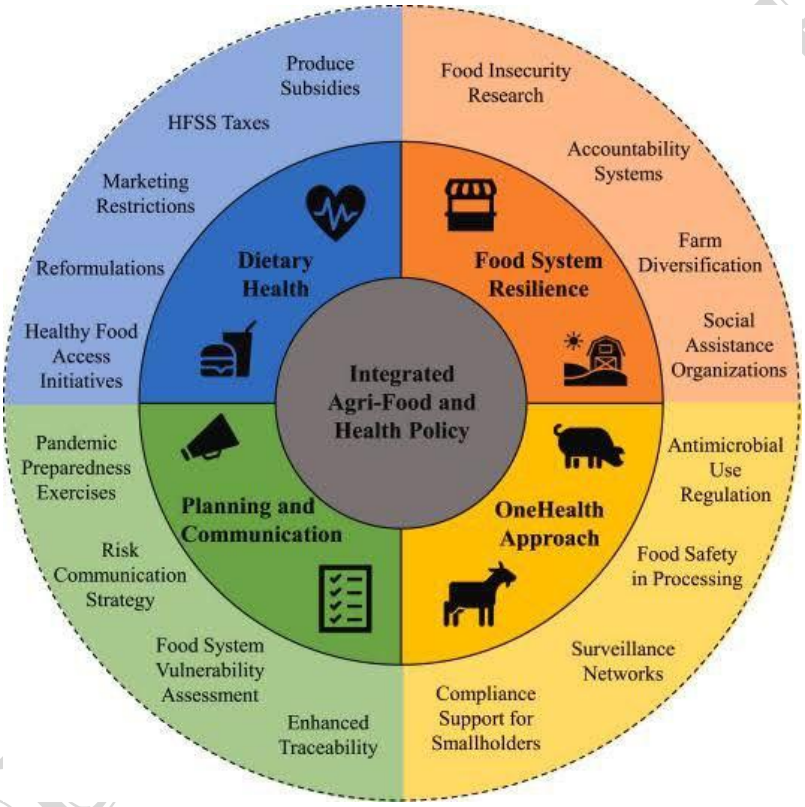
- Organized by the National Academy of Agricultural Sciences (NAAS), the ASC will come out with recommendations that facilitate the agriculture sector for moving towards a path of greater sustainability.

What are Sustainable Agri Food Systems?

About:

- Sustainable agri-food systems encompass a holistic approach to agricultural production, distribution, consumption, and waste management that is environmentally sound, socially equitable, and economically viable.
- These systems aim to meet current food needs while ensuring long-term sustainability, minimizing negative impacts on the environment, improving livelihoods, and promoting social well-being.
- In 2020, global agrifood systems emissions were 16 billion tonnes of carbon dioxide equivalent, an increase of 9 % since 2000.



Need for Adopting Sustainability in Agri Food Systems:

Rising Demand for Food:

- The increasing global demand for food necessitates sustainable agri-food systems to ensure sufficient and consistent food production to meet the needs of a growing population.

Environmental Degradation:

- Widespread environmental degradation caused by unsustainable agricultural practices underlines the urgency to transition to sustainable methods to mitigate further harm to the environment.

Climate Change Challenges:

- Climate change poses a significant threat to agriculture. Sustainable practices are essential to adapt to these challenges and reduce the sector's contribution to climate change.

- There are several sustainable and climate resistant agricultural practices in India which are recognised by the GIAHS (Globally Important Agricultural Heritage Systems), like Pokkali rice, Kuttanad below Sea Level Farming System of Kerala etc.

How can Sustainability be Adopted in Agri Food Systems?

Enhanced Technological Interventions:

- Scientific innovations and advanced technological interventions are pivotal for sustainable agricultural practices, aiding in efficient resource use and reducing negative environmental impacts.

Genome Editing and Modern Technologies:

- Genome editing and other modern technologies are highlighted as core tools for technological breakthroughs in agriculture, addressing limitations of traditional breeding methods.

Carbon-Neutral Agricultural Practices:

- Transitioning to carbon-neutral agricultural practices can be adopted to mitigate climate impacts, promote environmental sustainability, and contribute to global efforts to reduce carbon emissions.

What are the Issues in Adopting a Sustainable Agrifood System?

Food Waste and Loss:

- A significant portion of food is wasted at various stages of the food supply chain, from production to consumption. Addressing food waste and loss is critical to improving the sustainability of the food system.

Climate Change and Environmental Impact:

- Agriculture is a major contributor to greenhouse gas emissions, deforestation, water pollution, and soil degradation. Implementing sustainable practices to mitigate these impacts is essential for a sustainable food system.

Resource Scarcity:

- Depletion of natural resources such as water, arable land, and energy poses a challenge to sustainable food production. Efficient use of resources and adopting sustainable farming practices is crucial.

Biodiversity Loss:

- Modern agriculture practices often lead to loss of biodiversity, affecting ecosystem services and disrupting natural balances. Promoting biodiversity-friendly farming approaches is vital for a sustainable food system.

Monoculture and Crop Diversity:

- The dominance of monoculture farming can lead to vulnerability in the food supply. Encouraging crop diversity and sustainable farming systems can enhance resilience and sustainability.

11. BOND YIELD

Context:

- Recently, Reserve Bank of India (RBI) decision for **Open Market Operation (OMO) sale of government securities** (G-Sec) triggered a **spike in bond yields to their highest level** in FY 2023-24.

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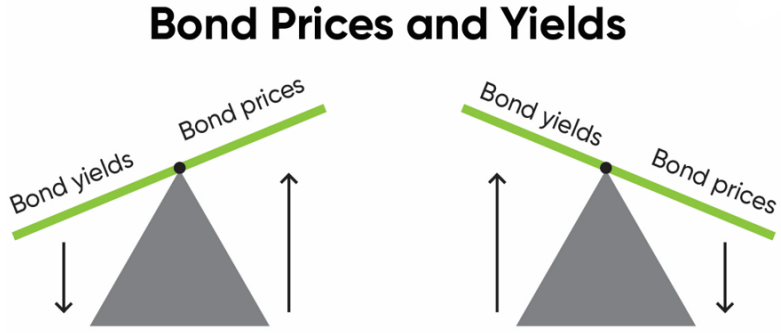
- RBI uses OMOs in order to **adjust the rupee liquidity conditions** in the market on a durable basis.

- A bond is a **debt instrument** in which an **investor loans money to an entity** (typically corporate or government) which borrows the funds for a defined period of time at a **variable or fixed interest rate.**
  - Bonds are used by **companies, municipalities, states and sovereign governments to raise money** to finance a variety of projects and activities.
  - A G-Sec is a tradeable instrument **issued by the Central Government or the State Governments**. It acknowledges the **Government's debt obligation**.
  - Such securities are **short term** (usually called **treasury bills**, with original maturities of less than one year) or long term (usually called **Government bonds or dated securities** with original maturity of one year or more).
- A bond's yield is the **return an investor expects** to receive each year over its term to maturity.
  - For the investor, the bond yield is a **summary of the overall return** that accounts for the remaining interest payments and principal they will receive, relative to the price of the bond.
  - The yield is also commonly referred to as an **interest rate, or the "cost of borrowing" to an issuer**.
- If market interest rate levels rise, the price of a bond falls. Conversely, if interest rates or market yields decline, the price of the bond rises.
- The yield of a bond is **inversely related to its price.**
- When the price of a bond falls, yields rise.



12. MINIMUM SUPPORT PRICE

Context:

- Recently, the Centre has announced hikes in the Minimum Support Price (MSP) for wheat and five other Rabi Crops for the 2024-25 marketing season.
- The most significant increase is for wheat, with a Rs 150 per quintal hike, the highest since 2007-08.
- Wheat is a crucial rabi crop and is the second-largest crop in terms of area coverage in India and plays a crucial role in the economy.

What is the Minimum Support Price?

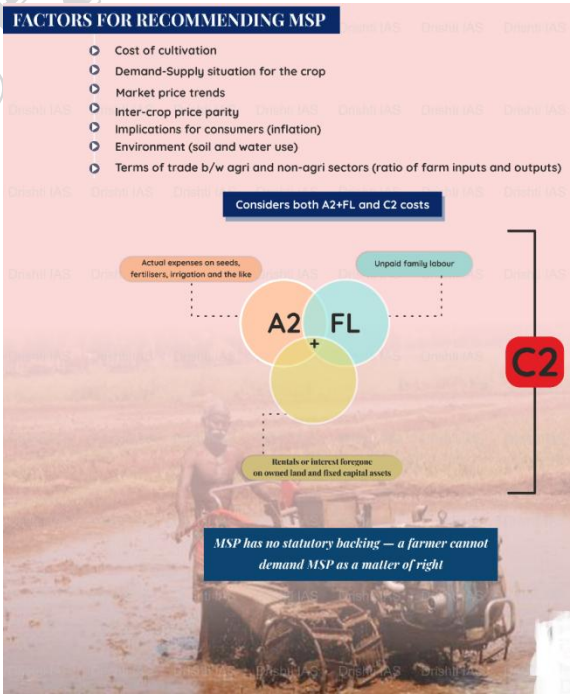
About:

- MSP is the guaranteed amount paid to farmers when the government buys their produce.

- MSP is based on the recommendations of the Commission for Agricultural Costs and Prices (CACP), which considers various factors such as cost of production, demand and supply, market price trends, inter-crop price parity, etc.
- CACP is an attached office of the Ministry of Agriculture and Farmers Welfare. It came into existence in January 1965.
- The Cabinet Committee on Economic Affairs (CCEA) chaired by the Prime Minister of India takes the final decision (approve) on the level of MSPs.
- The MSP is aimed at ensuring remunerative prices to growers for their produce and encouraging Crop Diversification.

Crops Under MSP:

- The CACP recommends MSPs for 22 mandated crops and fair and remunerative price (FRP) for sugarcane.
- The mandated crops include 14 crops of the kharif season, 6 rabi crops and 2 other commercial crops



Need for MSP:

- The twin droughts of 2014 and 2015 forced the farmers to suffer from declining commodity prices since 2014.
- The twin shocks of Demonetisation and the Rollout of GST, crippled the rural economy, primarily the non-farm sector, but also agriculture.
- The slowdown in the economy after 2016-17 followed by the pandemic further ensured that the situation remains precarious for the majority of the farmers.
- Higher input prices for diesel, electricity and fertilisers have only contributed to the misery.
- It ensures that farmers receive a fair price for their crops, which helps in reducing farm distress and poverty. This is particularly crucial in states where agriculture is a major source of livelihood.

What are the Concerns Related to MSP in India?

Limited Extent:

- The MSP is officially announced for 23 crops, but in practice, only two, rice and wheat, are extensively procured and distributed under the National Food Security Act (NFSA).
- For the rest of the crops, the MSP implementation is ad-hoc and insignificant. This means that the majority of farmers growing non-target crops do not benefit from the MSP.

Ineffective Implementation:

- The Shanta Kumar Committee, in its 2015 report, revealed that only 6% of the MSP was actually received by farmers.
- This suggests that a significant portion of farmers, around 94%, do not benefit from the MSP. The primary reason for this is inadequate procurement mechanisms and market access for farmers.

Skewed Crop Dominance:

- The focus on MSP for rice and wheat has led to a skewed cropping pattern in favor of these two staples. This overemphasis on these crops can have ecological, economic, and nutritional implications.
- It may not align with market demands, thereby limiting income potential for farmers.

Middlemen Dependency:

- The MSP-based procurement system often involves intermediaries such as middlemen, commission agents, and officials from Agricultural Produce Market Committees (APMCs).
- Smaller farmers, in particular, may find it challenging to access these channels, leading to inefficiencies and reduced benefits for them.

Burden on Government:

- The government shoulders a significant financial burden in procuring and maintaining buffer stocks of MSP-supported crops. This diverts resources that could be allocated to other agricultural or rural development programs.

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Way Forward

- To encourage crop diversification and reduce the dominance of rice and wheat, the government can gradually expand the list of crops eligible for MSP support. This will provide farmers with more choices and promote the cultivation of crops in line with market demand.
- Instead of providing MSP for all crops across all regions, the government can focus on setting MSPs for crops that are essential for food security and those with a demonstrated impact on farmer livelihoods. This targeted approach can help optimize resource allocation.
- Improve and modernize procurement mechanisms to ensure that farmers have access to MSPs. This may involve creating more efficient procurement systems, reducing middlemen, and expanding the reach of procurement agencies.

13. UN Trade and Development Report 2023

Latest Context:

- Recently, the UNCTAD released its 2023 Trade and Development Report, offering insights into global economic trends and development challenges.

Global Economic Outlook

- The world economy is expected to grow by 2.4% in 2023.
- Most regions, except East and Central Asia, have experienced a slowdown since 2022.

Concerning Trends

- A growing concern revolves around the increasing debt burden of less affluent nations.
- Major regions are witnessing sluggish economic growth.
- Multilateral responses to global challenges have proven inadequate.

India's Economic Projections

- India is forecasted to achieve a growth rate of 6.6% in 2023 and 6.2% in 2024.
- Domestic growth in India is driven by contributions from the external sector, private sector, and government initiatives.

Challenges in India

- India faces challenges such as an 8.5% unemployment rate in June 2023 and rising income inequality.

Key Recommendations:

Financial Sustainability:

- Central banks should prioritize long-term financial stability for both the private and public sectors.

Social Protection:

- Increase real wages and strengthen comprehensive social protection programs.

Energy Transition:

- Invest in the energy transition process in developing countries to promote sustainability.

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Regulating Trade:

- Develop a systemic approach at the international level to regulate commodity and food trading.

United Nations Conference on Trade and Development (UNCTAD):

Overview:

- Established as a permanent intergovernmental body by the United Nations General Assembly in 1964.

Headquarters located in Geneva.

Functions

- Facilitates equitable participation of developing countries in the global economy.
- Supports developing nations in utilizing trade, investment, finance, and technology for inclusive and sustainable development.

Membership

- Comprises 195 member states, including India.

Reports Published by UNCTAD

- Trade and Development Report
- World Investment Report
- The Least Developed Countries Report
- Economic Development in Africa Report
- Digital Economy Report
- Technology and Innovation Report
- Review of Maritime Transport

14. PROMPT CORRECTIVE ACTION (PCA) FRAMEWORK

- RBI to extend PCA supervisory norms to Govt-owned NBFCs from October 2024.

What is Prompt Corrective Action (PCA)?

- History - RBI initiated the Scheme of Prompt Corrective Action (PCA) in 2002.
- In early 2018, there were 12 banks under PCA framework. Of these, 11 were PSBs.
- Due to recapitalization & corrective measures there were only six banks (all PSBs) under the PCA framework as of March 2019.
- Objective - Prompt Corrective Action or PCA is a framework under which financial institutions with weak financial metrics are put under watch by the RBI.
- Until now, the RBI had imposed PCA only on banks. This is the first time PCA framework is extended to NBFCs.
- The move comes in the wake of large NBFCs such as IL&FS, DHFL, SREI Group and Reliance Capital getting into financial trouble over the last few years.
- Applicability - The PCA framework for NBFCs comes into effect from October 1, 2022, based on their financial position on or after March 31, 2022.

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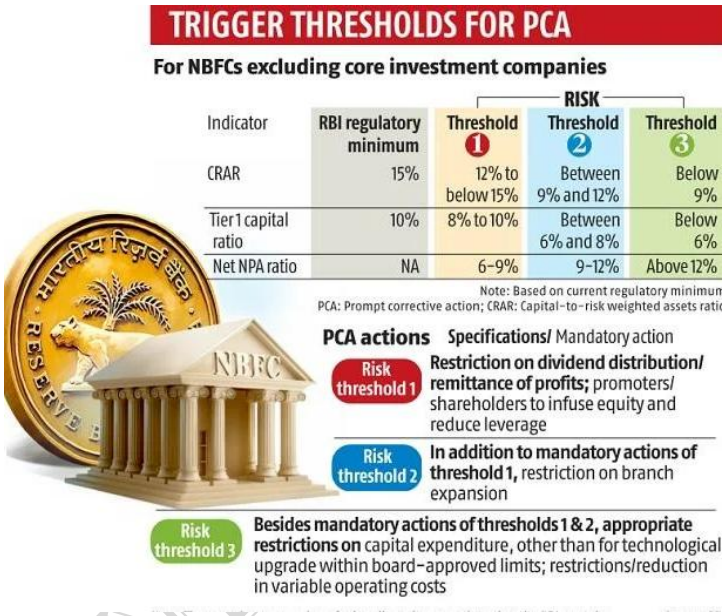
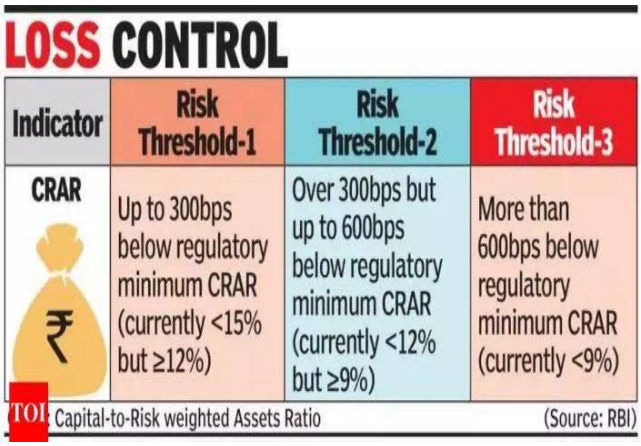
- The framework will apply to all deposit-taking NBFCs, excluding government companies, and all non-deposit taking NBFCs in the middle, upper and top layers.
- Implications - This is a welcome move as it will stop bad lenders from going worse rather than brushing the issue aside.
- Safer NBFCs will translate to a safer overall financial system.
- The PCA framework for NBFCs will be reviewed after 3 years.

What are the tracking indicators?

- The central bank will track three indicators
- Capital To Risk-Weighted Assets Ratio (CRAR) - It is bank's available capital expressed as a percentage of a bank's risk-weighted credit exposures.
- Tier I leverage ratio - It is the relationship between a banking organization's core capital and its total assets.
- Net Non-Performing Assets (NNPAS) Including Non-Performing Investments (NPIS). NPA are loans for which the principal or interest payment remained overdue for a period of over 90 days
- In the case of core investment companies (CICs), the RBI will track
- Adjusted Net Worth/Aggregate Risk Weighted Assets.
- Leverage Ratio
- NNPAs, including NPIs.





What Corrective Actions will be taken under PCA?

There are 2 types of Corrective Actions.

- Mandatory Corrective Actions
- Discretionary Corrective Actions
- Based on the risk threshold, the RBI may prescribe discretionary corrective actions in addition to mandatory corrective actions.
- Mandatory Corrective Actions under PCA are as follows.
- For Threshold limit 1 - There will be restriction on
- Dividend distribution/remittance of profits,

- Requiring promoters/shareholders to infuse equity and reduce leverage,
- Restriction on issue of guarantees or taking on other contingent liabilities on behalf of group companies (only for CICs).
- For Threshold limit 2 - In addition to restrictions under condition 1, the RBI may
- Restrict branch expansion.
- For Threshold limit 3 - In addition to restrictions under condition 1 & 2, the RBI may
- Impose curbs on capital expenditure other than for technological upgradation.
- Restrict/ directly reduce variable operating costs.

Discretionary Corrective Actions - Under this, the RBI may

- Undertake resolution of NBFC by amalgamation, reconstruction, splitting.
- File an insolvency application under the IBC and issue show-cause notice for cancellation of certificate of registration and winding up of the NBFC.
- Recommend to promoters/shareholders to bring in new management/board;
- Remove managerial persons under the RBI Act, as applicable;
- Seek removal of director and/or appointment of another person as director in his place;
- Supersede the board under the RBI Act and appoint an administrator among others.
- PCA restrictions will be withdrawn if there is no breaches in risk thresholds in any of the parameters are observed as per four continuous quarterly financial statements
- However, one of statements should be annual audited financial statement (subject to assessment by RBI) after a RBI led supervision

What will be the implications?

- The thresholds around total capital adequacy and Tier-I capital for classification of an NBFC in the PCA category are liberal
- However some entities could breach the net NPA criterion of more than 6%, if the asset quality does not improve.
- Once PCA guidelines are applicable entities are expected to bring the NPA levels under control by improving provisions or effecting write-offs.
- However the sectoral growth will be impacted in the near term, as entities tighten their credit norms and operational focus shifts towards collections.

Card-on-File Tokenisation

- Recently, the Reserve Bank of India (RBI) proposed to introduce Card-on-File Tokenisation (CoFT).

About Card-on-File Tokenisation:

- Tokenisation refers to replacement of actual credit and debit card details with an alternate code called the "token", which will be unique for a combination of card, token requestor and device.

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- This shall be unique for a combination of card, token requestor (i.e. the entity which accepts request from the customer for tokenisation of a card and passes it on to the card network to issue a corresponding token) and the merchant (token requestor and merchant may or may not be the same entity).
- Advantage: A tokenised card transaction is considered safer as the actual card details are not shared with the merchant during transaction processing.
- Customers who do not have the tokenisation facility will have to key in their name, 16-digit card number, expiry date and CVV each time they order something online.

What is Card-on-File transaction?

- It is transaction where in cardholders authorizes merchants to store their payment information securely and bill cardholders' stored accounts for future purchases.

15. CRITICAL AND STRATEGIC MINERAL:

Context:

- Recently, the Union Cabinet has approved amendment of 2nd Schedule of the Mines and Minerals (Development and Regulation) Act, 1957 ('MMDR Act') for specifying rate of royalty in respect of 3 Critical and Strategic minerals, namely, Lithium, Niobium and Rare Earth Elements (REEs).
- This will enable the Central Government to auction blocks for Lithium, Niobium and REEs for the first time in the country.

What are Royalty Rates?

About:

- Mineral royalty is the payment that the government (the sovereign owner) receives for allowing the extraction of mineral resources.
- A report by the Centre for Social and Economic Progress (CSEP) states that India has some of the highest mineral royalty rates in the world, which affects the competitiveness of its mining sector.

Key Amendments:

- The 2nd Schedule of the MMDR Act provides royalty rates for various minerals. The amendment significantly lowers the royalty rates for these minerals.
- For instance, Lithium mining will attract a royalty of 3% based on the London Metal Exchange price.
- Niobium too, will be subject to 3% royalty calculated on the ASP, in case of both primary and secondary sources.
- REEs will have a royalty of 1% based on the ASP (Average Sale Price) of the Rare Earth Oxide (the ore in which the REE is most commonly found).
- The Ministry of Mines has laid down the way to calculate the ASP of these minerals, on the basis of which the bid parameters will be determined.
- Domestic mining is sought to be encouraged with the aim of lowering imports, and setting up related end-use industries such as Electric Vehicles (EVs) and energy storage solutions.

What is the Significance of the Move?

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Private Sector Participation:

- The amendment paves the way for the participation of the private sector through auctioning concessions for these minerals, as the government removed them from the list of 'specified' atomic minerals.

Global Benchmarking and Commercial Exploitation:

- By specifying new royalty rates aligned with global benchmarks, the government is encouraging commercial exploitation of these minerals through competitive auctions, either conducted by the central government or states.

Boosting Domestic Mining and Industries:

- The move aims to encourage domestic mining to reduce imports and promote the establishment of end-use industries like electric vehicles and energy storage solutions.

Commitment to Net-Zero Emissions:

- The critical minerals targeted in this amendment are viewed as essential for India's energy transition and its commitment to achieving Net-Zero Emissions by 2070.

Strategic Push Against China:

- The effort to enter the lithium value chain is part of India's strategic push to reduce dependence on China, a major source of lithium-ion energy storage products.

What are the Key Points Related to Lithium, REEs, Niobium?

Lithium:

- Lithium is a vital ingredient for rechargeable lithium-ion batteries used in electric vehicles, laptops, and mobile phones. India, currently reliant on imports for lithium, has made exploration efforts in regions like Jammu & Kashmir, Rajasthan, Gujarat, Odisha, and Chhattisgarh to extract lithium.

Rare Earth Elements (REEs):

- REEs are crucial for permanent magnet motors used in electric vehicles. They are primarily sourced from or processed in China, presenting a supply chain challenge.
- REEs mining can have environmental implications, and India's efforts aim to secure a supply of REEs while considering environmental sustainability.

Niobium:

- Niobium is used to enhance the strength of alloys, making them particularly useful in various applications such as jet engines, buildings, oil and gas pipelines, magnets for MRI scanners, etc.
- Nobium is a silvery metal that is very resistant to corrosion due to a layer of oxide on its surface.

What is the Scenario of the Mining Sector in India?

Backbone of Manufacturing:

- Mining industry plays a crucial role in the country's economy, serving as the backbone for manufacturing and infrastructure sectors.

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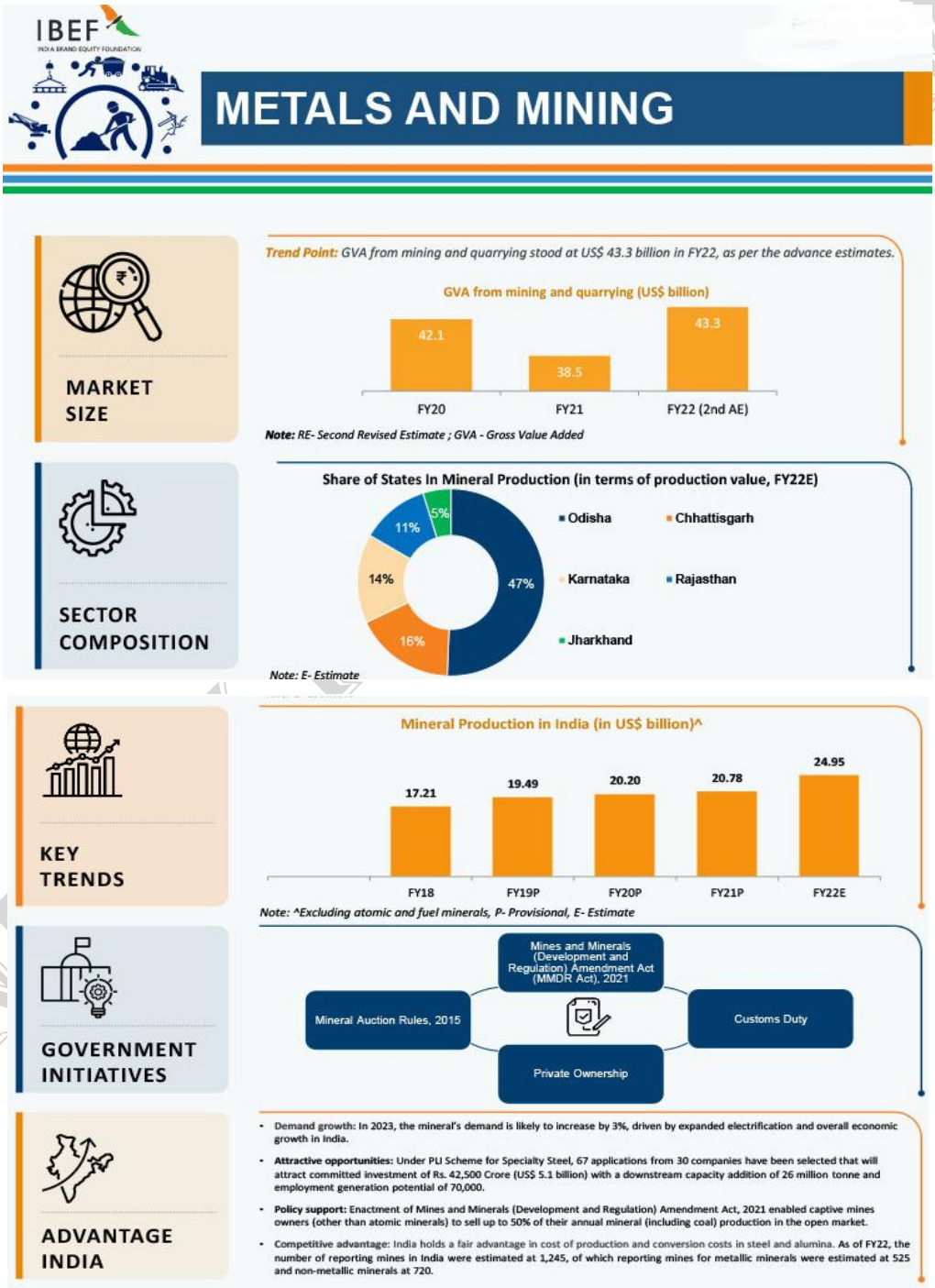
- Mining and quarrying sector contributes around 2.5% of the Gross Domestic Product (GDP).

Scope:

- India ranks 4th globally in terms of iron ore production and is the world's 2nd largest coal producer as of 2021.
- Combined Aluminum production (primary and secondary) in India stood at 4.1 MT per annum in FY21 becoming the 2nd largest in the world.
- As per World Mineral Production, 2016-20, British Geological Survey, India's ranking in 2020 in world production in term of quantity.

Indian Mining:



16. **EMERGING-MARKET BOND INDEX (EMBI)**

- **JPMorgan** to **add Indian government bonds** to its **benchmark EMBI** from June 2024.
- EMBI is a **benchmark index for measuring total return performance** of international **government and corporate bonds** that meet specific liquidity and structural requirements.
- **Inclusion in EMBI could potentially:**
    - **Lower** the country's **sovereign borrowing costs**.
    - Help **finance the current account deficit**.
    - **Free up liquidity for domestic financiers** to deploy in more productive assets.
    - **Increase demand for the rupee** and support its value.

17. **PROJECT MARIANA**

Context:

- **Project Mariana**, a collaborative effort **involving the Bank for International Settlements (BIS) and the central banks of France, Singapore, and Switzerland**, has successfully completed its mission.
- **The project focused on testing the cross-border trading and settlement of wholesale** central bank digital currencies **(wCBDCs) among financial institutions, utilizing decentralized finance (DeFi) technology concepts on a public blockchain.**

Key points about Project Mariana:

- Project Mariana demonstrated the **successful cross-border trading and settlement of hypothetical euro, Singapore dollar, and Swiss franc wCBDCs** among simulated financial institutions.
- The project relied on several key **elements, including a common technical token standard provided by a public blockchain**, **bridges for seamless wCBDC transfers** between different networks, and an **Automated Market Maker (AMM**) to facilitate automated spot FX transactions and settlements.
- The AMM's innovative **algorithms pooled liquidity from various wCBDCs**, enabling automatic **pricing and execution of spot FX transactions, and suggesting potential applications for the next generation of financial market infrastructures** supporting cross-border trading and settlement.

18. PERIODIC LABOUR FORCE SURVEY (PLFS) ANNUAL REPORT 2022-2023

The Periodic Labour Force Survey **(PLFS) Annual Report for 2022-2023** has been released, focusing on key **employment and unemployment indicators**. The survey's key findings are as follows:

Labour Force Participation Rate (LFPR):

- The labour force participation rate (LPR) is **a measure of the proportion of a country's working-age population that is actively engaged in the labour market**.
    - **An increasing trend in LFPR for persons aged 15 years and above was observed.**
    - **In rural areas, LFPR increased from 50.7% in 2017- 18 to 60.8% in 2022-23.**
    - **In urban areas, LFPR increased from 47.6% to 50.4% over the same period.**
    - **LFPR for males in India increased from 75.8% in 2017-18 to 78.5% in 2022-23.**
    - **For females, LFPR increased from 23.3% to 37.0% during this time.**

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Worker Population Ratio (WPR):

- The worker-population ratio (WPR) is the ratio of a **country's working population to its population, multiplied by 100.** It's calculated by dividing the **total number of workers by the total population.**
    - **The survey showed an increasing trend in WPR for persons aged 15 years and above.**
    - **In rural areas, WPR increased from 48.1% in 2017- 18 to 59.4% in 2022-23.**
    - **In urban areas, WPR increased from 43.9% to 47.7% during the same period.**
    - **WPR for males in India increased from 71.2% in 2017-18 to 76.0% in 2022-23.**
    - **For females, WPR increased from 22.0% to 35.9% over this time frame.**

Unemployment Rate (UR):

- The unemployment rate is **the percentage of unemployed workers in the total labour force**. The labour force includes all people who are employed or unemployed. The **unemployment rate is calculated by dividing the number of unemployed people by the total labour force.**
    - **A decreasing trend in UR for persons aged 15 years and above was observed.**
    - **In rural areas, UR decreased from 5.3% in 2017-18 to 2.4% in 2022-23.**
    - **In urban areas, UR decreased from 7.7% to 5.4% during the same period.**
    - **UR for males in India decreased from 6.1% in 2017- 18 to 3.3% in 2022-23.**
    - **For females, UR decreased from 5.6% to 2.9% over this time frame.**

19. **PURPLE ECONOMY**

Context:

- Shanti Raghavan, **the recipient of the Business Line Changemakers Award in 2020, leads the organization EnAble India**. They are **working on creating a 'purple economy,' which promotes disability inclusion and job opportunities on a large scale**.

What is the Care Economy?

- It refers to the economic activities related to providing **care and support services**, often in **healthcare, childcare, elderly care, and other areas** aimed at improving people's well-being. It encompasses both **paid and unpaid care work** and is a critical aspect of social and economic development.

What is Purple Economy?

The purple economy is an **economic order that focuses on the sustainability of caring labour**. It's an **alternative vision that complements the green economy**. The purple economy aims to:

1. **Organize the system around the sustainability of caring labour**
2. **Address the inequalities created by the disproportionate reliance on women's unpaid and underpaid labour**
3. **Contribute to sustainable development by promoting the cultural potential of goods and services**
4. **Contribute to a richer and more diverse cultural environment**

Examples of the purple economy include **Digital, Tourism, Luxury goods, and Housing**.

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20. **DOUBLE TAXATION AVOIDANCE AGREEMENT (DTAA)**

Context:

- The **Supreme Court of India has ruled that a Double Taxation Avoidance Agreement (DTAA) cannot** be enforced **unless it is notified under Section 90 of the Income Tax Act**.
- **This decision may have significant implications for multinational corporations (MNCs) from Switzerland, the Netherlands, France, and other countries.**

Implications:

- **The decision may lead to additional tax revenue for the Indian government but could potentially strain relations with tax treaty partners.**
- **The ruling revolves around the interpretation of the Most Favoured Nation (MFN) clause contained in various Indian treaties with countries that are members of the Organisation for Economic Cooperation and Development (OECD).**
- **This clause allows for concessions in tax rates on dividends, interest, royalties, or fees for technical services, similar to concessions given to other OECD countries**

The **Double Taxation Avoidance Agreement or DTAA** is a tax treaty signed between **India and another country** (or any two/multiple countries) so that **taxpayers can avoid paying double taxes** on their income **earned from the source country as well as the residence country**

21. REGIONAL RAPID TRANSIT SYSTEM (RRTS)

Context:

- The Prime Minister inaugurated the **first leg of the Regional Rapid Transit System (RRTS),** India's first **dedicated mass rapid transit system for regional connectivity** called as **Namo Bharat Train.**
- **The RRTS is designed to operate at speeds of up to 180 km/hour and is expected to reduce the travel time between Delhi and Meerut to less than an hour**.

About RRTS:

- RRTS is a **new rail-based, semi-high-speed, high-frequency commuter** transit system with a design speed of 180 Kmph for **better connectivity.**

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Key Features:

- The RRTS is **an integrated, mass transit network aimed at promoting balanced and sustainable urban development** in the **National Capital Region (NCR).**
- **Implementing Authority**: The **National Capital Region Transport Corporation (NCRTC),** a joint **venture between the central government and the state governments of Delhi, Haryana, Rajasthan, and Uttar Pradesh**, is responsible for implementing the RRTS project across the NCR.

22. **VIZHINJAM PORT**

Adani Group's Vizhinjam Port (set to be completed by 2024) (near Thiruvananthapuram in Kerala)**,** is poised to transform the country's maritime infrastructure.

Features of the Port:

- India's first **deepwater container transhipment** terminal.
- Proximity to international shipping routes connecting Europe, the Gulf and East Asia
- This transhipment terminal can handle **ultra-large ships and marks India's entry** into the transhipment club
- It has the potential to **compete with global ports like Colombo, Singapore, Port Klang, and Jebel Ali**.

23. **JAMRANI DAM MULTIPURPOSE PROJECT (UTTARAKHAND)**

Context:

- The Cabinet Committee on Economic Affairs (CCEA) approved the inclusion of the Jamrani Dam Multipurpose Project of Uttarakhand under the Pradhan Mantri Krishi Sinchayee Yojana-Accelerated Irrigation Benefit Programme (PMKSY-AIBP).
- The project involves dam construction (on **Gola River,** a tributary of Ram Ganga River in the Nainital district), irrigation, hydropower generation (14 MW), and providing drinking water to Haldwani and nearby areas.
- The Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) is focused on **improving irrigation and water efficiency,** and this project is part of the Accelerated Irrigation Benefit Programme (AIBP). The Jamrani Dam Multipurpose Project is the **seventh project** to be included in this initiative.

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ENVIRONMENT

1. GANGES RIVER DOLPHINS

Context:

- A recent scientific publication titled "Rescuing Ganges river dolphins from irrigation canals in Uttar Pradesh, 2013-2020" has elucidated the comprehensive endeavors focused on the rescue and relocation of Gangetic river dolphins from precarious situations within the irrigation canals of the Ganga-Ghagra basin.

Relevance:

- Prelims, GS-III: Environment and Ecology (Species in news, Conservation of Ecology and Environment)

Dimensions of the Article:

- Ganges River Dolphins
- Threats to Gangetic River dolphin
- Steps Taken to conserve and protect dolphins

Ganges River Dolphins

- The Ganges river dolphin (Platanista gangetica gangetica) was officially discovered in the 1800s and these Ganges river dolphins once lived in the Ganges-Brahmaputra-Meghna and Karnaphuli-Sangu river systems of Nepal, India, and Bangladesh. (But the species is extinct from most of its early distribution ranges.)
- The Ganges river dolphin was recognised as the National Aquatic Animal in 2009, by the Government of India.
- The Ganges river dolphin can only survive in fresh water and is essentially blind.
- They are frequently found alone or in small groups, and generally a mother and calf travel together.
- The Indus and Ganges River dolphins are both classified as 'Endangered' species by the International Union for Conservation of Nature (IUCN).
- The Ganges dolphin is a Schedule I animal under the Indian Wildlife (Protection) Act 1972, and has been included in Annexure – I (most endangered) of Convention on International Trade in Endangered Species (CITES).

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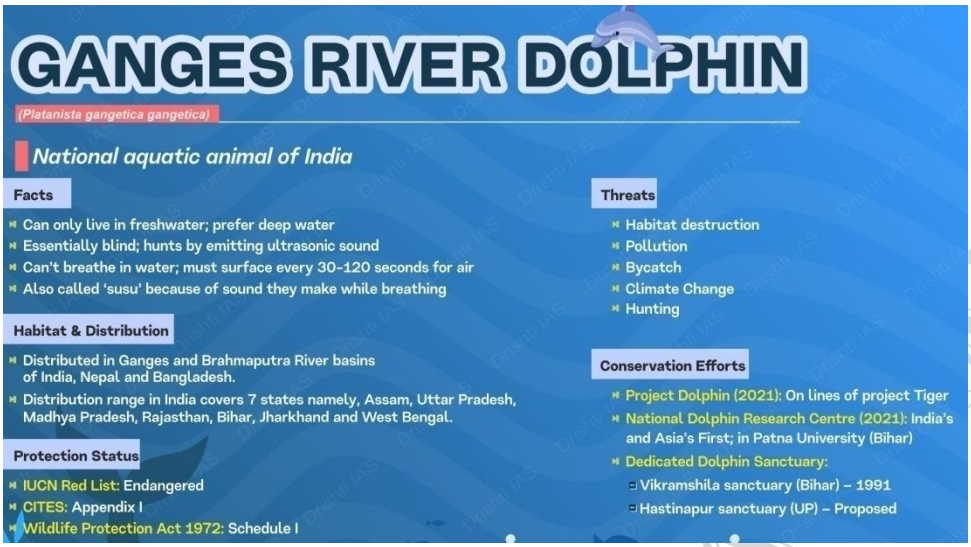
- The Ganges dolphin is also listed under Appendix II of the Convention on Migratory Species (CMS) (migratory species that need conservation and management or would significantly benefit from international co-operation).
- The Ganges river dolphin can only live in freshwater and is essentially blind. They hunt by emitting ultrasonic sounds, which bounces off of fish and other prey, enabling them to "see" an image in their mind.



Importance:

- They have significant importance because it is a reliable indicator of the health of the entire river ecosystem.
- The government of India declared it the National Aquatic Animal in 2009.
- It is also the State Aquatic Animal of Assam
- Threats to Gangetic River dolphin

Pollution: It faces a number of threats such as dumping of single-use plastics in water bodies, industrial pollution, and fishing.

Restrictive Flow of Water: The increase in the number of barrages and dams is also affecting their growth as such structures impede the flow of water.

Poaching: Dolphins are also poached for their flesh, fat, and oil, which is used as a prey to catch fish, as an ointment and as a supposed aphrodisiac.

Shipping & Dredging: It is also called a blind dolphin because it doesn't have an eye lens and uses echolocation to navigate and hunt.

Steps Taken to conserve and protect dolphins

- **Project Dolphin:** The Prime Minister announced the government's plan to launch a Project Dolphin in his Independence Day Speech 2020. It will be on the lines of Project Tiger, which has helped increase the tiger population.
- **Dolphin Sanctuary:** Vikramshila Ganges Dolphin Sanctuary has been established in Bihar.
- **Conservation Plan**: The Conservation Action Plan for the Ganges River Dolphin 2010-2020, which "identified threats to Gangetic Dolphins and impact of river traffic, irrigation canals and depletion of prey-base on Dolphins populations".

- **National Ganga River Dolphin Day:** The National Mission for Clean Ganga celebrates 5th October as National Ganga River Dolphin Day.
- **Climate crisis in forests**: Dandeli losing its distinctive grasses & hornbills to erratic weather

Context:

- In recent years, rising temperatures and changing rainfall patterns in the Dandeli forest area are impacting the forest ecosystem and the people living around them and dependent on them.

Dandeli forests and Wildlife sanctuary:

- The Dandeli forest in Uttara Kannada district of Karnataka is known for its forest grasses, birds and cattle herders.
- Along with neighboring Anshi National Park, the sanctuary was declared part of the Anshi Dandeli Tiger Reserve in 2006.
- It is also an elephant reserve under the Project elephant.
- There are around 100 different types of grasses that grow in the undergrowth of the Dandeli forest.
- These are the primary sources of food for the herbivore population of the forest such as barking deer, chital (spotted deer) and elephants.
- The wildlife sanctuary is known for its great hornbill (great Indian hornbill or great pied hornbill), the Malabar pied hornbill and the elusive black panther.

Changes in the ecology of dandeli forests and its impact:

- The grasses are being replaced by eupatorium weed, which is not eaten by the herbivores and is prone to fires.
- Eupatorium is a non-native species introduced in the area during the British rule for decorative purposes.
- During the colonial era the lush semi-evergreen and evergreen forests were replaced by monoculture teak plantations and the general character of the forest also changed from semi-evergreen to moist deciduous.
- The British had banned controlled fires in the forest, which was practiced by local farmers for slash and burn cultivation. This, in turn, led to there being uncontrolled forest fires. This is because dry leaves, tree limbs and other inflammable debris would be removed during controlled fires, limiting the chances of wildfires.
- The flowering and fruiting patterns of the more than 40 different varieties of fig trees that grow in Dandeli, have changed. The fig fruits are the main source of nutrition for most of the local birds in the area, especially the Malabar pied hornbill.
- Honey collection in the area has reduced in recent years as the ficus trees are not flowering properly.

2. METAL MINING POLLUTION

Context:

Recently, the University of Lincoln, the United Kingdom, has published a study, spotlighting the extensive ramifications of Metal Mining Pollution in rivers and Floodplains worldwide.

What is the Research Methodology of the Study?

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- The research simulated contamination from both operational and decommissioned Metal Mining Sites, encompassing critical aspects such as tailings facilities designed for waste storage.
- The study meticulously evaluated hazardous substances including lead, zinc, copper, and arsenic.
- These elements, detrimental to both ecosystems and human health, tend to accumulate downstream from mining sites over prolonged durations.
- This underscores the lasting and far-reaching consequences of mining pollution.
- The research team, acknowledging data limitations in certain countries, considered the figures presented to be conservative estimates.
- This signifies the potential for the actual impact to be even more extensive, underlining the need for comprehensive and accurate data for a thorough assessment

What are the Key Highlights of the Study?

Extent of Pollution Exposure:

- Pollution stemming from the continuous discharge of mining waste into rivers affects an astonishing number of people, nearly 50 times more than those immediately impacted by tailings Dam

Population and Ecosystem Impact:

- The impacted floodplains due to the Mining Waste house a substantial population of about 23.48 million people, in addition to sustaining a significant livestock population of 5.72 million.

Significance of the Study:

- The provides a groundbreaking predictive model to assess the far-reaching offsite and downstream impacts of mining on ecosystems and human health.
- It offers a critical tool for governments, environmental regulators, the mining industry, and local communities to make informed decisions, emphasizing the necessity to prioritize environmental sustainability particularly in the modern era where sustainable mining practices are increasingly prioritized.

Call for Action:

- The study concluded by advocating for enhanced global data collection and monitoring systems to better comprehend the ecological and health impacts of the metal mining industry.

What is Metal Mining Pollution?

About:

- Metal mining pollution refers to the contamination and environmental degradation caused by the extraction and processing of Metallic Ores to obtain valuable metals.
- It involves various activities associated with mining, including exploration, extraction, transportation, processing, and waste disposal.
- These processes often release harmful substances into the air, water, and soil, leading to adverse effects on ecosystems, human health, and wildlife

What are the Sources of Metal Mining Pollution?

- **Tailings**: Tailings are finely ground rock particles left over after the valuable metals have been extracted from the ore.

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  - These tailings often contain hazardous elements like mercury, arsenic, lead, cadmium, and other toxic substances that can contaminate nearby water sources and soil.
- **Acid Mine Drainage (AMD):** AMD occurs when sulfide minerals in the mined rocks are exposed to air and water, leading to the production of sulfuric acid.
  - This acid can contaminate rivers, streams, and groundwater, posing a significant threat to aquatic life and ecosystems.
- **Airborne Pollution:** Dust and particulate matter generated during mining operations can become airborne, spreading pollutants such as heavy metals and other harmful compounds.
  - Inhalation of these pollutants can pose health risks to both miners and nearby communities.
- **Chemical Usage:** Chemicals such as cyanide and sulfuric acid are often used in metal extraction processes. Accidental spills or inadequate containment of these chemicals can result in contamination of soil and water, causing serious environmental damage.

How can Metal Mining Pollution be Addressed?

Stringent Regulations and Compliance:

- Implement and enforce strict environmental regulations and standards that govern metal mining operations.
- These regulations should cover waste disposal, emissions, water management, and reclamation to ensure compliance and minimize pollution.

Advanced Waste Management:

- Encourage the use of modern tailings storage facilities and waste disposal methods that minimize the risk of pollution. Employ strategies to prevent tailings dam failures, such as proper design, monitoring, and periodic assessments.

Responsible Chemical Usage:

- Promote the responsible and controlled use of chemicals in mining processes. Alternative, less toxic chemicals should be explored and utilized to reduce the environmental impact.

Water Management and Treatment:

- Implement effective water management strategies to control and treat water discharged from mining operations. Employ water treatment technologies to remove harmful substances before releasing water into the environment.

Mine Reclamation and Rehabilitation:

- Make mine reclamation and rehabilitation an integral part of mining operations. Restore mined areas to their natural state, promoting ecosystem recovery and biodiversity

3. INDIA BEGINS PRODUCING REFERENCE FUEL

Context:

- India has marked a significant milestone in its pursuit of self-reliance, initiating the production of 'reference' grade petrol and diesel. It holds the promise of not only catering to domestic requirements but also tapping into the export market.

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- Historically, only a select few companies, primarily from Europe and the US, provided reference fuels to India.

What is Reference Fuel?

About:

- Reference fuels (petrol and diesel), represent high-value premium products specifically utilized for calibrating and testing vehicles by automotive original equipment manufacturers (OEMs) and institutions engaged in automotive testing and certification.

Features:

- They have higher specifications than regular or premium fuels. It includes various specifications such as Cetane number, flash point, viscosity, sulfur and water content, hydrogen purity, and acid number.
- For instance, reference grade petrol and diesel feature an octane number of 97, exceeding the octane numbers of regular and premium fuels, which stand at 87 and 91, respectively.

Indigenous Production by Indian Oil Corporation:

- India historically depended on imports to fulfill the need for these specialized fuels. However, the Indian Oil Corporation (IOC) has now indigenously developed 'reference' grade petrol at its Paradip refinery in Odisha and diesel at its Panipat unit in Haryana.
- Reference gasoline (petrol) fuels will be available in E0, E5, E10, E20, E85, E100 from Paradip refinery.
- Reference diesel fuel shall be available in B7 grade from Panipat refinery.

Benefit:

- **Cost Advantage**: The cost of the imported 'reference' fuel stands between Rs 800-850 per litre, whereas the domestic production is estimated to lower the cost to around Rs 450 a litre, signifying a substantial cost advantage.
- **Benefit to Vehicle Manufacturers**: This development will provide minimum lead time for vehicle manufacturers, enabling import substitution at a better price.

Reference fuels are high-quality fuels used by gasoline and diesel vehicle manufacturers. They are used for:

- Engine development
- Performance assessment
- Ensuring operability across global climatic conditions

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- Calibration and testing of vehicles

Some terms related to Fuel:

Octane Number:

- It measures the fuel's resistance to engine knocking. Higher octane numbers signify better resistance to premature combustion in gasoline.

Cetane Number:

- Indicates the ignition quality of diesel fuel. A higher cetane number signifies easier ignition.

Flash Point:

- It is the lowest temperature at which a substance produces enough vapor to ignite momentarily.

Viscosity:

- Measures a fluid's resistance to flow; higher viscosity indicates thicker, less fluid-like behavior.

Acid Number:

- It is a measurement of the amount of acidic substance in the oil.

4. AMMONIA AS A AUTOMOTIVE FUEL

Context:

Recently, an internal combustion engine powered by ammonia is gaining traction in the automotive industry.

This unique approach is sparking interest as it explores alternative propulsion technologies while not completely departing from traditional Internal Combustion Engine (ICE) systems or transitioning to Battery Electric Vehicles (BEVs).

Biodiversity & Environment

Ammonia as a Automotive Fuel

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What are ICE Systems and BEV Systems?

Internal Combustion Engine (ICE) Systems:

- ICE vehicles use traditional engines that burn fossil fuels (e.g., petrol or diesel) to generate power.
- Fuel is mixed with air, ignited, and the resulting explosion drives the vehicle's wheels.
- They are commonly found in cars, trucks, and motorcycles.
- They emit exhaust gases and contribute to air pollution and greenhouse gas emissions.
- Battery Electric Vehicles (BEVs):
- BEVs are electric vehicles that rely solely on rechargeable batteries to power an electric motor.

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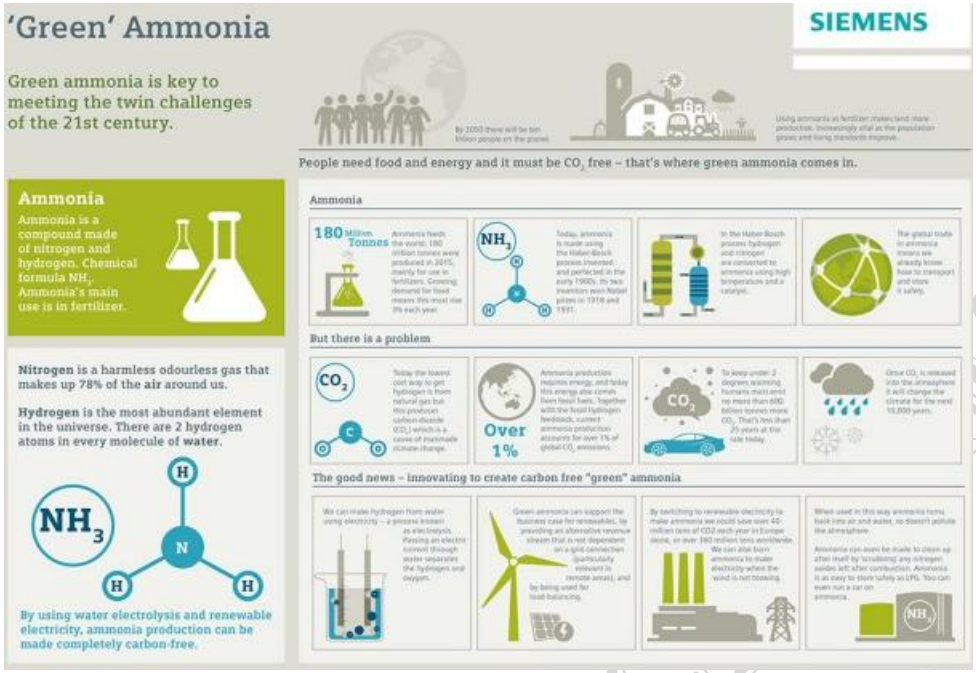
- They must be charged using electricity from the grid, which can be generated from various sources, including renewable energy.
- They produce zero tailpipe emissions and are considered environmentally friendly.



What are the Current Major Applications of Ammonia?

About:

- Ammonia is a chemical compound with the formula NH3. It is a colorless gas with a pungent odor and is widely used in various industrial, agricultural, and household applications.

Major Application:

- **Agriculture**: Key component in the production of ammonia-based fertilizers, such as ammonium nitrate and urea, which are essential for crop growth.
- **Chemical Industry:** Fundamental ingredient in the production of substances like nitric acid, ammonium sulfate, and various nitrogen-based compounds.
- It plays a crucial role in the manufacturing of synthetic fibers as well, like nylon
- **Manufacturing:** As a refrigerant in industrial refrigeration systems and air conditioning.
- Also, ammonia is used in the manufacture of dyes and as a pH regulator in dyeing processes.
- **Household:** An ingredient in household cleaning products, including glass and surface cleaners.

What are the Advantages of Using Ammonia as a Fuel?

- **High Energy Density:** Ammonia has a high energy density, which means it can store and release a significant amount of energy, making it suitable for long term applications.
- Ammonia has 9 times the energy density of lithium-ion batteries and 3 times that of compressed hydrogen.
- **Low Carbon Emissions**: Ammonia has the potential to produce near-zero carbon dioxide (CO2) emissions during combustion, making it an environmentally friendly choice, especially when compared to fossil fuels.
- **Bridge Fuel**: Ammonia can serve as a bridge fuel, helping reduce dependence on traditional fossil fuels and offering a transitional buffer toward cleaner energy sources.

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- Also, using ammonia can enhance a nation's energy security by diversifying the energy mix and reducing reliance on a single energy source.

What are the Major Challenges Associated with Using Ammonia as a Fuel?

Environmental Impact: Ammonia as a fuel holds the promise of near-zero CO2 emissions during combustion.

But current ammonia engines still emit exhaust gases, including unburned ammonia and Nitrogen oxides (NOx) that pose risks to environment and health.

Nitrogen in the atmosphere usually results in more tropospheric ozone, respiratory illnesses, and acid rain.

Production Challenges: The production of ammonia typically relies on the Haber-Bosch process, which consumes a significant amount of energy and relies on fossil fuels.

Green ammonia production, which involves using renewable energy and sustainable sources of hydrogen, is still in the early stages of development and faces cost and scalability challenges.

Toxicity: Ammonia is highly toxic, posing health risks to humans and the environment if not managed properly.

Also, due to its toxicity and corrosiveness, accidents or mishandling could have severe consequences.

Fuel Quality Standards: Developing and implementing consistent quality standards for ammonia as a fuel can be complex, especially when ammonia is produced from various sources or with varying levels of impurities.

About Green Ammonia

- Ammonia, also known as sustainable or renewable ammonia, is an innovative and eco-friendly form of ammonia production that is gaining prominence in the global energy landscape.
- It is produced using renewable energy sources, such as wind, solar, or hydropower, and serves as a promising energy carrier with applications in various sectors, including agriculture, transportation, and energy storage.

Production of Green Ammonia

Haber-Bosch Process: Traditional ammonia production relies on the energy-intensive Haber-Bosch process, which consumes a significant amount of natural gas and emits substantial greenhouse gases (GHGs), mainly carbon dioxide (CO2).

Electrolysis: Green ammonia production involves an alternative approach called "electrolysis," which utilizes renewable electricity to split water (H2O) into hydrogen (H2) and oxygen (O2). This hydrogen is then used to synthesize ammonia (NH3) through the Haber-Bosch process, but with zero carbon emissions.

Renewable Energy Sources: The key to green ammonia production is the use of renewable energy sources, such as solar, wind, or hydropower, to power the electrolysis process. This ensures that the entire production cycle is emissions-free.

5. LAND DEGRADATION AND DESERTIFICATION

Context:

- The UN Convention to Combat Desertification (UNCCD) has launched its first-ever Data Dashboard, aggregating national reporting figures from 126 countries.
- The data indicates that land degradation is rapidly increasing in severity across all regions, underscoring the pressing need for global action.

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What are the key findings of UNCCD on land degradation?

Extent of Land Degradation: Between 2015 and 2019, the world lost at least 100 million hectares of healthy and productive land each year, which is twice the size of Greenland.

Regional Disparities: Eastern and Central Asia, as well as Latin America and the Caribbean, witness the most severe land degradation, impacting over 20% of their total land area.

Faster Degradation: Sub-Saharan Africa, Western and Southern Asia, Latin America and the Caribbean experience land-degradation at rates exceeding the global average.

Notable Loss: Sub-Saharan Africa, Latin America and the Caribbean have lost 163 million and 108 million hectares, respectively, to land degradation since 2015.

Land Restoration "Bright spots":

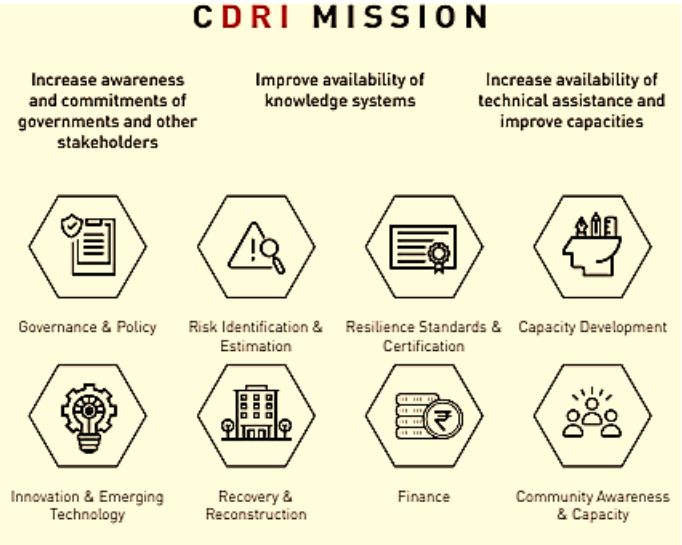
Botswana: Reduced land degradation from 36% to 17% of its territory. Committed 45.3 million hectares to land-degradation neutrality and reported 1.42 million hectares as "bright spot" areas.

Dominican Republic: Decreased degraded land from 49% to 31% between 2015 and 2019.Ongoing efforts to restore 240,000 hectares.

Uzbekistan: Reported the highest proportion of degraded land (26.1%) in Central Asia but reduced it from 30% to 26% compared to 2015.Conducted sexual planting on 1.6 million hectares to combat the drying of the Aral Sea.

Land Degradation Neutrality (LDN) Goal Achievability: To achieve Sustainable Development Goals, the world must restore 1.5 billion hectares of degraded land by 2030 if current land-degradation trends continue.

Sustainable Development Goal 15: Life on Land calls for protecting, restoring, and sustaining land-based ecosystems. In doing so target 15.3 specifically aims to achieve a land degradation-neutral world by 2030.



What is land degradation?

- Land degradation results from human-induced actions that exploit land, causing its utility, biodiversity, soil fertility, and overall health to decline.
- Land-degradation is caused by multiple forces, including extreme weather conditions, particularly drought.
- Desertification is a form of land-degradation by which fertile land becomes desert.

What are the causes of land degradation?

Natural Cause:

- **Loss of Soil Cover**: Soil erosion significantly contributes to land degradation in the country, primarily due to rainfall and surface runoff. This factor was responsible for 11.01% of desertification in the country.
- **Water Erosion:** Water erosion contributed to 10.98% of desertification in India during 2011-13.
- **Wind Erosion:** Wind erosion, where the wind carries away soil, accounted for 5.46% of desertification in India.

Anthropogenic Causes:

- **Poor Agricultural Practices**: Land degradation in India is exacerbated by poor agricultural practices, including improper crop rotations and the overuse of agrochemicals.
- **Deforestation:** Activities such as deforestation and shifting cultivation contribute to the degradation of vegetation, which is essential for maintaining soil health.
- The degradation of vegetation was found to be responsible for 9.15% of desertification in the country.
- **Increasing Urbanization**: The increasing population pressure in India has led to higher urbanization rates. This has resulted in the diversion of land from agriculture to urban development.
- **Overgrazing**: India has one of the largest cattle populations in the world. However, unsustainable grazing practices contribute to land degradation.
- **Climate Change**: Climate change intensifies desertification as rising temperatures and frequent droughts become prominent. Forest fires, a consequence of this, devastate forests and contribute to desertification.

What are the impacts of land degradation?

- **Economic Impact:** Land degradation resulted in the country losing more than 2% of the GDP for 2014-15, as per the Energy and Resources Institute (TERI).

Environmental Impact

- **Soil Erosion**: The process by which topsoil is detached from land and carried away by water, ice, sea waves, or wind.
- **Loss of Fertility**: Resulting from the use of scientific inputs like irrigation, fertilizers, and pesticides, as well as unscientific cropping practices.
- **Salinity/Alkalinity**: Occurs in areas with temporary water surplus and high temperatures due to over-irrigation or excessive rainfall, affecting soil fertility.
- **Water Scarcity**: The dryland population vulnerable to water stress and increased drought intensity is projected to reach 178 million under ideal conditions of 1.5 degrees Celsius warming by 2050.

Potential Impacts on Human Health

- Reduced food and water supplies can lead to higher threats of malnutrition.
- Increased risk of water- and food-borne diseases due to poor hygiene and a lack of clean water.
- Respiratory diseases can result from atmospheric dust caused by wind erosion and air pollutants.
- The spread of infectious diseases may occur as populations migrate, impacting public health.
- Rights of Indigenous People: Insecure land tenure affects the ability of people and communities, including indigenous groups, to combat climate change. Land degradation further endangers their rights and livelihoods.

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What are the measures taken by the Government to prevent land degradation?

Desertification and Land-Degradation Atlas

- Published by Space Applications Centre (SAC) of the Indian Space Research Organisation.
- Provides data on the extent of land-degradation and desertification in India.
- Estimated land degradation and desertification in India: 97.84 million hectares in 2018-19. Offers state-wise information on degraded land to aid restoration planning.

Online Portal for Visualization

- Developed in collaboration with Space Application Center (SAC), Ahmedabad.
- Allows visualization of degraded land areas and the processes causing degradation.
- Centre of Excellence at ICFRE Dehradun
- Envisioned at the Indian Council for Forestry Research and Education (ICFRE), Dehradun.
- Focuses on South-South Cooperation for knowledge sharing and best practices.
- Aims to share India's experiences in sustainable land management.
- Supports transformative projects, capacity building, and program development.

Way forward

- **Integrated Land Use Planning**: Implementing integrated land use planning is vital. This approach involves identifying optimal land use combinations to meet the needs of stakeholders while preserving land resources.
- **Identifying Global Restoration Hotspots**: A cost-effective strategy involves pinpointing global restoration hotspots within landscapes to maximize benefits and focus restoration efforts efficiently.
- **Regenerative Agricultural Practices**: Promoting regenerative agricultural practices, such as terrace farming and rainwater harvesting, plays a crucial role in land restoration.
  - ✓ These practices not only restore land but also have the potential to increase crop yields, reduce greenhouse gas emissions, and sequester atmospheric carbon.
- **Convergence with the MGNREGS and PMKSY**: The government is now planning to bring convergence between the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) and the Pradhan Mantri Krishi Sinchayee Yojana (PMKSY).
  - ✓ It could help treat about 30% more land than feasible with the current scheme size.

China Experience:

- Great Green Wall (Three-North Shelterbelt Program): China has been implementing this afforestation program since the late 1970s. It involves planting large-scale monoculture forest strips of non-native species to combat desertification and dust storms in the Gobi Desert region.

6. IMPACT OF DISASTERS ON AGRICULTURE AND FOOD SECURITY

Latest context:

- A report by the Food and Agriculture Organization (FAO) reveals that natural disasters have resulted in approximately $3.8 trillion worth of crop and livestock production losses over the past 30 years

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Key Highlights of the Report

- Natural disasters pose significant challenges to global agricultural production, affecting crops, livestock, and livelihoods. The recent report by the Food and Agriculture Organization (FAO) sheds light on the extensive economic losses incurred due to these disasters over the past three decades.
- The FAO report also outlines crucial priorities, emphasizing the need for proactive measures to enhance agriculture's resilience and mitigate the impact of future natural disasters on global food production.

Economic Impact of Natural Disasters on Agriculture

- The FAO report reveals staggering figures: an estimated $3.8 trillion worth of crops and livestock production lost due to natural disasters in the last 30 years.
- This amount, averaging $123 billion per year, accounts for 5% of the annual global agricultural gross domestic product (GDP).
- These losses are not evenly distributed across agricultural products. Cereals, fruits and vegetables, sugar crops, meats, dairy products, and eggs have all experienced significant average losses.

Impact on Different Countries:

- Disasters have the highest relative impact on lower and lower middle-income countries, where they can cause losses of up to 15 % of their total agricultural GDP.
- Small Island Developing States (SIDS) also experience significant losses, amounting to nearly 7% of their agricultural GDP.

Losses by Product Groups:

- There are increasing trends in losses related to major agricultural products.
- Cereals are the most affected, followed by fruits and vegetables and sugar crops, with average losses of millions of tonnes each year.
- Meats, dairy products, and eggs also show substantial losses.

Regional Differences:

- Asia experiences the largest share of total economic losses, followed by Africa, Europe, and the Americas.
- However, in Asia, these losses account for a smaller percentage of agricultural added value compared to Africa.

Increasing Frequency of Disasters:

- Disaster events have been on the rise, increasing from 100 per year in the 1970s to around 400 events per year worldwide in the past two decades.
- These events are becoming more frequent, intense, and complex, with expected worsening impacts due to climate-induced disasters.

Impact on Vulnerable Groups:

- Small-scale farmers, particularly those practicing Rain-Fed agriculture, are the most vulnerable to disaster impacts.
- Supporting the adoption of farm-level disaster risk reduction practices can help reduce losses and enhance resilience.

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- Investment in farm-level disaster risk reduction good practices can perform on average 2.2 times better than previously applied practices.

Crop and Livestock Losses: Major losses were observed in cereals, fruits, vegetables, sugar crops, meats, dairy products, and eggs, with cereals accounting for an average loss of 69 million tonnes per year, followed by fruits and vegetables, and sugar crops, each experiencing 40 million tonnes of losses annually.

About Climate-resilient agriculture (CRA)

- Climate-resilient agriculture (CRA) plays a crucial role in ensuring sustainable agricultural practices and enhancing the adaptability of farming systems to climate change.
- Resilience within the context of agriculture refers to the capability of agricultural systems to effectively and flexibly respond to, recuperate from, and flourish in the face of varying climate conditions, while preserving their fundamental functions, identities, and structures.
- Impact of disasters on agriculture in India (leading to substantial economic and agricultural losses)
- **Economic Losses:** Disasters such as floods, droughts, cyclones, and other extreme weather events have resulted in substantial economic losses in the agricultural sector.
- **Crop Damages**: Crop damages have been a major consequence of these disasters, leading to decreased agricultural productivity and income for farmers.
- **Livestock Impacts**: Livestock, including cattle, poultry, and other animals, have also faced severe impacts, leading to a decline in livestock production and associated income.
- **Smallholder Vulnerability**: Smallholder farmers are particularly vulnerable to the impact of disasters, as they often lack the resources and infrastructure to cope with and recover from such events.
- **Food Security Concerns**: Agricultural disasters have also raised concerns about food security, as they directly affect the availability and accessibility of food for both rural and urban populations.
- **Government Initiatives**: The Indian government has implemented various initiatives, including crop insurance schemes, disaster relief funds, and support programs, to assist farmers in coping with the aftermath of agricultural disasters.
- **Climate Change Adaptation**: With the increasing frequency and intensity of climate-related disasters, there is a growing emphasis on climate change adaptation measures in Indian agriculture, including the promotion of climate-resilient crops and farming practices.
- **Research and Development**: Research and development efforts are ongoing to develop and promote technologies and practices that can help mitigate the impact of disasters on Indian agriculture and enhance the resilience of farming communities.

Various government efforts in India to promote sustainable agriculture and environmental protection:

- **National Mission of Sustainable Agriculture**: Initiated in 2010 to promote the efficient and sustainable management of resources for agricultural development.
- **Pradhan Mantri Krishi Sinchayee Yojana (PMKSY**): Launched in 2015 to encourage the adoption of micro-irrigation and drip irrigation systems, aiming to conserve water in agriculture.

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- **Paramparagat Krishi Vikas Yojana**: Implemented to promote climate-smart agricultural practices and the adoption of appropriate technologies.
- **Green India Mission:** Launched in 2014 to enhance and protect forest covers, thus contributing to climate change mitigation and ecological balance.
- **Soil Health Card Scheme**: Initiated to facilitate soil testing and provide guidance to farmers regarding the appropriate use of fertilizers, aiming to maintain soil fertility.
- **Neem-Coated Urea**: Introduced to curtail the excessive usage of urea fertilizers, thereby safeguarding soil health and promoting sustainable agricultural practices.
- **Zero Budget Natural Farming (ZBNF**): is an innovative agricultural practice that promotes natural farming without the use of chemical fertilizers and pesticides.
- **National Project on Organic Farming and National Agroforestry Policy**: Implemented to encourage the adoption of organic farming techniques and agroforestry, ensuring both financial benefits and ecosystem conservation.
- **Organic Farming Initiatives in Andhra Pradesh, Himachal Pradesh, Sikkim**: These states have actively promoted and adopted organic farming practices to ensure sustainable and environmentally friendly agricultural production.
- **ICAR Climate-Resilient Villages**: The establishment of climate-resilient villages in 151 districts, focusing on building villages with a positive carbon footprint.
- **Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA**): Initiated in 2005 to provide employment opportunities, economic stability, and environmental conservation in rural areas.

What is the Food and Agriculture Organization?

About:

- FAO is a specialised agency of the United Nations that leads international efforts to defeat hunger.
- World Food Day is celebrated every year around the world on 16th October. The day is celebrated to mark the anniversary of the founding of the FAO in 1945.
- It is one of the UN food aid organisations based in Rome (Italy). Its sister bodies are the World Food Programme and the International Fund for Agricultural Development (IFAD).

Initiatives Taken:

- Globally Important Agricultural Heritage Systems (GIAHS).
- Monitors the Desert Locust situation throughout the world.
- The Codex Alimentarius Commission or CAC is the body responsible for all matters regarding the implementation of the Joint FAO/WHO Food Standards Programme.
- The International Treaty on Plant Genetic Resources for Food and Agriculture was adopted by the Thirty-First Session of the Conference of the FAO in 2001.

Flagship Publications:

- The State of World Fisheries and Aquaculture (SOFIA).
- The State of the World's Forests (SOFO).

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- The State of Food Security and Nutrition in the World (SOFI).
- The State of Food and Agriculture (SOFA).
- The State of Agricultural Commodity Markets (SOCO)

7. GLOBAL INFRASTRUCTURE RESILIENCE

Context:

- Coalition for Disaster Resilient Infrastructure (CDRI) released the first biennial report on global infrastructure titled "Global Infrastructure Resilience: Capturing the Resilience Dividend.

What is Infrastructure Resilience?

- Infrastructure: Infrastructure is defined by the UN as "the physical structures, facilities, networks and other assets which provide services that are essential to the social and economic functioning of a community or society".
- Resilience: Resilience is the ability to prevent, resist, absorb, adapt, respond and recover positively, efficiently and effectively when faced with a wide range of risks while maintaining an acceptable level of functioning.

Dimensions:

- Resilient infrastructure: Infrastructure that can absorb, respond to, and recover from hazard events and shocks.
- Infrastructure for resilience: Infrastructure that supports broader social and economic or systemic resilience without generating or accumulating new systemic risk.

Global Infrastructure Risks and the need for Infrastructure resilience

- **Obsolescence of infrastructure**: Many countries, particularly those that industrialized prior to World War II, need to replace obsolete infrastructure assets.
- **Weak infrastructure governance**: Socio-economic development in lower income countries is constrained by large infrastructure deficits being aggravated by weak infrastructure governance.
    - Deficient planning and design, inadequate standards, ineffective regulation and compliance and low levels of investment characterize weak infrastructure governance.
- **Systemic risks**: Systemic risks such as climate change and biodiversity loss, can be considered existential, as they threaten the habitability of the planet.
- International agreements for climate change mitigation mandate a rapid transition from carbon-locked-in infrastructure to low, zero, or negative emission infrastructure.

- **Developmental benefits:** Investing to strengthen infrastructure resilience could set countries on a development trajectory characterized by quality and dependable essential services, reduced damage to infrastructure assets, lowered systemic risk, and sustainable development goals.
- **Disproportionate impact**: The resources required in Low- and Middle-Income Countries (LMICs) for infrastructure resilience are at least one order of magnitude greater than current investment.
- **Infrastructure finance**: Recent estimates of the annual investment required to address infrastructure deficits, achieve the SDGs, and achieve net zero by 2050, amount to $9.2 trillion.
    - In the coming years, it is expected that just four countries (China, India, Japan, and USA) will account for 50% of total global infrastructure investment

Nature-based Infrastructure Solutions (NbIS)

- NbIS refer to practices that concurrently protect and provide infrastructure, adapt to climate change, promote environmental integrity and biodiversity, and provide social well-being. If widely adopted, they can play a crucial role in strengthening resilience.
- **Safeguarding traditional infrastructure**: NbIS can be used to complement, substitute or safeguard traditional 'grey' infrastructure, thus representing a paradigm shift towards building with nature.
- **Low-cost:** NbIS cost, on average, only 51% of grey infrastructure projects.

Reducing carbon emissions:

- NbIS also reduce carbon emissions across infrastructure lifecycles, which will enable avoiding land use change and extending infrastructure lifespans.

Function:

- Con reduce or avoid need for engineered infrastructure ossets.
- NbIS such as wetlands, roads and ponds con filter pollutants, assimilate wastes and provide water treatment facilities.
- Increasing efficiency, reduces need for maintenance.
- Ripanan vegetation can stabilize soils, and reduce serdimentation, thus reducing need for dredging.
- Protection from climate impacts.
- Agroforestry can help in reducing occurence of shallow, rapidly moving landslides.
- Boost health of infrastructure worker and improve productivity.
- Social benefits advancing global targets such as SDGs and Paris agreement
- Promotion of opportunities for women's involvement in decision making

Challenges for integrating NbIS

- **Knowledge requirement:** NbIS require new interdisciplinary knowledge and skill sets that traditional engineers and architects do not necessarily possess. Lack of research: Rarely can one find research that quantifies ecosystem services, integrates nature-based values into modelling and cost-benefit accounting, and facilitates the design of NbIS.
- **Lack of risk assessment**: Without a credible and robust risk identification process, it is impossible to identify the resilience dividends that can accrue through adopting NbIS.

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- **Politically unattractive**: NbIS may sometimes be unattractive politically precisely because it reduces opportunities for privatized profits. Gestation period: NbIS is often a slow solution in a context where many infrastructure requirements need quick.

Integrating Nature based Infrastructure Solutions

- **Research:** Carefully reviewed, curated, up-to-date, multi-lingual and publicly available research, libraries, design standards, and case studies are essential.
- All countries, particularly LMICS, will need national centres of excellence in NbIS.
- **Outcome linked NbIS:** Linking NbIS monitoring to the achievement of the SDG and the global common goals may facilitate its greater uptake.
- **Regulation:** Effective legislation to protect and enhance ecosystems is necessary to encourage greater investment in NbIS
- **Rating systems**: Rating tools can serve as a market signal for resilience or sustainability and provide verified examples of good practice.

8. DECARBONISATION OF THE CEMENT INDUSTRY

- **In the cement industry, Pyro-processing** (limestone and clay, are heated in a kiln at more than 1,400oC) and **calcination** (calcium carbonate (CaCO3) is heated) are major processes which cause Carbon emissions.
- **Need of decarbonisation in the cement Industry**
    - It is the **second largest industrial emitter** in the world (after iron and steel).
    - Contributes about **7 %** of CO2 emissions globally.
    - **Important to achieve commitments of "net zero" emissions by 2050** (or by 2070, as pledged by India).
- **Challenges in India**
    - India is one of the **fastest urbanising countries and is witnessing a housing and infrastructure boom**.
    - **Lack of availability of alternatives for Pyroprocessing** and **calcination**
    - **Limited initiatives and economic measures** promote sectoral energy efficiency enhancements
- **Measures**
    - Increase the share of **blended cement** (minimizing the use of limestone by using another substitute).
    - Increase the share of **recycled materials in production.**
    - More utilization of alternative fuels like **refusederived fuel (RDF)**, **industrial waste** and **biomass**.
    - Using innovative technologies like **carbon capture, utilisation and storage (CCUS).**

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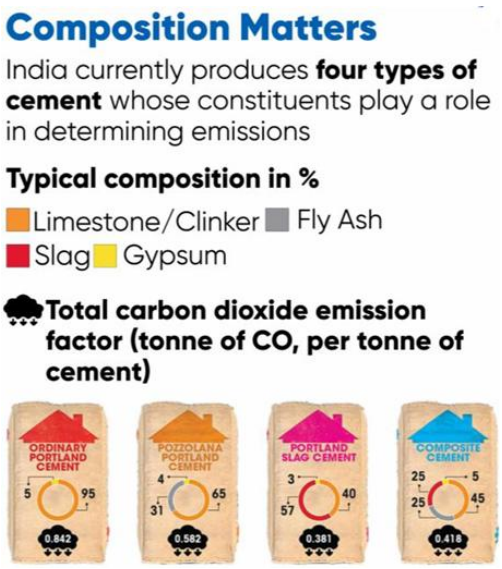

9. **PETROLEUM COKE OR PET COKE**

- Supreme Court has asked **Commission for Air Quality Management (CAQM)** to consider issues related to distribution of highly polluting pet coke
- Pet coke is a **carbon-rich solid material** derived from **final cracking process** of **crude-oil refining**
- It is used as **a replacement of coal due to its higher calorific value**
- It is **hydrophobic, less volatile and produces low ash** residue,
- It is used in C**ement manufacturing, lime kilns, industrial boilers, Aluminum Anodes,** etc.

10. **FISH MINT**

- **Herbal plant** full of medicinal properties
- **Distribution**: Extends from the Himalayan foothills through Southeast Asia, China, Korea and Japan.
    - In Meghalaya, known as ja mardoh, tokning-khok in Manipur, in Assam, as masunduri.
- **Features: Has a fish-like taste and smell**. Hence, the name, fish mint.
- **Invasive plant**: Because of its ability to regrow from underground rhizomes forming new plants when disturbed.
- **Medicinal Properties:** used to treat digestive issues, insect bites, fevers, coughs, etc.
- Its benefits have been **documented in ancient texts of Ayurveda and Siddha.**

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11. **DANCING FROGS**

- **Dancing frogs of the Western Ghats** are considered one of the **most threatened amphibian genera** as per **second Global Amphibian Assessment** of IUCN
    - **Nilgiri Dancing Frog** is listed as **Vulnerable** and White-Cheeked Dancing Frog is listed as **Endangered on IUCN List.**
- They are **threatened by invasive species, land use change, extreme weather**, etc.
- Named so as they perform **"foot flagging"** in which males **stretch up their hind legs** one at a time and wave their webbed toes in air in a rapid **motion akin to a dance**.

12. **PINK BOLLWORM**

- **Damage by pink bollworm (PBW)** to Bt Cotton worst in two decades
- Bt (Bacillus thuringiensis) cotton which incorporates genes from a soil bacterium code for proteins toxic to American bollworm.
- **Pink Bollworm (PBW)** Scientific Name: Pectinophora gossypiella (Saunders)
    - Bollworm is any larvae of various moths.
- **Native To:** Possibly the eastern Indian Ocean region.
- **Impact:** Adults lay eggs on **cotton bolls; once hatched,** the larvae eat the seeds and damage the fibres of the cotton, **reducing the yield and quality**

13. INDIA'S FIRST NANO DAP PLANT

- Union Home Minister and Minister of Cooperation inaugurated India's 1st IFFCO's Nano DAP (Liquid) plant in Kalol (Gandhinagar), Gujarat.

What are Nano DAP and Nano Urea**?**

- Nano DAP and Nano Urea are advanced agricultural fertilizers designed to improve nutrient efficiency and reduce environmental impact. DAP liquid is an efficient source of Nitrogen and Phosphorus. They are developed using nanotechnology to enhance nutrient delivery to plants, leading to higher crop yields with less fertilizer usage.

Significance:

- The introduction of **Nano Urea and Nano DAP** is seen as a groundbreaking agricultural experiment, aiming to reduce urea use and promote natural farming, with the potential for significant positive impacts if adopted by **Primary Agricultural Credit Societies (PACS)** nationwide.

The benefit of Nano Technology in Fertilizers:

Benefits	Explanation
Increased Surface Area	Nano-sized particles have a larger surface area, aiding nutrient absorption.
Improved Solubility	Nanoparticles dissolve easily in water, ensuring nutrient availability.

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Targeted Delivery	Nanotechnology enables controlled nutrient release to plant roots.
Reduced Leaching	Nano fertilizers have lower leaching potential, reducing environmental impact.
Enhanced Nutrient Uptake	Smaller particles facilitate better nutrient absorption by plant roots.

14. **IEA: WORLD ENERGY OUTLOOK 2023**

Context:

- According to the International Energy Agency, India is expected to have the **highest growth in energy demand** over the next three decades, however, India's industrial sector will emit **30% less CO2 by 2030**, and passenger cars will emit 25% less CO2 per kilometre driven.

Reasons for such assessment:

- These changes are attributed to **government policies that have lifted people out of poverty** and improved their quality of life while addressing **climate commitments** through increased efficiency and new technologies.
- **Other assessments about India:** Over the past five years in India, **solar PV has accounted for nearly 60% of new generation** capacity.

Other assessments about the World:

- Fossil fuel share in the global energy supply is projected to reduce from around **80% to 73% by 2030**. Global energy-related carbon dioxide (CO2) emissions will peak by 2025.

About IEA

- IEA (HQ: Paris; Founded in 1974) is an **autonomous intergovernmental organisation** to ensure the security of oil supplies. Membership: 31 countries (India is not a member). India is part of the **'association countries'** of IEA. **World Energy Outlook is Published every year** and provides critical analysis and insights on trends in energy demand and supply

SCIENCE AND TECHNOLOGY

1.NOBEL PRIZE IN PHYSICS 2023

- Prize awarded for: Experimental methods that generate attosecond pulses of light for the study of electron dynamics in matter.
- Awardees: Pierre Agostini, Ferenc Krausz, and Anne L'Huillier.

About Electron Dynamics

- Electron dynamics, in simple terms, refers to the behaviour and movement of electrons within atoms and molecules.
- An atom is composed of a nucleus of protons and neutrons, and electrons which are negatively charged travel around this nucleus.

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- Atoms natural time scale is incredibly short. Atoms can move and turn in millionths of a billionth of a second, known as femtoseconds (Femtosecond is equal to 10 second).
- Electrons move or change rapidly, in the magnitude of attosecond, which makes them difficult to study.
- For a long time, femtosecond was seen as the shortest achievable duration of the light pulses. Thus, making the study of electrons very difficult.

How did the discovery overcome this challenge?

- Generation of attosecond pulses of light (Anne L'Huillier) In 1987, Anne L'Huillier and her colleagues transmitted an Infrared laser beam through a noble gas and it produced multiple overtones.
- When the peak of one overtone merges with the peak of another, they undergo constructive interference and produce a larger peak.
- Similarly when the peak of one overtone merges with the trough of another, however, they undergo destructive interference, 'cancelling' themselves out. By combining a large number of overtones in this way, physicists fine-tune a setup to produce light pulses for a few hundred attoseconds

Production of pulse train (Pierre Agostini and Ferenc Krausz)

- In 2001, Pierre Agostini and Ferenc Krausz were able to produce verified attosecond pulses in a 'train': a pulse followed by a gap, followed by a pulse, and so forth.
- By 2017, experts were able to produce a pulse as short as 43 attoseconds.
- Resultantly, these experiments produced pulses of light that were measured in attoseconds. These pulses can be used to provide images of the processes inside. atoms and molecules (including electron dynamics).

Applications of attosecond physics

- **Medical diagnostics:** To check for the presence of certain molecules. For instance, study of molecular- level changes in blood, to identify diseases.
- **Development of Ultrafast Electronics**: To develop faster electronic devices,and better telecommunications, imaging, and spectroscopy.
- **Precision Control of Electrons:** To explore short-lived atomic and molecular processes in fields like materials science, electronics, and catalysis

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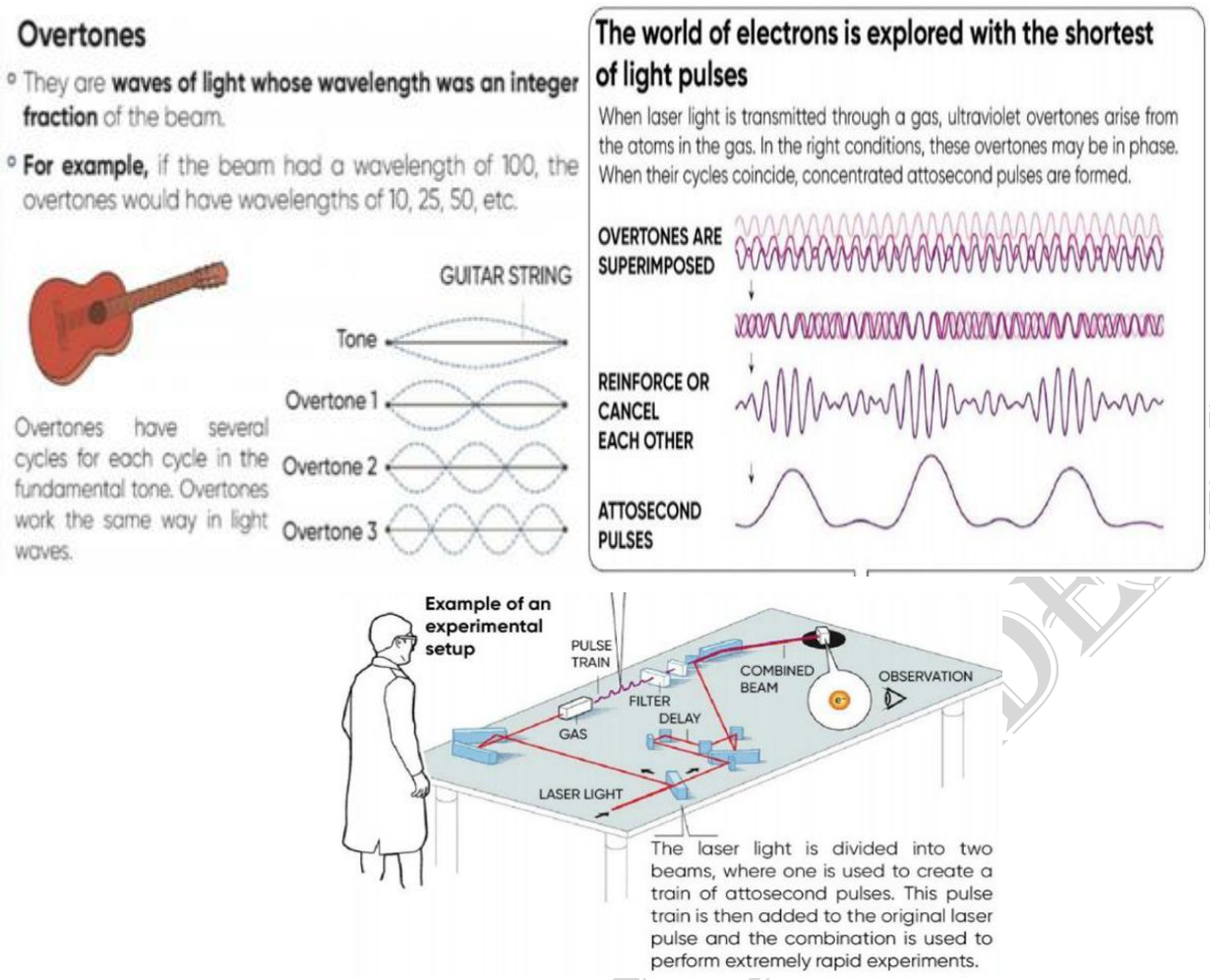

2. NOBEL PRIZE IN CHEMISTRY 2023

- Prize awarded for: The discovery and development of quantum dots.
- Awardees: The prize was given to Moungi G. Bawendi, Louis E. Brus and Aleksey Yekimov.

Quantum dots (QDs)

- Quantum dots are man-made semiconductor particles, whose sizes are normally not more. than 10 nanometers.
- They are composed of different types of atoms, such as cadmium, selenium etc.
- Similar behaviour is observed in some metals, therefore, in some cases, it may be acceptable to speak about metal quantum dots..
- QDs are also denoted as artificial atoms or zero-dimensional electron systems.
- **Properties of QDs:** They exhibit quantum confinement, which leads to many unique optical and transport properties.
- **Fluorescence:** When excited by an external electric or light source, QDs emit photons of a specific wavelength.
- **Tunable Emission**: QDs can emit light of different colours depending on their size. This property is called size-tunable emission and is widely used in display technologies and bioimaging.
- **Photostability:** QDs are less prone to photobleaching (loss of fluorescence over time) compared to traditional organic dyes. This makes them suitable for long-term imaging applications.

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- **Material Variety:** QDs can be made from different semiconductor materials, such as cadmium selenide (CdSe), lead sulfide (PbS), and indium arsenide (InAs), each with its own unique properties.
- **Biocompatibility:** Some quantum dots are biocompatible, which means they can be used in biological applications without causing harm to living cells. This property is advantageous in bioimaging and drug delivery

About Nobel Winning Research

- In the early 1980s, Alexei Ekimov succeeded in creating size-dependent quantum effects in coloured glass. that the He demonstrated particle size affected the colour of the glass via quantum effects.
- A few years later, Louis Brus was the first scientist in the world to prove size-dependent quantum effects in particles floating freely in a fluid.
- In 1993, Moungi Bawendi developed. a technique to make quantum dots of well-defined sizes and with high optical quality.

Terms;

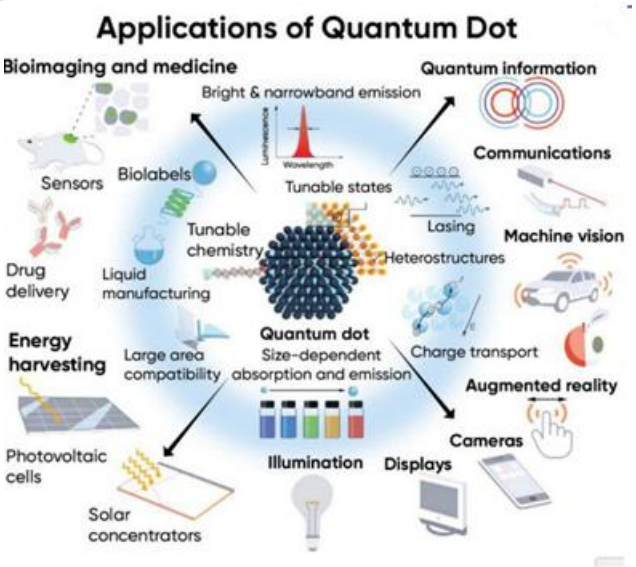
Quantum effects arise when particles shrink

- When particles are just a few nanometres in diameter, the space available to electrons shrinks The affects the particle's optical properties
- Quantum confinement: It is a phenomenon in the world of quantum mechanics that occurs when particles, typically electrons, are confined to a very small space, such as in nanoscale structures

Applications of Quantum Dots

The technology can be applied in multitude of domains, including the following:

- Electronics: Television screens based on QLED technology, and LED lamps.
- Advanced surgery: In cancer treatment for targeted drug delivery, nanomedicine, biochemists and doctors use them to map biological tissue.
- Anti-counterfeit measure: Used as security markers on currency and documents. Other potential uses: In quantum computing, thinner solar cells, flexible electronics, tiny sensors, and encrypted quantum communication etc



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3. NOBEL PRIZE IN PHYSIOLOGY OR MEDICINE 2023

- Prize awarded for: Discoveries concerning nucleoside base modifications that enabled the development of effective mRNA vaccines against COVID-19.
- Awardees: The prize was given to Katalin Karikó and Drew Weissman.

About Vaccination and COVID-19

- A Vaccination works by stimulating the formation of an immune response to a particular pathogen.
- Vaccines based on killed or weakened viruses have long been available such as vaccines against polio, measles, and yellow fever.
- As technology evolved, instead of the whole virus, just a part of the viral genetic code, began to be introduced through vaccines (DNA-based vaccines).
- However, the large-scale development of DNA vaccines requires cell culture (growing of cells under controlled conditions) and takes time.
- When you get a DNA vaccine, your cells translate the gene particle from the virus or bacteria into a protein that your body recognizes as a foreign element. Your immune system then creates antibodies that fight these particular proteins. During the COVID-19 outbreak, time was of the essence in finding a weapon against the deadly and fast-spreading virus. This is where mRNA technology proved crucial as it requires significantly less time.
- The mRNA vaccines provided a promise of faster vaccine development but posed significant challenges. These challenges were addressed in the work of Nobel Laurates.

Work of Nobel laureates

Understanding the concerns with mRNA vaccines

Issues with In vitro transcribed mRNA vaccines:

- Instability: They were considered unstable and challenging to deliver, requiring the development of sophisticated delivery systems.
- Inflammatory reactions: The cells recognize in vitro transcribed mRNA as a foreign substance, which leads to their activation and the release of inflammatory signaling molecules.

Inefficient Protein Production in Cells and Tissues

- They questioned why this synthetic mRNA was considered to be a foreign substance while mRNA from mammalian cells did not give rise to the same reaction.
- Reason for a different reaction: The mRNA from cells (mammalian mRNA) undergoes a chemical change after entering the body, whereas the synthetic mRNA remains unchanged.
- This led them to realize some critical properties must distinguish synthetic mRNA from mammalian cells mRNA.
- **Understanding:** Kariko and Weissman knew that nucleoside bases in RNA from mammalian cells are frequently chemically modified.
- **Hypothesis:** They hypothesised that the absence of altered bases in the in vitro. transcribed RNA could explain the unwanted inflammatory reaction.

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- **Testing:** On testing, they produced different variants of mRNA, each with unique chemical alterations in their bases, which they delivered to the cells.
- **Result:** The results were significant as the inflammatory response was almost abolished when base modifications were included in the mRNA

Applications of the discovery

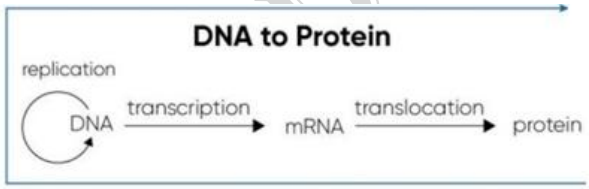
- **Covid-19 Vaccination**: With the onset of the Covid-19 pandemic, base-modified mRNA vaccines encoding the SARS-CoV-2 surface protein were developed at an unprecedented pace.
- **Rapid vaccine development:** Impressive flexibility and speed with which mRNA vaccines can be developed pave the way for using the new platform for vaccines against other infectious diseases.
- **Broad applicability:** In the future, the technology may also be used to deliver therapeutic proteins and treat some cancer types.
- **Global health impact**: mRNA vaccines can play a role in improving global health by addressing a range of infectious diseases and potentially reducing the severity and spread of epidemics and pandemics.

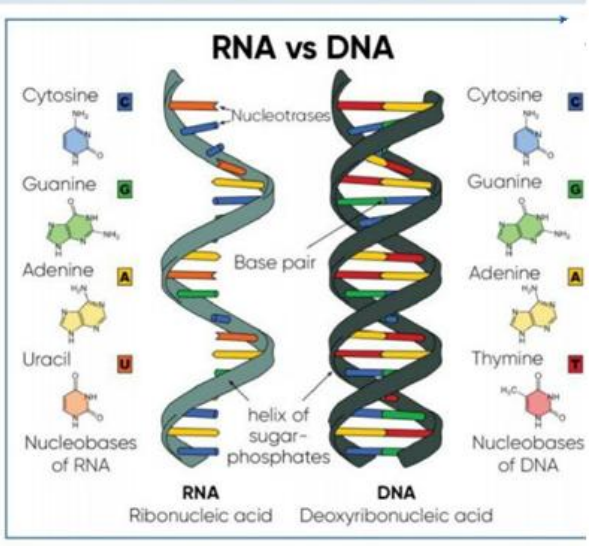
About mRNA (messenger Ribonucleic Acid)

- **DNA stores all the genetic information** in our bodies; **mRNA carries that genetic information,** similar to a blueprint or set of instructions, that is then **translated into proteins.**
  - **RNA contains 4 nucleoside bases,** abbreviated A, U, G, and C, corresponding to A, T, G, and C in DNA, the letters of the genetic code.

Working of an mRNA vaccine

- mRNA vaccines use mRNA created in a laboratory to teach **our cells how to make a protein**-or even just a piece of a protein that **triggers an immune response** inside our bodies.
  - **In vitro transcribed mRNA or synthetic mRNA** is the synthetic form of mRNA that is used in mRNA-based vaccines. (It is created outside of a living cell.)
- This immune response, which **produces antibodies,** is what helps protect us from getting sick immediately. Also, the body remembers the associated pathogens, thus creating immunity for the future.





4. INTERNAL STRUCTURE OF MARS

Context:

- According to a pair of recent studies published in Nature, Mars's liquid iron core is likely to be surrounded by a fully molten silicate layer.
- Data from three years of quakes in Mars, including two seismic events caused by meteorite impacts, were used for the study.
- NASA's InSight Mars Lander used an instrument called the Seismic Experiment for Interior Structure (SEIS) to record seismic waves passing through Mars's interior.

What are the Key Findings of the Study?

Note:

Mars's Core Composition:

- In 2021, measurements from NASA's InSight lander's SEIS project indicated the presence of a large, low-density core in Mars, comprising liquid iron and lighter elements like sulphur, carbon, oxygen, and hydrogen.
- However, two recent studies challenge this finding.
- They found that the Martian core is surrounded by a 150 km-thick layer of near-molten silicate rock, indicating a higher core density than previously thought.

Misinterpretation of Core Surface:

- The studies reveal that the top of this silicate layer was initially misinterpreted as the core's surface. This reinterpretation implies that Mars's core is more compact than earlier estimates, aligning better with existing knowledge of chemical abundances on Mars.
- This revised understanding suggests that Mars may have had a turbulent interior following its formation, with temperatures reaching at least 2,000 Kelvin, rather than a calmer, heat- shedding process into interplanetary space.

Impact on Mars's Geological History:

- The findings have significant implications for Mars's geological history, hinting at a more dynamic and energetic early phase. The presence of a molten silicate layer implies a vigorous and turbulent interior, possibly affecting Mars's geological evolution and the distribution of elements within the planet.

What is InSights Mars Lander?

About:

- InSight (interior Exploration using Seismic Investigations, Geodesy and Heat Transport) was sent on a 24-month mission in 2018. InSight will study the interior of Mars.
- The landing site is Elysium Planitia (a flat-smooth plain just north of the equator considered to be the perfect location from which to study the deep Martian interior), where InSight can stay still and quiet all through.

Functions:

- Mars InSight's goal is to listen for quakes and tremors as a way to unveil the Red Planet's inner mysteries. The mission seeks to answer critical questions about rocky planet formation in the early days of the solar system.

What are the Various Mars Missions?

- NASA has a lander (Mars Insight), two rovers (Curiosity and Perseverance), and three orbiters (Mars Reconnaissance Orbiter, Mars Odyssey, MAVEN)
- ExoMars rover (2021) (European Space Agency) Tianwen-1: China's Mars Mission (2021)
- UAE's Hope Mars Mission (UAE's first-ever interplanetary mission) (2021)
- India's Mars Orbiter Mission (MOM) or Mangalyaan (2013)
- Mars 2 and Mars 3 (1971) (Soviet Union

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5. CLOUD SEEDING

Context:

- Cloud seeding, a groundbreaking technique to enhance rainfall, has taken centre stage in a recent study published in the journal Bulletin of the American Meteorological Society, conducted by the Indian Institute of Tropical Meteorology, Pune.
- The study unveils the potential of cloud seeding to boost precipitation in water-scarce regions, offering hope for tackling drought conditions..

CAIPEEX Phase-4 Investigation:

- The Cloud Aerosol Interaction and Precipitation Enhancement Experiment (CAIPEEX phase-4) was a two-year study in Solapur (Maharashtra), conducted during the 2018 and 2019 summer monsoons.
- Its primary objective was to assess the effectiveness of hygroscopic seeding in deep convective clouds and develop a cloud seeding protocol. Researchers used calcium chloride flares for cloud seeding.
- A cloud seeding flare releases these particles. when triggered. The seeding was done at the base of the warm convective clouds and at a time when the clouds were in their growing stage so that the seed particles could enter the clouds with minimum dispersion.

Cloud Seeding's Effectiveness:

- Cloud seeding is proven effective for enhancing rainfall under suitable conditions. A random seeding experiment selected 276 convective clouds, with 150 clouds subjected to seeding and 122 unseeded.
- Specific cloud characteristics, including liquid. water content and vertical motion, were used to identify clouds with potential for rainfall. Targeted convective clouds were typically over one kilometer deep and likely to evolve into deep cumulus clouds

Benefits:

Cost-Benefit Ratio:

- The approximate cost of producing water through cloud seeding was 18 paisa per liter during the research experiment.
- Using indigenous seeding aircraft could reduce costs by more than 50%.

Managing Drought Conditions:

- Cloud seeding alone cannot fully mitigate droughts but can contribute to an 18% increase in rainfall, partially addressing water requirements.
- Undertaking cloud seeding as part of catchment- scale projects could help in drought management.

Practical Applications:

- Cloud seeding can significantly benefit regions.
- like Solapur which falls on the leeward side of the Western Ghats and hence gets low rainfall.
- Additional water through cloud seeding has the potential to alleviate water scarcity issues in such areas.

Microphysics and Cloud Characteristics:

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- The two-year study aimed to understand the microphysics and characteristics of convective clouds suitable for enhancing rainfall.
- It provides comprehensive protocols and technical guidance for planning and conducting doud seeding in India.

Cloud Variability:

- Not all cumulus clouds respond to cloud seeding; approximately 20-25% can produce rainfall if seeding is executed correctly.
- Cloud microphysics varies widely, leading to varied results with cloud seeding..

Cloud Seeding Methods:

Static Cloud Seeding:

- This method involves introducing ice nuclei, such as silver iodide or dry ice, into cold clouds that have supercooled liquid water droplets. The ice nuclei can trigger the formation of ice crystals or snowflakes, which can grow at the expense of the liquid droplets and fall as precipitation.

Dynamic Cloud Seeding:

- Dynamic cloud seeding is a method of inducing rain by boosting vertical air currents.
- The process is considered more complex than static cloud seeding because it depends on a sequence of events working properly.
- **Hygroscopic Cloud Seeding:** This method involves spraying fine particles of hygroscopic materials, such as salts through flares or explosives into the base of warm clouds.. The particles can act as cloud condensation nuclei and increase the number of cloud droplets, which can enhance the reflectivity and stability of the cloud.

Challenges:

- Cloud seeding requires the presence of moisture- filled clouds, which are not always available or predictable.
- Cloud seeding does not occur during times when additional precipitation would be problematic, such as times of high flood risk or busy holiday travel periods.
- Cloud seeding may have negative effects on the environment and health, such as altering the natural water cycle, contaminating the soil and water with chemicals, or affecting the local climate.

6. TV-D1 MISSION:

Context:

- Indian Space Research Organisation (ISRO) is set to launch its first-ever test flight, TV-D1, for the Gaganyaan mission, marking a pivotal moment in India's pursuit of human spaceflight.

About TV-D1 Mission:

- Test Vehicle Abort Mission-1 (TV-D1) will evaluate the crew module's readiness for the Gaganyaan mission.
- It is a single-stage liquid rocket developed specifically for this abort mission.
- The payloads consist of the Crew Module (CM) and Crew Escape Systems (CES) with their fast-acting solid motors, along with CM fairing (CMF) and Interface Adapters.

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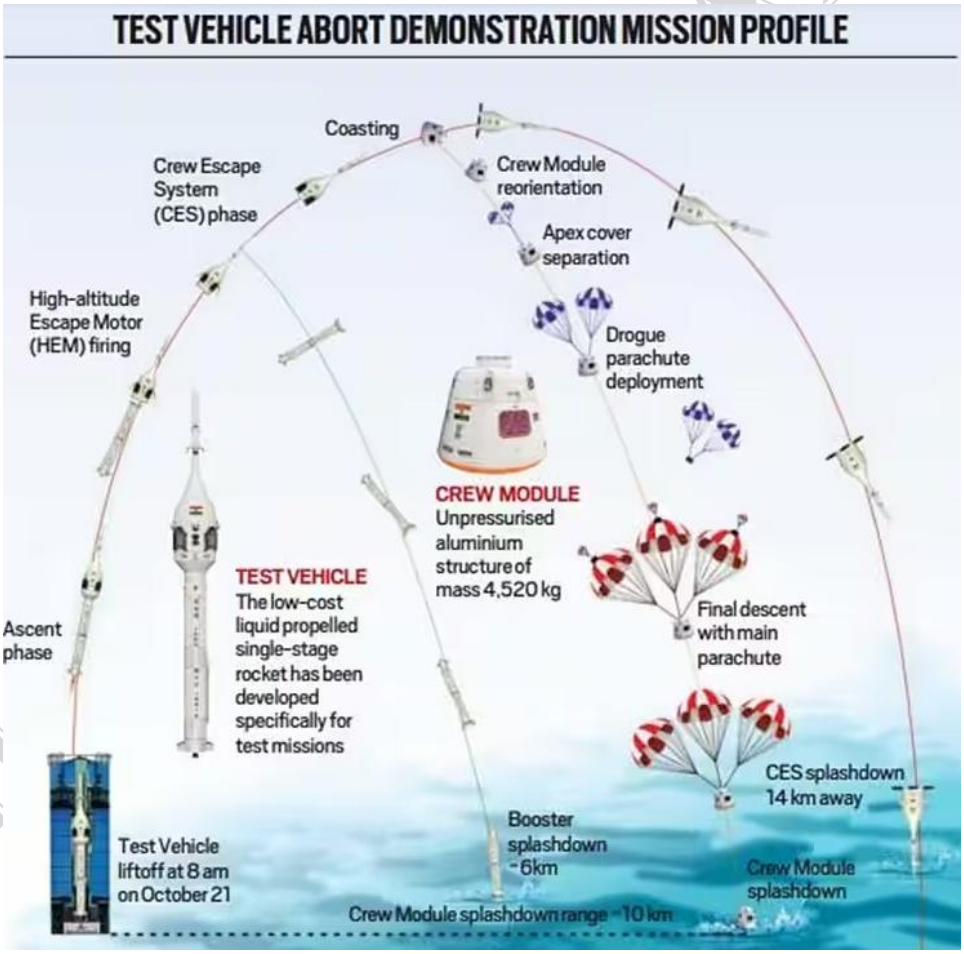
- This flight will simulate the abort condition during the ascent trajectory corresponding to a Mach number of 1.2 encountered in the Gaganyaan mission.

What is the test all about?

- The abort and crew escape system operates on a similar principle to an ejection seat found in fighter jets, with the primary goal of safeguarding the lives of crew members in the event of in-flight anomalies.
- The Crew Escape System is engineered to automatically function across various altitudes should the onboard computer detect any malfunctions.
- This test flight will simulate an abort condition during the ascent trajectory.
- Objective: To test a crucial system to be deployed on the Gaganyaan mission that will ensure the safety of the Indian astronauts in case of an emergency in the initial phase of the launch.
- CES with CM will be separated from the Test Vehicle at an altitude of about 17 km.
- Subsequently, the abort sequence will be executed autonomously commencing with the separation of CES and deployment of the series of parachutes, finally culminating in the safe touchdown of CM in the sea, about 10 km from the coast of Sriharikota.



7. THALLIUM POISONING

Context:

- Recently multiple family members in Mahagaon village, Maharashtra fell victim to thallium poisoning, a chemical that operates in silence, evading detection.

What are the Key Facts about Thallium?

About:

- Thallium (TI) is a chemical element with the atomic number 81, was discovered by Sir William Crookes in 1861.
- It is a soft, heavy, inelastic metal.
- Thallium is tasteless and odourless and has been used by murderers as a difficult-to-detect poison.

Appearance:

- A soft, silvery white metal that tarnishes easily.

Sources:

- It is found in trace amounts in the earth's crust.
- It is found in several ores. One of these is pyrites, which is used to produce sulfuric acid. Some thallium is obtained from pyrites, but it is mainly obtained as a by-product of copper, zinc and lead refining.

Uses:

- Thallium's use is restricted due to its toxic nature.
- Thallium sulfate, a rodent killer, is now banned for household use in many developed nations.
- The technology is utilized in the electronics industry specifically for photoelectric cells.
- Thallium oxide is utilized in the production of high-refraction glass and low-melting glass.
- This material is utilized in the production of low temperature thermometers and imitation jewels.

Health Hazards:

- Thallium can cause neurological damage, including headaches, weakness, and irritability, and repeated exposures can lead to tremors, hallucinations, coma, and even death.

Antidote:

- Prussian blue is utilized in non-radioactive thallium poisoning.

8. MARSQUAKE

Context:

- Recently, scientists have revealed the causes of the largest recorded marsquake. This finding holds scientific importance and carries implications for forthcoming Mars exploration by providing fresh insights into the geology and seismic events of the Red Planet.

What are the Recent Findings Related to Marsquake?

- A Marsquake, or Martian earthquake, is a seismic event occurring on Mars. In 2022, a significant marsquake with a magnitude of 4.7 was recorded.
- Initial suspicion was a meteoroid impact due to similar seismic signals from past meteoroid- caused quakes.

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Space agencies like Indian Space Research Organisation

- (ISRO), European Space Agency, China National Space Administration, and the UAE Space Agency collaborated on a groundbreaking project to search for a crater on Mars.
- The search found no impact crater, leading to the conclusion that the marsquake resulted from internal tectonic forces, indicating increased seismic activity.
- The cause was attributed to the accumulated stresses within Mars' crust, evolving over billions of years due to differential cooling and shrinking rates in different regions. This discovery has implications for future Mars exploration, aiding in the identification of safe landing sites and areas to avoid for astronauts.

9. UNLOCKING INDIA'S SPACETECH POTENTIAL

Context:

- Indian A report titled "Exploring Opportunities for Downstream Spacetech" was jointly launched by Indian Space Association (ISPA), Nasscom, Deloitte India at Indian Space Conclave 2023.

The paradigm shift in India's Space journey

- The Start: Indian Space journey started with the formation of INCOSPAR (Indian National Committee for Space Research) in 1962, ISRO (Indian Space Research Organization) in 1969 and the Department of Space. (DoS) in 1972. Government was the only player: Since then and up. till the 2010s, the space sector was effectively domain of the Government with negligible private. sector participation.

Entry of Private Sector:

- Space is no longer the exclusive domain of Government, and it is set to be driven by synergistic efforts between public and private sectors due to its strategic and economic significance.
- Segmental diversification: Until now, most of the contribution of space technology has been from the upstream segment of the value chain through satellite manufacturing, launching etc.,
- India's new space policy 2023 has opened opportunities for space technology to serve even the downstream segment.

Potential areas for the Indian downstream space sector

- Remote sensing/Earth Observation (EO): includes services for storage of satellite data, data analysis and development of applications. In sectors like
- Agriculture: Crop identification, soil mapping, weather monitoring, irrigation management etc..
- Urban Planning and Development: Master development, Urban heat island
- Agriculture: Crop identification, soil mapping, weather monitoring, irrigation management etc
- prediction and monitoring etc..
- Disaster Management: Prediction. and Post-Disaster Management. Blue Economy (Fisheries, oceanography): Fish Detection & forecasts, Potential Fishing zones etc

Satellite Communications (SatCom)

- Focuses on products and services that use communication satellites for services like broadcasting, communication, and internet connectivity.

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- Connectivity for bank branches in remote areas.
- Health, Education and Governance Delivery.
- Other Sectors: Tourism, Payments, Trade, Digital Commerce etc.
- Positioning, Navigation & Timing services (PNT): Includes services used for tracking of assets, navigation services on air, land and sea etc.
- Guidance: Drones, Navigation for enterprises, Toll collection, Railways.
- Civil Aviation: Commercial Aviation, Airport Operations etc.
- Time Synchronization: Telecom, Energy, Finance etc..
- Space for Strategic Purposes: Categorised as the fourth operational domain, space has always been a dual-purpose sector to serve national security and strategic interests.
- Secure Communication: Integrated Command and Control Centre. Intelligence, Surveillance and Reconnaissance: Strategic Surveillance, Asset, Marine Domain Awareness etc.

Challenges for the emerging Indian Private Space ecosystem

- International Competition: Global space industry is highly competitive, and Indian companies need to find their niche and differentiate themselves to compete effectively. Access to Capital: Major funding is for the industries related to the upstream activities while the downstream companies pull in lower amounts.
- Supply Chain Disruption: Global instability and geopolitical conflicts disrupt supply chains, leading to limited access to key equipment for private sector.

Other concerns:

Indian space tech market lacks comprehensive data aggregation and analytics capabilities. Space sector faces challenges in justifying Return on Investment (ROI) due to the high cost of space resources.

Way ahead

- **Active role of Government**: With the space sector opening up, governments have a crucial role to play as enablers and consumers of Earth observation-based services. Their involvement can nurture the growing ecosystem.
- **Streamlined Regulatory Framework**: Simplify and expedite regulatory processes, ensuring transparency and predictability in approvals.
- **Public-Private Partnerships**: Encourage collaborations to expand satellite communication services to make space- based services more affordable.
- **Global Collaboration**: Enhance and Strengthen Cooperation of International Partners with the Indian Space Industry through initiatives like Satellite Services, NISAR (India-US) etc.

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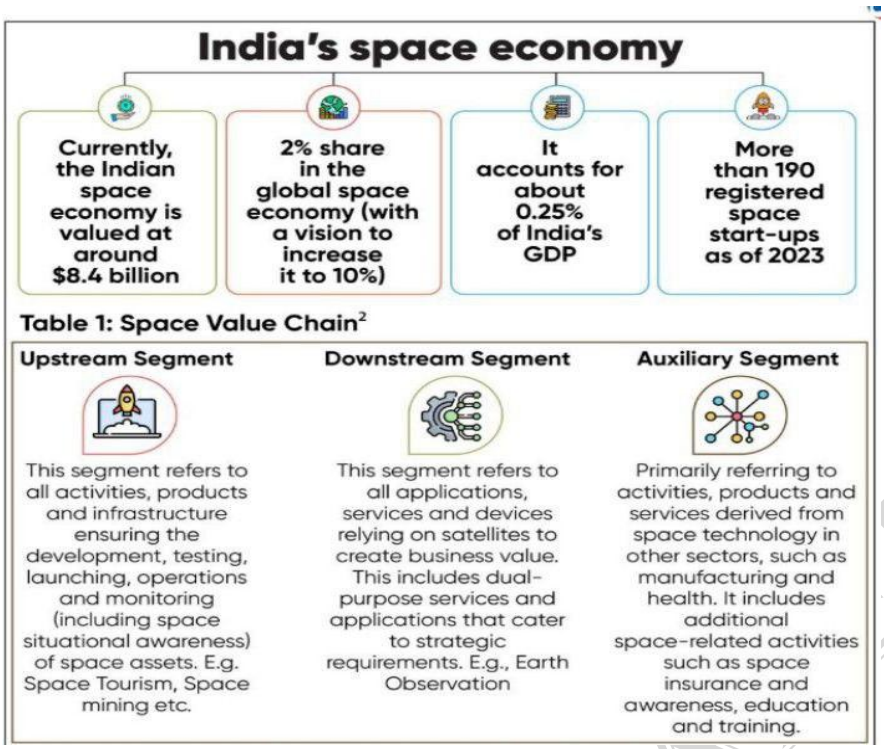

10. MARINE CLOUD BRIGHTENING

Context:

- Researchers in Australia are exploring the concept of "marine cloud brightening" as a potential solution to protect the Great Barrier Reef from heat-induced coral bleaching.

What is Marine cloud brightening?

- Marine cloud brightening is a proposed technique to combat global warming.
- The idea is to make clouds over the ocean brighter so they reflect more sunlight back into space, which could help cool down the Earth.
- British cloud physicist John Latham originally proposed cloud brightening in 1990.

How does Marine cloud brightening work?

- Tiny particles like sea salt are sprayed into clouds over the ocean.These particles attract water vapor, forming small cloud droplets.
- The increased number of droplets makes the clouds whiter, so they reflect more sunlight.
- By reflecting more sunlight, less heat reaches the Earth's surface.This could potentially lower the temperature of both the atmosphere and oceans.

Mechanism of Marine Cloud Brightening:

- In clean maritime air, clouds primarily form from sulfates and sea salt crystals, which are relatively scarce, leading to larger droplets with lower light reflection.
- Marine cloud brightening (MCB) seeks to boost marine cloud reflectivity (albedo), making clouds whiter and brighter.
- It involves using water cannons or specialized vessels to release fine sea water droplets into the atmosphere.

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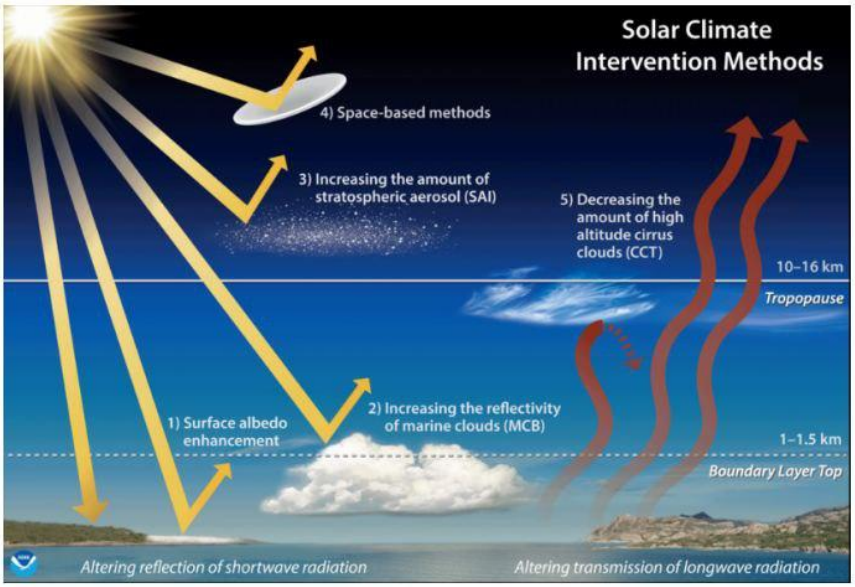
- As these droplets evaporate, they leave behind salt particles, serving as cloud condensation nuclei that foster the formation of denser, brighter clouds



Benefits of Marine Cloud Brightening

- **Lower sea surface temperatures:** MCB has the potential to decrease sea surface temperatures in specific regions, potentially reducing the frequency and severity of coral bleaching events.
- **Resurrection of Great Barrier** Reef Researchers is conducting modeling studies and small-scale experiments to evaluate the feasibility of MCB for the Great Barrier Reef's revival.
- **Neutralize impacts of Climate change**: It has been suggested to mitigate the severe impacts of climate change, including reducing warming, frequency of heatwaves, and high-intensity storms.
- **Rain cycles:** MCB will help in recalibrating the rain cycles leading to better precipitation both on land as well as sea.

Prelims Fact: Great Barrier Reef

1. The Great Barrier Reef, a **UNESCO World Heritage Site**, has been experiencing significant coral bleaching events in recent years.
2. Situated in the Pacific Ocean off northeastern **Australia**.

Issues related to Marine Cloud Brightening

- **Unintended cloud Brightening:** Unintentional cloud brightening is already in play as highlighted by The Intergovernmental Panel on Climate Change (IPCC).

- **Technical Feasibility:** MCB involves large-scale seawater spraying at high altitudes, presenting engineering challenges in design, cost, maintenance, and operation of spraying devices.
- **Moral Hazard:** The MCB could potentially lead to a lack of commitment from policymakers and the public to reduce greenhouse gas emissions and adapt to climate change.
- **Environmental Impacts:** MCB-induced changes in cloud patterns and precipitation could disrupt regional climate and hydrological cycles, potentially leading to unintended consequences like droughts or floods.
- **Ethical Issues**: It raises ethical concerns regarding human intervention in natural processes and the governance and decision-making processes surrounding its implementation.

Way Forward

- Countries can concentrate on advanced technologies that have advanced beyond the ideation stage and are now in the experimentation stage like Stratospheric aerosols injection (SAI).
- More research is needed to understand geoengineering's impact on regional ecosystems, and international cooperation among educational and research institutes is necessary.
- Public funding is needed for specific technologies that can reduce emissions, primarily through the redirection of fossil fuel subsidies.
- Governments should be the sole source of funding for outdoor experimentation.

Conclusion

- MCB is in its early stages of research and development, necessitating further studies to evaluate its feasibility, efficacy, impacts, risks, and governance.

11. LARGE LANGUAGE MODELS

Context:

- As per Principal Scientific Advisor, India will set up a "high powered committee" to explore the development of Large Language Models (LLMs), tools that harness Artificial Intelligence to create applications that can understand and process human language

What are Large Language Models ?

About:

- LLMs : LLMs are a specific class of generative AI models that are trained to understand and generate human-like text.
- These models are built using deep learning techniques, particularly using neural networks.
- They can generate coherent and contextually relevant text given a prompt or input.
- One of the most well-known examples of LLMs is OpenAI's GPT (Generative Pre-trained Transformer).

Generative AI:

- Generative AI refers to the subset of artificial intelligence that focuses on creating systems capable of generating content that is similar to what a human might produce.

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- These systems learn from patterns in existing data and then use that knowledge to produce new, original content.
- This content can take various forms, such as text, images, music, and more.

US-India Collaboration:

- India and the U.S. have a great relationship now, which is perfect for deep tech cooperation. India's draft policy on deep tech says that Startup India's database lists over 10,000 startups in different deep tech areas, which aligns well with the U.S.-India partnership.

What is Deep Tech?

About:

- Deep tech or deep technology refers to a class of startup businesses that develop new offerings based on tangible engineering innovation or scientific discoveries and advances.
- Usually, such startups operate on, but are not limited to, agriculture, life sciences, chemistry, aerospace and green energy.
- Deep tech fields like Artificial Intelligence, advanced materials, blockchain, biotechnology, robotics, drones, photonics, and quantum computing are moving more and more quickly from early research to market applications.

Characteristics of Deep Tech:

- **Impact:** The deep tech innovations are very radical and disrupt an existing market or develop a new one. Innovations based on deep tech often change lives, economies, and societies.
- **Time & Scale:** The time required for deep technology to develop the technology and reach the market-ready maturity is way more than shallow technology development (like mobile apps and websites). It took decades for artificial intelligence to develop and it is still not perfect.
- **Capital:** Deep tech often requires a lot of early-stage funding for research and development, prototyping, validating hypotheses, and technology development.

What are the advantages of deep tech?

- Address real world problems- It can create more effective, efficient, and sustainable solutions.
- Example- AI and machine learning can diagnose diseases, optimize supply chains and improve energy efficiency.
- Create new industries- The rise of quantum computing is expected to revolutionize fields such as finance, cryptography, and logistics.
- Foster innovation- It helps innovation in variety of fields.
- IIT Madras's Research Park, which has incubated over 200 deep tech companies cumulatively valued at over ₹50,000 crore including those in space and aviation.
- Increase the patents- National Chemical Laboratory's Venture Centre supported to file and commercialise high-quality patents.
- Encourage investments- Discovery through start-ups founded by themselves foster independent decisions which leverages deep historical investments in S&T in its public labs and institutions.

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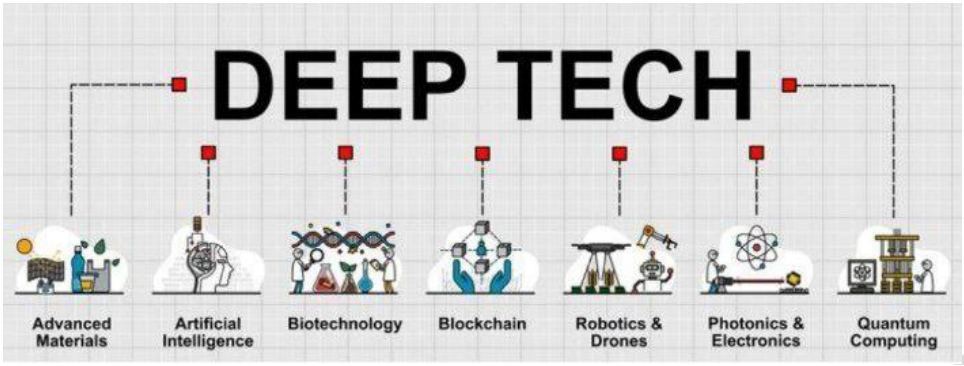
- Technology risks- Deep tech startups are the main route through which India is taking technology risks, a crucial element to build new capabilities.



Note;Chat GPT-4:

- It is the latest GPT (Generative Pre-trained Transformer) series iteration.
- Building on the success of its predecessors, ChatGPT-4 takes natural language processing to new heights with its ability to generate coherent and contextually relevant responses.
- It has been trained on enormous data, enabling it to understand and generate human-like text with exceptional fluency and coherence.

What are the Challenges Faced by Deep Tech?

- For deep-tech startups, funding is one of the biggest challenges. Less than 20% of startups receive financing.
- Government funds are underutilized, and domestic capital is lacking for such startups.
- Talent and market access, research guidance, investors' understanding of deep-tech, customer acquisition and cost for talent are the major challenges faced by them.

Way Forward

Reevaluate the Roadmaps:

- As the continual growth of the Indian start-up ecosystem is fueled by the ongoing era of constantly emerging new technologies, organizations and the government would need to reevaluate their roadmaps for adopting deep tech.
- As technologies such as 5G, understandable artificial intelligence, quantum computing, cloud-native technologies, cybersecurity meshes, and customer data platforms will be used in the future. There are a number of factors that can help the booming and resilient Indian startup ecosystem become global leaders in deep technology.

CSR Budget Utilization:

- The social sector has traditionally benefited from Corporate Social Responsibility. However, this growing corpus should also be used to develop strategic technologies.
- A large corporation can be encouraged to contribute to the strategic needs of the nation with some of its budget. There is a need for the government to allow these funds to flow into certain strategic tech startups.

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12. QUANTUM ENGINE

Context

The new "Quantum Engine" works by reversing the identity of atoms.

Key Highlights

- Physicists have come up with a way to convert the energy difference between two quantum states of a group of atoms into reality.
- The basic principle is that, at a given temperature, a system of fermions will have more energy than a system of bosons.
- They adapted the principles of the familiar classical engine to the subatomic realm, allowing physicists to build better quantum computers.
- They can all occupy the same lowest energy level at a given low temperature.
- Therefore, superconductivity is possible.

Quantum motor efficiency:

- The energy of the atoms increases during the third stage and can be converted into work.
- The efficiency of a quantum engine is based on how much more energy is released in the third stage compared to the energy added to the system in the first stage.
- However, according to the physicist, the efficiency of the quantum engine is 25 percent, and it is expected that it will be able to increase it to 50 percent or more in the future.

Applications:

- The researchers showed that their design can be used to force a group of atoms to cyclically release energy when they are switched between bosonic and fermionic states to cool the particles that make up a quantum computer.

Pauli or Quantum Engine':

- It converts Fermions to Bosons and further Fermions.
- It has four stages, like Classical engines that convert heat into work.
- The atoms collected in the damage are compressed and kept in a boson state.
- The strength of the magnetic field applied to the atoms increases slightly.
- The interaction between the atoms and the field causes the former to slip into the fermionic state.
- They are forced to move away from the lowest energy level and gradually occupy higher levels.
- The compression used in the first step becomes easier.
- The magnetic field strength is reduced to its original value.

Fermionic energy:

- A fermionic system has more energy than a boson system at low temperature.
- Physicists needed to convert some particles from bosons to fermions and found that by cooling a bunch of fermions to near absolute zero and then forcing them to interact with each other using a magnetic field, they could be made to behave like bosons.

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- The Pauli exclusion principle states that no two particles in a given system can have the same four quantum numbers – that is, they cannot occupy the same energy level.
- Fermions are particles bound by Pauli's exclusion rule.
- Thus, they recursively occupy the lowest available until all possible energy levels are filled.
- However, bosons are not bound by the Pauli exclusion principle.
- They can all occupy the same lowest energy level at a given low temperature.
- Therefore, superconductivity is possible.

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India's First CAR-T Cell Therapy Approved

Context:

- Recently, the IIT Bombay-incubated company Immuno Adoptive Cell Therapy has received Central Drugs Standard Control Organisation (CDSO) approval of the first humanized CD19-targeted Chimeric Antigen Receptor T cell (CAR-T cell) Therapy product called NexCAR19 (Actalycabtagene autoleucel) for use in cases of relapsed/refractory B-cell Lymphomas and Leukaemia in India.
- NexCAR19 is a result of a decade-long collaborative effort between IIT Bombay and Tata Memorial Centre (TMC) and has undergone rigorous clinical investigations and translational studies.

What is CAR T-cell Therapy?

- CAR T-cell therapies are a major breakthrough in cancer treatment.
- Unlike chemotherapy or immunotherapy which involve taking drugs, CAR T-cell therapies use a patient's own cells. They are modified in the laboratory to activate T-cells and target tumor cells.
- CAR T-cell therapy has been approved for leukaemias (cancers arising from the cells that produce white blood cells) and lymphomas (arising from the lymphatic system).

Procedure:

- T cells are taken from a patient's blood and then the gene for a special receptor that binds to a certain protein on the patient's cancer cells is added to the T cells in the laboratory.
- The special receptor is called a chimeric antigen receptor (CAR). Large numbers of the CAR T cells are grown in the laboratory and given to the patient by infusion.

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"Significance:

- CAR T-cell therapies are even more specific than targeted agents and directly stimulate the patient's immune system to fight cancer, leading to greater clinical efficacy.
- That's why they're referred to as "living drugs."

Challenges:

- **Preparation:** The difficulty of preparing CAR T-cell therapies has been a major hindrance to their widespread use.
  - ✓ The first successful clinical trial was published a decade ago, and the first indigenously developed therapy in India was performed in 2021.
- **Side Effects**: In certain kinds of leukaemias and lymphomas, the efficacy is as high as 90%, whereas in other types of cancers it is significantly lower.
  - ✓ The potential side-effects are also significant, associated with cytokine release syndrome (a widespread activation of the immune system and collateral damage to the body's normal cells) and neurological symptoms (severe confusion, seizures, and speech impairment).
- **Affordability:** Introduction of CAR T-cell therapy in India can face challenges of cost and value.
  - ✓ Critics argue that developing CAR T-cell therapy in India may not be cost-effective as it will still be unaffordable for most people.

What are T Cells?

- T cells, also known as T lymphocytes, are a type of white blood cell that play a central role in the immune response.
- T cells are involved in cell-mediated immunity, which means they help the body recognize and respond to foreign substances, such as viruses, bacteria, and abnormal cells, such as cancer cells.
- There are two major types of T cells: the helper T cell and the cytotoxic T cell.
- As the names suggest, helper T cells 'help' other cells of the immune system, whilst cytotoxic T cells kill virally infected cells and tumors."

13. **GREEN AMMONIA**

- **Green Ammonia** from, **Egyp**t **imported** through VOC Port, **Tamil Nadu for the first time.**
- **Green ammonia** is made using **100% renewable and carbon-free source.**
  - **Blue Ammonia,** refers to the ammonia for which **by-product CO2 has been captured and stored,** reducing climate impact.
  - **Grey/Brown Ammonia** refers to the a**mmonia produced using fossil fuels.**
- **Ammonia (NH3) is a pungent gas** widely used **to make fertilisers.**
  - Produced through **Haber-Bosch process** in which hydrogen and nitrogen are reacted together at **high temperatures and pressures**.
  - Ministry of Power has **notified Green Ammonia Policy in 2022.**

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14. MONOCLONAL ANTIBODY

- The Union Government has decided to **procure doses of Monoclonal Antibody from Australia.**
- Monoclonal antibody, an experimental therapeutic, was **also imported for treatment of infected patients during 2018 Nipah outbreak in Kerala.**
    - Nipah virus (NiV) is **a zoonotic virus** and can be transmitted through contaminated food or directly between people.
- Monoclonal antibodies (mAbs) are **artificial antibodies that mimic the activity of our immune systems.**
    - They are **produced through a process that involves extracting specific antibodies** from human blood and **then cloning them.**
    - They are **clones of just one antibody**, and they bind to one antigen only**.**
    - They are made by **homogeneous hybrid cells (B cells)** derived from the same parent cell.
        - ✓ **Polyclonal antibodies (PAbs),** on the other hand, are a mixture of antibodies that are secreted by different B cell lineages.
    - They have been used in the **treatment of cancers, Ebola, HIV etc**.
- mAbs can effectively **bind with a part of the viral envelope** that attaches to the human cells to gain entry into the body.
- This **effectively neutralises the virus**.
- **Concerns with mAbs:** Side effects such as **cytokine release syndrome reactions**, **allergic/atopic disorders**, **impaired immune function**, etc.

Know the term

Anitbodies are protective proteins produced by the immune system in response to the presence of a foreign substance, called an antigen

15. **R21/MATRIX-M (MALARIA VACCINE)**

- World Health Organization has recommended **second malaria vaccine**, **R21/Matrix-M**, for the **prevention of malaria in children.**
    - This follows WHO recommendation for the RTS,S/AS01 vaccine in 2021.
- **R21/Matrix-M vaccine** has been licensed for **use in Ghana, Nigeria and Burkina Faso.**
    - It was developed by Jenner Institute at Oxford University and Serum Institute of India.
    - **Key features**: Cost effective, high efficacy, safe in clinical trials.
- Malaria is caused by **Plasmodium parasites**, which are **spread to people through bites of infected female Anopheles mosquitoes**.

16. **KASTURI COTTON BHARAT**

Context:

- The **Union Minister of Textile, Commerce & Industry, Consumer Affairs and Food & Public Distribution**, launched the website for "**Kasturi Cotton Bharat**."
- This initiative, **supported by the Ministry of Textiles, the Cotton Corporation of India**, trade bodies, and the industry, **aims to enhance the competitiveness of Indian cotton in the global market.**

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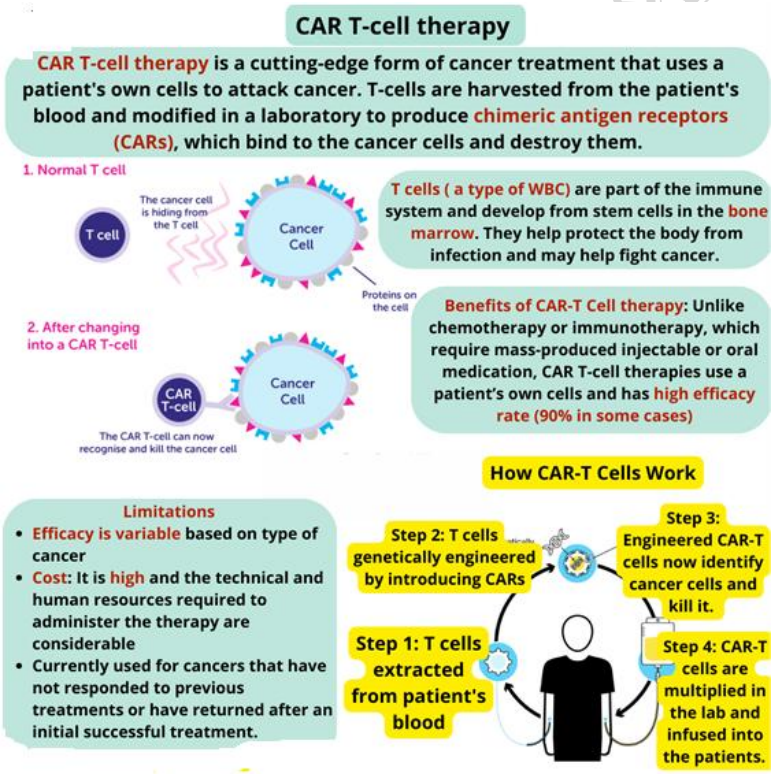
- It focuses on **self-regulation for branding, traceability, and certification of Indian cotton**.
- The website, https://kasturicotton.texprocil.org, serves as a **digital platform for information and updates,** explaining the **registration process for ginners to produce the Kasturi Cotton Bharat Brand.**
- This **brand represents whiteness, softness, purity, lustre, and Indianness**. To ensure **traceability, QR-based certification technology and a blockchain-based software platform** will be used across the supply chain.

17. CAR-T CELL THERAPY

Context:

- **India's Drug Controller General (DCGI)** has granted market authorization for CAR-T (Chimeric Antigen Receptor-T) cell therapy developed by **ImmunoACT, a spin-off company from IIT-Bombay.**
- **This ground-breaking treatment, known as NexCAR19, is now approved for use in cases of relapsed-refractory B-cell lymphoma and leukaemia.**
- **The therapy's market authorization follows extensive scrutiny of data from phase 1 and 2 clinical trials by the Central Drugs Standards and Control Organisation (CDSCO).**



18. PSYCHE

Context:

- NASA has launched a **spacecraft called 'Psyche' on a six-year mission to study a unique metal-rich asteroid also named 'Psyche**.'
- **This asteroid orbits the Sun between Mars and Jupiter.**
- **The primary goal of the Psyche mission is to explore the iron core, a previously unexplored aspect of planet formation.**

- **For the first time, the mission will examine a celestial body primarily composed of metal rather than rock and ice.**
- **Additionally, it aims to gain insights into the internal structure of terrestrial planets, including Earth, by directly studying the interior of a differentiated body, which would otherwise remain hidden**

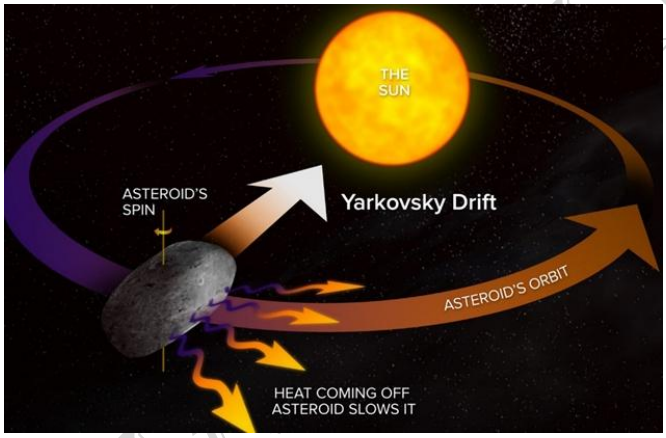
19. **YARKOVSKY EFFECT**

Context:

- NASA's OSIRIS-REx mission successfully collected a sample from asteroid Bennu and is now on an extended mission to study Apophis. The mission was significant for understanding the early solar system, potential asteroid impacts, and the **Yarkovsky effect on asteroids**.

What is the Yarkovsky effect?

- The Yarkovsky effect is a phenomenon in space where the way an asteroid absorbs and re-emits solar radiation can alter its trajectory over time. This effect can lead to **small but significant changes in an asteroid's path**, potentially influencing its orbit and posing collision risks with Earth



Usage: Scientists study the Yarkovsky effect to better understand and predict the movements of asteroids in our solar system.

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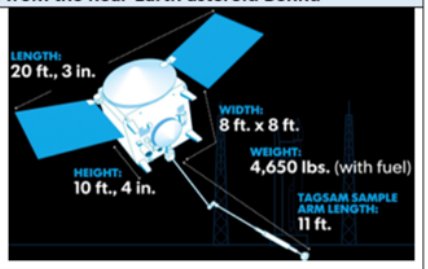
NASA's OSIRIS-REx Mission

Dimension	Significance
The NASA's Origins, Spectral Interpretation, Resource Identification, and Security-Regolith Explorer (OSIRIS-REx) spacecraft (launched in 2016) (NASA's first asteroid sample return mission), has successfully delivered the first asteroid samples from the near-Earth asteroid Bennu	
Instruments	Five instruments are on board for exploring Bennu, including cameras, a spectrometer, and a laser altimeter. The spacecraft's robotic arm, TAGSAM, successfully collected a sample from the asteroid. 
Objective and Significance of the Mission	To study the near-Earth asteroid Bennu, which is a primitive carbonaceous asteroid and a time capsule from the early solar system.
	Study Solar System: Pristine asteroid material can reveal information about the building blocks of life and the conditions of the early solar system.
	Asteroid Impact: Helps in understanding and mitigating asteroid impacts on Earth by studying Bennu's physical characteristics, orbit, and potential impact risks.
	Space Exploration: Advances human knowledge of space by exploring a near-Earth asteroid and developing cutting-edge spacecraft and instruments.
	Resource Potential: Investigates the resource potential of asteroids for future space mining activities
About Asteroids	Rocky objects orbiting the Sun, smaller than planets, are remnants of the solar system's formation. There are total of approx. 994,383, asteroids (the majority in the asteroid belt between Mars and Jupiter)
Asteroid Bennu	An ancient B-type asteroid, rich in carbon and minerals, reflecting only 4% of light. Its age is estimated to be roughly 4.5 billion years old, formed in the early solar system
Future	Osiris-Rex (renamed OSIRIS-APEX (OSIRIS-Apophis Explorer), did not return to Earth's surface, instead, it will continue its mission by studying another asteroid, Apophis, which it will reach in 2029

INTERNAL SECURITY

1. SMART FENCING SYSTEM ALONG INDIA-MYANMAR BORDER

Context:

- The Ministry of Home Affairs (MHA), in its 2022-23 annual report, has introduced a plan to build a 100-kilometer Smart Fencing System (SFS) along the India-Myanmar border.

What is a Smart Fencing System?

About:

- An SFS is a technologically advanced border security infrastructure designed to enhance surveillance and control along sensitive border areas.
- It typically includes a combination of physical barriers, sensors, cameras, and communication systems.
- The term "smart" refers to the system's ability to use technology for monitoring and responding to border threats effectively.

Need for SFS along the India-Myanmar Border:

Ethnic Violence and Insurgency:

- Ethnic violence has been a significant concern in Manipur, resulting in the tragic loss of over 175 lives since May 3, 2022. Manipur has witnessed as many as 137 insurgency-related incidents out of the total 201 recorded in the northeastern states in 2022.
- Manipur is affected by the activities of Meitei, Naga, Kuki, Zomi, Hmar insurgent groups.

- The presence of an unfenced border and unregulated migration from Myanmar have been attributed as some of the factors responsible for the ethnic violence in Manipur.
- This has resulted in violence, extortion and diverse demands by various Indian Insurgent Groups (IIGs) which maintain safe havens/camps in neighbouring countries.
- The smart fencing system will deter unauthorized entry and infiltration by insurgents and illegal actors, addressing a pressing security issue.

Enhancing Surveillance:

- A smart fencing system is equipped with advanced surveillance technologies to monitor and respond to border breaches in real time.

Tackling Complex Security Challenges:

- The northeastern region faces a fragile security situation due to factors such as terrain, socio-economic development, tribal rivalries, and migration.
- The smart fencing system is a proactive measure to mitigate these threats and maintain peace and stability in the region.

What are the Key Points Regarding the India-Myanmar Border?

- India shares a long land border of over 1643 km with Myanmar as well as a maritime boundary in the Bay of Bengal. Four northeastern states, viz. Arunachal Pradesh (520 km), Nagaland (215 km), Manipur (398 km) and Mizoram (510 km).
- Out of 1,643 km, a demarcation of 1,472 km has been completed as per the MHA's 2022-23 annual report.
- Myanmar is the only ASEAN country adjoining India and, therefore, is a gateway to SouthEast Asia.
- The border is porous and unfenced in many parts, allowing free movement of people and goods under a bilateral agreement. The border also witnesses illegal activities and is also affected by the activities of various insurgent groups that operate in the region and often take shelter in Myanmar.
- A Free Movement Regime (FMR) exists between India and Myanmar. "Under the FMR, every member of the hill tribes, who is either a citizen of India or a citizen of Myanmar and who is resident of any area within 16 km on either side of the Indo-Myanmar border can cross the border on the production of a border pass (one-year validity) issued by the competent authority and can stay up to two weeks per visit."
- The Manipur government has suspended the FMR since 2020, post-Covid-19 pandemic.

What are the Other Smart Fencing Projects in India?

- India's first 'smart fence' pilot project was launched along the India-Pakistan border in 2018.
- Later the project BOLD-QIT (Border Electronically Dominated QRT Interception Technique) was launched under the Comprehensive Integrated Border Management System (CIBMS) on the Indo- Bangladesh border in 2019.
- Two pilot projects covering about 71 Kms on Indo-Pakistan Border (10 Kms) and Indo-Bangladesh Border (61 Kms) of CIBMS have been completed.
- CIBMS involves deployment of a range of state-of-the-art surveillance technologies — thermal imagers, infra-red and laser-based intruder alarms, aerostats for aerial surveillance, unattended ground sensors that can help

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detect intrusion bids, radars, sonar systems to secure riverine borders, fiber-optic sensors and a command and control system that shall receive data from all surveillance devices in real time.

A Gist of Border infrastructure Development

	Main Threat	What needs to be done?	What has been done?
Pakistan	War, insurgency, smuggling	C.I.B.M.S monitoring with a well-trained and larger BOLD-QIT, more than one route connecting far flung areas, especially Jammu and Kashmir	C.I.B.M.S in some stretches, 3rd route to Leh to be opened by 2023.
China	War	Armored vehicle Capable infrastructure, high attitude airfield.	Daulet Beg Oldie airfield running, some bridges and tunnels armored vehicle capable.
Bangladesh	Smuggling, human trafficking	C.I.B.M.S. monitoring with BOLD-OIT	Planning stage
Bhutan	Smuggling	Armored vehicle capable road connectivity till Bhutan-China border.	B.R.O working on it.
Myanmar	Smuggling, insurgency, trafficking	C.I.B.M.S. monitoring with bigger and more efficient BOLD-QIT to tackle insurgency, roads for swift troop movements	Some roads present, C.I.B.M.S planning stage

Smart Fencing System

1. An SFS is a technologically advanced border security infrastructure designed to enhance surveillance and control along sensitive border areas.
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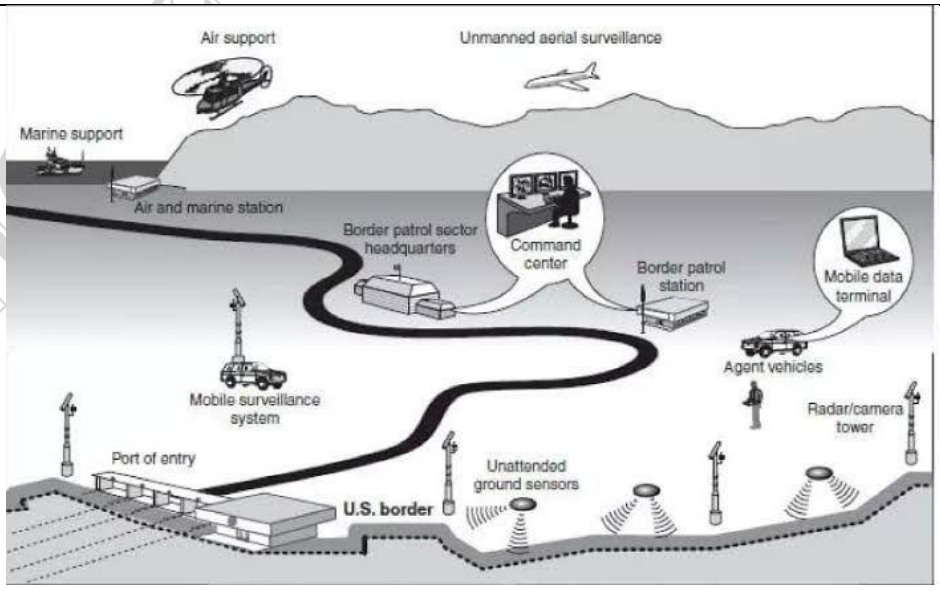

2. IAF'S NEW ENSIGN

Context

- The Indian Air Force unveiled the new ensign of the air force to better reflect its values during the celebrations of the 91st anniversary of the IAF at Air Force Station-Bamrauli.

Old Ensign

- The now old Air Force ensign was blue, containing the National Flag in the first quadrant and a roundel consisting of the colours of the national flag i.e. saffron, white and green, at the centre. This ensign was adopted in 1951.
- Going back in history, the Royal Indian Air Force (RIAF) Ensign comprised the Union Jack in the upper left canton and the RIAF roundel (red, white and blue) on the fly side.
- Post-Independence, the Indian Air Force ensign was created by replacing the Union Jack with the Indian Tricolour and the RAF roundels with the IAF Tricolour roundel in the lower right canton.

New Ensign

- The new lAF ensign has witnessed an inclusion of the Air Force Crest in the top right corner towards the fly side.
- The IAF Crest has the national symbol, the Ashoka lion on the top with the words "Satyamev Jayate" in Devanagari below it. Below the Ashoka lion is a Himalayan eagle with its wings spread, denoting the fighting qualities of the IAF. A ring in light blue colour encircles the Himalayan eagle with the words "Bhartiya Vayu Sena".
- The motto of the IAF-- Nabhaḥ Spṛśaṃ Deeptam -- is inscribed below the Himalayan Eagle in golden Devanagari.
- The IAF motto has been taken from verse 24, Chapter 11 of the Bhagavad Gita and means "Radiant Thou Touchest Heaven" or in other words "Touching the sky with glory".

Anti Terrorism Approach:

Why in News?

- Recently, India hosted the United Nations Security Council's Counter-Terrorism Committee's (UNSC-CTC) meeting which was attended by representatives of all 15 UNSC members.
- In addition to the terror threats of emerging technologies terrorism is still one of the gravest threats to humanity.
- The advent of technology had dramatically changed the nature of attacks and of recruitment by terror groups.

What is UNSC-CTC?

- It was established by Security Council resolution 1373 which was adopted unanimously on 28th September 2001 in the wake of the 9/11 terror attacks in the US.
- The Committee comprises all 15 Security Council member.
- Five permanent members: China, France, Russian Federation, the United Kingdom, and the United States, and ten non-permanent members elected for two-year terms by the General Assembly.

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- The Committee was tasked with monitoring implementation of resolution 1373 which requested countries to implement a number of measures aimed at enhancing their legal and institutional ability to counter terrorist activities at home and around the world.
- This includes taking steps to criminalize the financing of terrorism, freezing any funds related to persons involved in acts of terrorism, denying all forms of financial support for terrorist groups, suppressing the provision of safe haven, sustenance or support for terrorists and sharing information with other governments on any groups practicing or planning terrorist acts.

What are Emerging Challenges for India?

- The use of emerging technologies for spreading terror is an issue of increasing concern across the globe.
- While one of the terrorists of the 26/11 strike was captured alive, prosecuted, and convicted by the Supreme Court in India, the key conspirators and planners of the 26/11 attacks continue to remain protected and unpunished
- China's putting a hold on UNSC sanctions against Pakistan-based terrorists on multiple occasions weakened the Security Council to act in some cases.
- Over the years, terrorist groups have diversified their funding portfolio. They have also begun to exploit the anonymity of new and emerging technologies such as virtual currencies for fund-raising and finances.
- Pakistan was put on the Financial Action Task Force's (FATF's) so-called grey list in June 2018 for a lax regime in countering money laundering and terror funding. The FATF removed Pakistan after more than four years at the plenary in October 2022.
- Discussion over the delisting of Pakistan from last year coincided with a trend of rising terror attacks in Kashmir.

India's approach to tackling terrorism

- **Legislative framework:** The Unlawful Activities (Prevention) Act of 1967 and the National Security Act of 1980 are the primary laws to combat terrorism..
- **Dedicated Law enforcement agency:** The National Investigation Agency (NIA) Act as India's primary counterterrorism law enforcement organization.
- It is supported by other agencies like Research and Analysis Wing (RAW), Intelligence Bureau (IB), State police services etc.
- **Countering the Financing of Terrorism**: India is a member of the Financial Action Task Force, the Asia/Pacific Group on Money Laundering, and the Eurasian Group
- **Countering Violent Extremism (CVE):** The Ministry of Home Affairs is the lead agency for CVE.
- **Win the minds and hearts of people**: To reduce the chances of radicalization the government has been taking developmental initiatives like the Civic Action Programme (supporting civil action by security forces), and the Udaan scheme (capacity building of the youth in J&K)..
- **International and Regional Cooperation**: India has leadership roles in many regional and interrational like the Global Counterterrorism Forum, where it has promoted multilateral counter-terrorism cooperation. In 1995, India took the initiative to pilot the draft Comprehensive Convention on International Terrorism with the objective of providing a comprehensive legal framework to combating terrorism.

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Factors highlighting the need to change the approach toward terrorism

- **Lack of hierarchical structure in recent terrorist acts**: Terrorists are relving on loose affiliations with like-minded groups from a variety of countries and there is also the rise of lone wolf attacks.
- **Changing nature of weapons:** Some terrorist groups now acquiring the capability to use chemical, biological, radiological, or nuclear (CBRN) materials.
- **Use of technology**: Terrorists are making extensive use of new information technologies, along with a coordinated cyber-attack exponentially increasing the risk of threat
- **New methods of Terrorism Financing**: Dedicated crowd funding platforms or websites are being for terror financing.
- Given the volume and variety of activity, it is difficult to detect illicit activity.
- **Lack of definition at a global level**: There is a discrepancy in defining terrorism as a result of which a universally accepted definition of "terrorism" is lacking.
- **Nexus with other organised crimes:** Inter linkage between Counterfeit goods production and trade, flora and fauna crimes, drug trafficking etc. and terrorist activities raise new concerns for India.
- According to a report by FICCI, there is a good correlation between drug trafficking and terrorism..
- **Lack of interagency cooperation**: Different Anti-Terrorist Agencies (ATAs) are working at the center and the state level with limited cooperation and data interchange.
- Delays and complexities in the legal and judicial system.

Way forward

Key measures suggested in the conference

- Model anti-terrorism structure should be established under the NIA for all states. All ATAS should make multidimensional and artificial intelligence-based use of databases in the fight against terrorism more successful.
- India has prepared many database verticals such as Inter-Operable Criminal Justice System (ICIS), National Automated Fingerprint Identification System (NAFIS), National Integrated Database on Arrested Narco-Offenders, National Database of Human Trafficking Offenders (NDHTO) etc. which can be used for terrorism-related investigations.
- All State ATAs should have a uniform hierarchy, and standard operating procedure to ensure better cooperation between center and state agencies.
- NIA, Anti-Terrorism Squad, and Special Task Force should think out of the box and take innovative measures to counter terrorism.
- E.g., NIA should help the Bureau of Police Research and Development BPR&D in studying the Modus Operandi used by terrorists to trap young boys.
- Collaboration from the global level to the grassroots, involving various states within the country, as also the international cooperation.
- Creating a Common Training Module that uniformity can be brought in the methodology of combating terrorism.

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Other measures:

- Focus on linkages of terrorism with other organised crimes: E.g., in Operation Dhvast case NIA in coordination.
- with Punjab and Haryana Police busted a Terrorist-Gangster-Drugs-Arms Trafficking nexus.
- Cooperation with neighbouring countries: The Parliamentary Standing Committee on External Affairs has recommended to establish a common platform to counter-terror under the Neighbourhood First policy.
- Strengthening the safety of the digital ecosystem: The growing importance of the digital ecosystem or cyberspace warrants dedicated efforts to make it more secure and robust.
- To enable the same, Australia's 'essential 8' features for cybersecurity could be emulated.
- Strengthening our democracy from within: Strengthening the democratic institutions enables the government to gain the trust and cooperation of its citizens.

3. **SONOBUOYS**

- Indian Navy plans to equip MQ-9B Sea Guardian Drones with Sonobuoys.
- Sonobuoy is a small device used for **underwater acoustic surveillance**.
- It **contains hydrophones that detect underwater sounds**, especially those made by submarines.
    - These devices are **deployed from aircraft or ships** and transmit real-time acoustic data, **helping pinpoint potential submarine threats**.

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