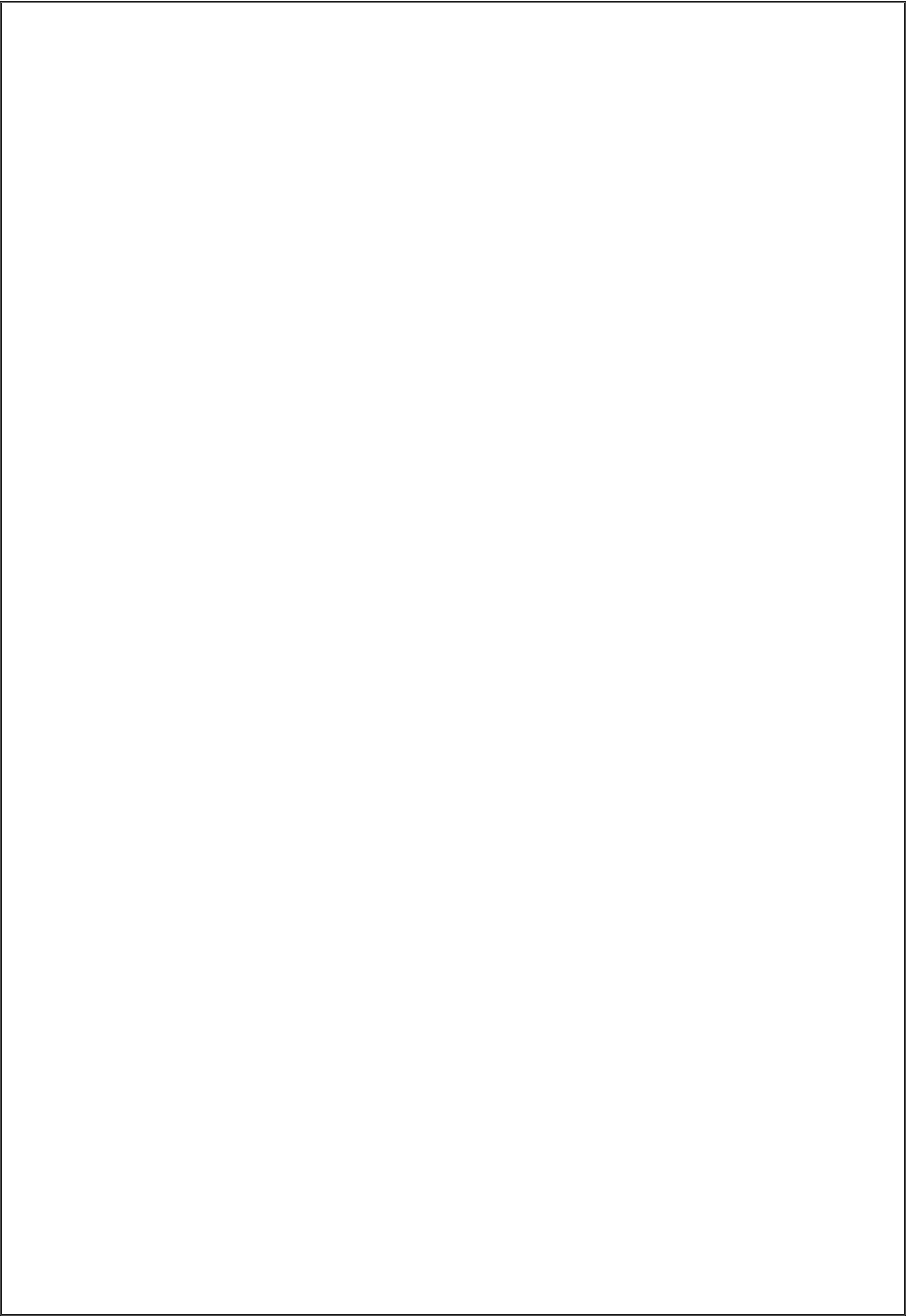




UNIQUE IAS ACADEMY

No.5/45 NVN Layout, New Siddhapudur, Gandhipuram, Coimbatore - 44

UPSC CURRENT AFFAIRS NOVEMBER- 2023



S.No	Index	Pg.No
INDIAN HISTORY & CULTURE		
1	SANT MIRABAI JANMOTSAV.....	1
2	SHARDAPEETH.....	2
3	KOZHIKODE AND GWALIOR IN UNESCO CREATIVE CITIES NETWORK.....	3
4	KOLKALI ART OF KERALA.....	4
5	VAJRA MUSHTI KALAGA.....	5
6	PANAMALAI PAINTINGS.....	6
GEOGRAPHY		
1	FLOOD IN SOMALIA.....	7
2	CYCLONE MIDHILI.....	10
3	EARTHQUAKE SWARM.....	10
4	SAND AND DUST STORMS.....	11
POLITY AND GOVERNANCE		
1	ELECTORAL FUNDING.....	14
2	REFORMING THE SPECIAL AND LOCAL LAWS.....	16
3	GOVERNOR’S POWERS OVER STATE BILLS.....	18
4	SPEEDY DISPOSAL OF CASES AGAINST LAWMAKERS.....	20
5	SPECIAL CATEGORY STATUS.....	21
6	AAINA DASHBOARD FOR CITIES’ PORTAL LAUNCHED.....	24
7	PIRACY OF FILM CONTENT.....	25
INTERNATIONAL RELATIONS		
1	INDIA-UNITED KINGDOM (UK) RELATIONS.....	25
2	THE INDO-PACIFIC ECONOMIC FRAMEWORK (IPEF).....	30
3	INDO-PACIFIC REGIONAL DIALOGUE 2023.....	33
4	10TH ASEAN DEFENCE MINISTERS’ MEETING-PLUS.....	34
5	INDIA-US 2+2 MINISTERIAL DIALOGUE.....	35
6	INDIA-AUSTRALIA 2+2 MINISTERIAL DIALOGUE.....	37
ECONOMY		
1	INDIA’S DIGITAL PUBLIC INFRASTRUCTURE (DPI).....	39
2	GLOBAL DEBT OF DEVELOPING COUNTRIES.....	40
3	EXCHANGE RATE MANAGEMENT IN INDIA.....	43
4	PM GATI SHAKTI INITIATIVE.....	45
5	RAPID TRANSIT SYSTEM (RRTS) PROJECT.....	47
6	DEDICATED FREIGHT CORRIDORS (DFCS).....	49
7	TOWARDS REALISING ‘THE MARITIME INDIA VISION 2030’.....	50

8	LEAP AHEAD INITIATIVE: LAUNCHED BY STPI FOR STARTUPS.....	53
9	MICROFINANCE IN INDIA.....	54
10	DEVAS INVESTORS CASE.....	55
11	BHARATIYA BEEJ SAHKARI SAMITI LIMITED (BBSSL).....	55
12	IMF QUOTA.....	56
13	INSURANCE SURETY BOND.....	57
14	INDIA BEGINS PRODUCING REFERENCE FUEL.....	58

ENVIRONMENT

1	AIR POLLUTION IN URBAN INDIA.....	59
2	STUBBLE BURNING.....	61
3	UNITED NATIONS FORUM ON FORESTS (UNFF).....	64
4	WATER STRESS, CLIMATE CHANGE AND CHILDRENS AT CROSSROADS	67
5	NATIONAL EFFICIENT COOKING PROGRAMME.....	70
6	CLIMATE EQUALITY: A PLANET FOR THE 99%” REPORT.....	72
7	STATE OF CLIMATE SERVICES REPORT 2023.....	73
8	WORLD’S LARGEST SOLAR FACILITIES.....	74
9	RAPID ICE MELT IN WEST ANTARCTICA.....	76
10	GLOBAL LANDSCAPE OF CLIMATE FINANCE 2023 REPORT.....	77

SCIENCE & TECHNOLOGY

1	DEEPPAKES.....	78
2	EU'S LANDMARK AI LEGISLATION.....	81
3	ROLE OF ARTIFICIAL INTELLIGENCE IN HEALTHCARE.....	83
4	WI-FI 7 TECHNOLOGY.....	87
5	CAR-T CELL THERAPY.....	88
6	DIVERSE EPIGENETIC EPIDEMIOLOGY PARTNERSHIP (DEEP).....	91
7	ULTRA PROCESSED FOOD.....	93
8	25 YEARS OF THE INTERNATIONAL SPACE STATION.....	95
9	NASA'S ATMOSPHERIC WAVES EXPERIMENT.....	97
10	X-RAY POLARIMETER SATELLITE.....	98
11	NITROGEN-9 NUCLEUS.....	100
12	WHAT IS THE E PRIME LAYER?.....	101
13	AMYLOIDOSIS.....	102
14	EJECTA HALO.....	103

SOCIAL ISSUES

1	LONELINESS: A PUBLIC HEALTH CONCERN.....	104
2	PM JANMAN SCHEME.....	106

3	SURROGACY LAW.....	108
---	--------------------	-----

PRELIMS FACTS

1	CERVAVAC VACCINE.....	111
2	PICHWAI PAINTING.....	111
3	KOLKALI.....	112
4	PARTHENON SCULPTURES.....	112
5	HOUTHİ REBELS.....	113
6	KARMAYOGI PRARAMBH.....	113
7	ELECTORAL TRUSTS (ET) SCHEME.....	114
8	ANNAPURNA CERTIFICATE PROGRAMME.....	114
9	NITI AAYOG: SATH-E PROJECT.....	115
10	INTERNATIONAL SUGAR ORGANISATION (ISO)	115
11	AMPLIFI 2.0 PORTAL.....	116
12	RAT HOLE MINING.....	116
13	SUBSURFACE WATER ICE MAPPING (SWIM) PROJECT	117
14	WHITE HYDROGEN	118
15	CARBON NANOFLORETS	118
16	WILDLIFE SANCTUARIES IN NEWS.....	119
17	ENVIRONMENTAL DNA	119
18	PROJECT KUSHA	120
19	NATIONAL ORGAN AND TISSUE TRANSPLANT ORGANISATION (NOTTO)	120
20	SEA BUCKTHORN.....	121
21	ISS MARKED ITS 25TH ANNIVERSARY	121
22	MUSIC FROG	122
23	NASA’S PSYCHE SPACECRAFT.....	123
24	BLETCHLEY DECLARATION.....	123
25	GREEN ALGA PICOCYSTIS SALINARUM.....	124
26	GREENWASHING.....	124
27	FIBRE OPTIC CABLES.....	125
28	INDIAN OCEAN TUNA COMMISSION.....	126
29	WALKING PNEUMONIA	126
30	BEN GURION CANAL PROJECT	127
31	MOUNT ETNA.....	127

UNIQUE IAS ACADEMY

INDIAN & HISTORY CULTURE

1. SANT MIRABAI JANMOTSAV

Context:

‘Sant Mirabai Janmotsav,’ an event dedicated to celebrating the 525th birth anniversary of Sant Mirabai is scheduled to take place in Mathura, Uttar Pradesh. During the event, the Prime Minister will unveil a commemorative stamp and coin as a tribute to Mirabai.

About;

- Mirabai (Meera), was born into the Rathore Rajput royal family in Kudki, located in the present-day Pali district of Rajasthan.
- She spent her formative years in Merta and was the great-granddaughter of Rana Jodhaji, the founder of Jodhpur.
- In 1516, she was unwillingly married to Bhoj Raj, the crown prince of Mewar, and faced various challenges in her marital life.
- Mirabai's life took a transformative turn when she became a devoted follower of Lord Krishna. Her unwavering devotion led her to abandon the royal palace and embark on a spiritual journey. She saw Krishna as the beloved and is considered to be high example of Premabhakti.
- After the death of her husband, she left the kingdom of Mewar and embarked on pilgrimages.
- She is mentioned in Bhaktamal written by NabhaDass.

Meerabai.

- **15th Century Saint.**
- Hindu mystic poet of the Bhakti movement. She referred to the Lord, whom she saw as her **husband**, with different names like **Satguru, Prabhu Ji, Girdhar Nagar, Krishna.**
- She even called him the husband of her soul.
- Due to her mother, her in-laws disapproved of her public singing and dancing as she belonged to a **Royal Family of Mewar** and was a princess.
- But she had too much love for her god and **sacrificed everything, even her family, for god and attained Moksha through Bhakti Yoga.**
- She is a celebrated Bhakti saint, particularly in the **North Indian** Hindu tradition



- These poems are commonly known as **bhajans**, and are popular across India.
- Her poems are also included in **Sikh** religion as method of Bhakti.
- She composed in **Rajasthani language.**

Photo: Sangeet Mahara
 Raga: Bhupali

About Bhaktamal (Bhaktamaal)

- Bhaktamal (written in early 17th century) is a poem written in Braj Language by NabhaDass.
- Bhaktamal compiles life history of more 200 bhaktas from Puranic times to Bhakti movement.
- Though written as hagiography, the book recounts no miraculous events and is widely believed to be an unbiased account of bhaktas across all sectarian paths.

- Nabha Dass belonged to the sect of Ramananda Sampradaya, the sect following the teachings of Saint Ramananda.

Major works

- Meerabai's poetry portrays a unique relationship wherein she is not only the devoted bride of Krishna, but Krishna is ardent in his pursuit of Mira.
- One of her celebrated songs is "Paayojimaine Ram Ratandhanpaayo (today I got the most precious wealth of Lord Rama's name)".
- Meerabai's poems in Braj language, sung during prayers and expressing emotions to Lord Krishna, make up her poetry collection.
- These include Raag Govind, Narsi Ji Ka Mayara, Geet Govindki Tika, Meera Bai Ki Malhar, Raag Vihaag and Garba Geet.

Social Reforms

- She became a disciple of Sant Ravidas (also known as Raidas) who belonged to a caste considered "untouchable".
- Her songs also openly challenged the norms of the upper castes and became popular with the masses in Rajasthan and Gujarat.

2. SHARDAPEETH

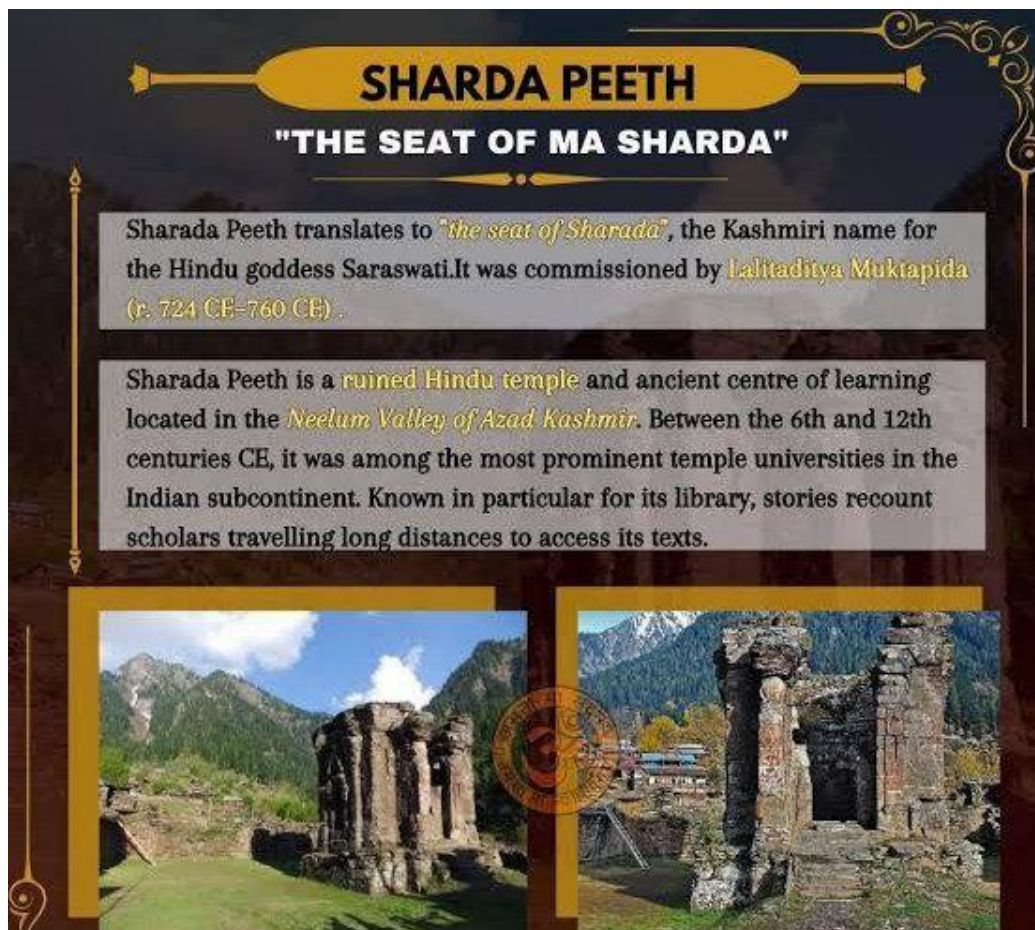
Context:

- Union Home Minister and Minister of Cooperation e-inaugurated Maa Sharda Devi Temple at Kupwara, Jammu and Kashmir.

About Sharda Peeth

- Sharda Peeth and Sharda Mata Devi temple is a revered site for the Hindu community.
- The temple is one of the 18 Maha Shakti Peethas and is considered to be the abode of Hindu Goddess Saraswati.
- It is located in Neelum Valley in Pakistan Occupied Kashmir (PoK) across Teetwal village in Kupwara district of Jammu and Kashmir, along the Line of Control (LoC).
- "The Maa Sharda's temple was reconstructed as the temple has been out of reach since partition.
- Originally there was no idol of the Goddess Sharda in the temple, but there was only a stone plinth.
- The reconstructed temple has the idol of Sharda Maa which was donated by the Sringeri Math.
- It is an important step in the direction of discovery of Sharda-civilisation and promotion of Sharda-script.
- Sharda Peeth had been a historical centre of India's cultural, religious, and educational heritage.
- It was a centre of learning known as Sharda Peeth or Sarvajnanpeetha.
- The Government of India is working in direction to start Sharda Peethyatra across Line of Control (LOC).
- Sharda-script - Sharda is the original script of Kashmir.
- It evolved from the Western branch of Brahmi nearly 1200 years ago.

- At this time the language of Kashmir was developing into Kashmiri, with its peculiar intonations, variations and sounds and the script became unfit for Sanskrit.
- But almost all the ancient Sanskrit literature of Kashmir is written in this script.
- Similar pilgrim site - The Kartarpur corridor, inaugurated in 2019, links 2 important Sikh shrines and allows pilgrims to travel visa-free.
- It links Dera Baba Nanak in Gurdaspur district of Punjab and Gurudwara Darbar Sahib in Kartarpur, Pakistan."



3. KOZHIKODE AND GWALIOR IN UNESCO CREATIVE CITIES NETWORK

Context:

- Recently, the United Nations Educational, Scientific and Cultural Organization (UNESCO) announced the addition of 55 new cities to its Creative Cities Network (UCCN). Among the new entrants, two Indian cities made their mark: Kozhikode in Kerala as the 'City of Literature' and Gwalior in Madhya Pradesh as the 'City of Music'.

What is the Significance of Kozhikode and Gwalior?

Kozhikode as City of Literature:

- Kozhikode is the first city in India to receive the prestigious title of 'City of Literature' by UNESCO.
- The city has a long history of hosting various literary events, such as the Kerala Literature Festival, which is one of the largest literary gatherings in Asia.
- This acknowledgement reinforces the city's role as a hub for intellectual exchange and literary discussions.

- Kozhikode carried the distinction of being home to over 500 libraries.
- The city is also home to many renowned writers, including S. K. Pottekkatt (the most celebrated writer of the city), Thikkodiyar and P. Valsala Sanjayan, along with poets, scholars, and publishers who have contributed to the diversity and vibrancy of Malayalam literature and culture.

Gwalior as the City of Music:

- Gwalior is the second city in India to be designated as the ‘City of Music’ by UNESCO, after Varanasi in 2015.
- The city is widely regarded as the birthplace of Tansen, one of the greatest musicians and composers in Indian history, who was also one of the ‘Navratnas’ (nine jewels) in the court of Emperor Akbar.
- The city is also the origin of the Gwalior Gharana, the oldest and most influential school of Hindustani classical music.
- The city hosts one of the biggest annual music festivals in India, the Tansen Sangeet Samaroh, which attracts thousands of music lovers and artists from across the country and abroad.

Other Indian cities which are added to this network

- Srinagar and Jaipur: in the field of crafts and folk arts
- Mumbai: Film category
- Chennai and Varanasi: Music category
- Hyderabad: Gastronomy category.

UNESCO Creative Cities Network (UCCN)

It was created in 2004.

- It aims to “promote cooperation among cities which recognize creativity as a strategic factor in their urban development”.
- Sustainable Development Goal 11 aims for Sustainable Cities and Communities.
- The network covers seven creative fields: crafts and folk arts, media arts, film, design, gastronomy, literature and music.

4. KOLKALI ART OF KERALA

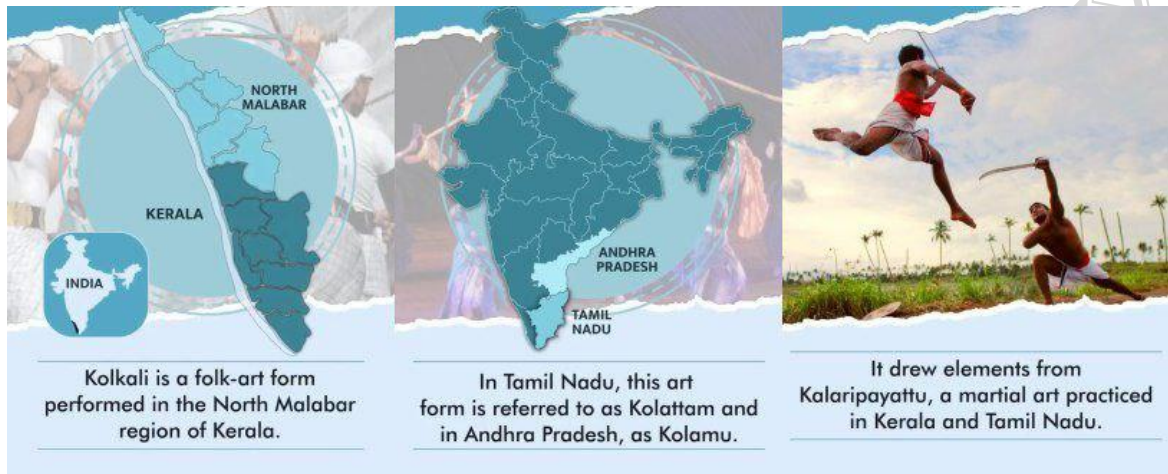
Context:

- Kolkali, a folk art of Malabar region of Kerala, is being performed in remembrance of St. Thomas’ (one of the disciples of Jesus Christ) arrival in India who landed in Muziris (Cranganore) on the Kerala coast in 52 AD.

About

- With a history of about 200 years, Kolkali art is said to have drawn elements from Kalaripayattu, a martial art practised in Kerala and Tamil Nadu.
- In Kolkali, each of the performers holds a stick and moves in circle, striking the sticks and keeping rhythm to the accompanying music.
- As the music gradually rises in pitch, the pace increases till the performance reaches its climax. The circle expands and contracts as the dance progresses.

- Kolkali is widespread among the Dravidians. It has exerted a great influence in the folk dance forms of Bengal, Gujarat, Punjab, and Maharashtra. In Tamil Nadu, this art form is referred to as Kolattam and in Andhra Pradesh, as Kolamu.
- Community Participation: Villagers, regardless of caste and creed, actively participate.
- Inclusivity: Performed by troupes from Muslim, Christian, and Harijan communities.
- About St. Thomas: St. Thomas, one of the twelve apostles of Jesus Christ, is believed to have arrived in India in the 1st century AD. According to tradition, he landed in the southwestern state of Kerala. St. Thomas is credited with spreading Christianity in India, particularly in the Malabar Coast region



5. VAJRA MUSHTI KALAGA

Context:

- Vajramushti Kalaga, a form of wrestling popular during the medieval era was held recently to mark the Vijayadashmi of Wadiyars dynasty.

Vajramushti Kalaga:

- This form of wrestling was popular during the Vijayanagar period (14th to 17th centuries), but currently held only at Savari Thotti in Mysuru Palace during Dasara (Vijayadashmi).
- It has been held for more than 400 years without any break since 1610 AD, when Raja Wadiyar started Dasara in Srirangapatna.
- It is a unique martial art, different from conventional grappling, and entails two jettys taking a swipe at each other's head with a knuckleduster (small metal weapon).
- Vajra Mushti (knuckleduster) means Thunderbolt Fist, made of animal horns like buffalo, elephant (ivory), and worn on knuckles of the fighter.
- Its first literary mention is from the Manasollasa of Chalukya king Someswara III (1124– 1138), although thought to be as early as the Maurya dynasty.
- The person who first extracts blood from the opponent's head is declared the winner.
- Jyesthimallas or Jyesthi clan of fighters still carry on the practice of this art and reside in areas of Gujarat, Mysore, Hyderabad, and Rajasthan.

- Medieval Portuguese travelers like Fernao Nuniz (1535-37), have described accounts on this event during the Navaratri celebrations in Vijayanagar empire.

Feature	Description
Martial Art Form	Vajra Mushti Kalaga is a traditional Indian martial art involving a knuckleduster called "Thunderbolt Fist."
Technique	It differs from conventional grappling, incorporating hand-to-hand combat techniques such as grappling and striking.
Competition	Two participants, called jetty s, aim to draw blood from each other's heads using the knuckleduster (Made of animal horns and worn on the knuckles of the fighter)
Historical Roots	This tradition dates back to the Wadiyar dynasty (Kingdom of Mysore) in 1610 .
Modern Knuckledusters	Modern combatants use blunt-studded knuckle-dusters, also known as "Indra-musti" or "Indra's fist."
Victory Condition	The winner is the one who draws blood from the opponent's head first.
Historical Accounts	Medieval Portuguese travellers noted this form of wrestling during Navaratri celebrations in the Vijayanagar empire (14th-17th centuries)
Current Status	Vajra Mushti Kalaga has seen a decline and is rarely practiced in modern times Vajra Mushti matches are still conducted during the Mysore Dasara festival at Mysore Palace.

HISTORICAL BACKGROUND

- It was popular during the period of the **Vijayanagar rulers** (between the 14th and the 17th centuries).
- Vajramushti was first mentioned in **Manasollasa**, a manual of warfare in the time of **King Someshwara III** of the Chalukya dynasty (1124-1138).
- Portuguese travellers** noticed this form of wrestling during the Navaratri celebrations in the Vijayanagar empire and have left detailed accounts of it.
- British soldier James Scurry**, who was in captivity under Tipu Sultan in Srirangapatnam, gives the first account of a Vajramushti in English.

CURRENT STATUS

6. PANAMALAI PAINTINGS

Context:

- Neglect has taken a heavy toll on the 1,300-year-old Pallava period paintings at Talagirishwara temple at Panamalai in Villupuram district.
- The panel depicting the dance of Lord Shiva has almost faded away and only the face of goddess Parvathi and a few patches remain now.

About Panamalai Paintings

Historical Roots and Evolution

- Panamalai paintings have their origins in the Panamalai hills of Tamil Nadu, India.
- The art form has a rich history dating back several centuries, evolving as an integral part of indigenous tribal culture.
- Over time, these paintings have adapted and incorporated elements from the changing cultural landscape, while retaining their traditional essence.

Themes and Motifs

- Nature's Abundance:** Panamalai paintings prominently feature depictions of animals, birds, trees, and flowers, reflecting the profound connection of the indigenous community with their natural environment.
- Cultural Expressions:** The art form encompasses a wide range of themes, including representations of tribal life, rituals, and folklore, providing a visual narrative of the tribe's customs and traditions.
- Spiritual and Mythical Narratives:** Panamalai paintings often showcase mythological stories and spiritual beliefs, offering insights into the tribe's unique worldview and cosmology.

Artistic Techniques and Practices

- Natural Sourcing:** Artists utilize pigments and dyes derived from local plants, resulting in a distinctive and authentic color palette that reflects the region's biodiversity.
- Skillful Application:** Panamalai artists employ meticulous brushwork and finger-painting techniques to create intricate designs, fine lines, and detailed patterns, showcasing their high level of skill and precision.

- **Vibrant Palette:** Bold and vibrant colors are a hallmark of Panamalai paintings, contributing to their visual appeal and enhancing the overall impact of the artwork.



GEOGRAPHY

1. FLOOD IN SOMALIA

Context:

- Recently, the U.N. Office for the Coordination of Humanitarian Affairs (OCHA), has described Floods that uprooted hundreds of thousands of people in Somalia and neighbouring countries in East Africa following a historic drought as a Once-in-a-Century event.
- The heavy seasonal rainfall has been worsened due to the combined impact of two climate phenomena, El Niño and the Indian Ocean Dipole (IOD), as per UNOCHA.
- Across the Horn of Africa, El Niño and a positive IOD are associated with above-normal rains and flooding.
- El Niño: It is a climate pattern associated with the warming of the ocean surface temperatures in the central and eastern tropical Pacific Ocean, Generally, El Niño occurs on average every 2-7 years.

El Nino Southern Oscillation (ENSO)

Describes the fluctuations in temperature between the ocean and atmosphere in the east-central Equatorial Pacific

Significance:

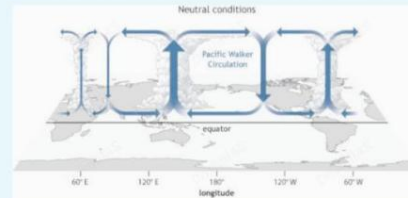
- Ability to change the global atmospheric circulation, influencing temperature and precipitation worldwide

States of ENSO:

- The two opposite phases - **El Niño** and **La Niña**
- The middle of the continuum - **Neutral**

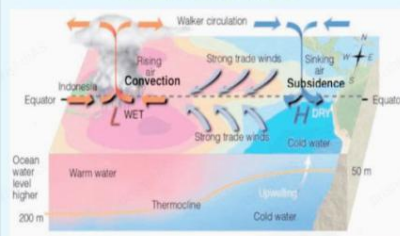
Walker Circulation (WC)

- An **atmospheric system of air flow** in the equatorial Pacific Ocean
 - The trade winds across the tropical Pacific flow from east to west: air rises above the warm waters of the western Pacific, flows eastward at high altitudes, and descends over the eastern Pacific
- WC and ENSO:
 - A weak/reverse WC produces **El Niño**
 - Stronger WC results in **La Niña**



Normal (non ENSO) Conditions in the Pacific Ocean

NEUTRAL ENSO

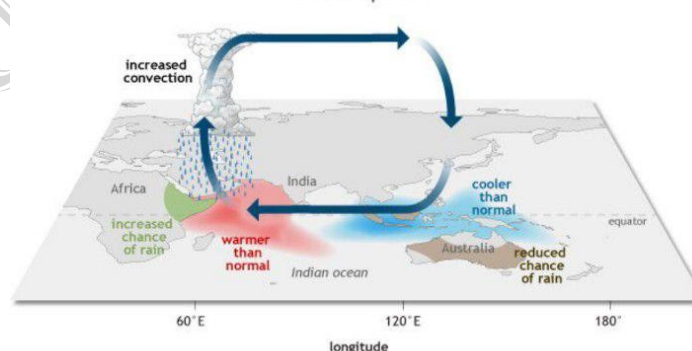


- Trade winds (easterlies) blow west** along the equator, taking warm water from S. America towards Asia
- To replace that warm water, **cold water rises from the depths** — a process called **upwelling**
 - El Niño and La Niña** are two climate patterns that **break these normal conditions**
- During an El Niño, sea level pressure tends to be lower in the eastern Pacific and higher in the western Pacific while the opposite tends to occur during a La Niña
 - This see-saw in atmospheric pressure between the eastern and western tropical Pacific is called the **Southern Oscillation (SO)**

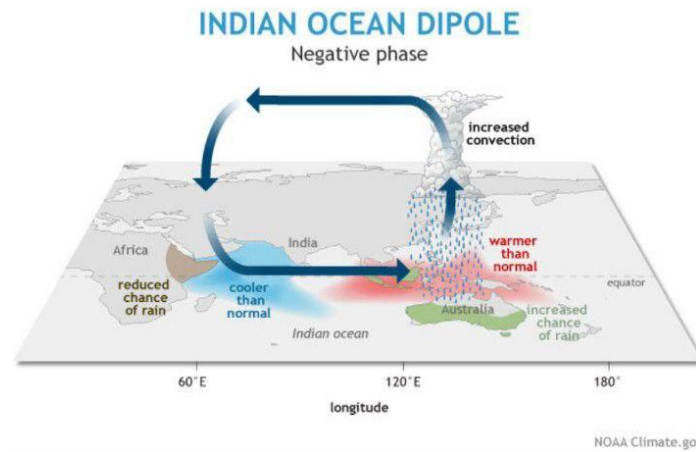
- It can lead to a weakening of the monsoon circulation over the Indian subcontinent.
- IOD: Also known as Indian Nino, IOD refers to the difference in sea surface temperature between the eastern and western sides of the Indian Ocean. It has 3 phases:
- Positive: The western side is warmer than the eastern side.

INDIAN OCEAN DIPOLE

Positive phase



- Negative: Cooler western side and warmer eastern side.
- Neutral: Temperatures are close to normal across the Indian Ocean.
- About UNOCHA: It is responsible for bringing together humanitarian actors to ensure a coherent response to emergencies.



What are the Key Facts About Somalia?

Location:

- Somalia is situated in the Horn of Africa, bordered by the Gulf of Aden to the north, the Indian Ocean to the east, Kenya and Ethiopia to the west, and Djibouti to the northwest.

Capital:

- Mogadishu is the capital and largest city in Somalia.

Terrain:

- The country features diverse landscapes including arid plains, plateaus, highlands, and mountain ranges.
- The northern part of Somalia includes the Golis Mountains, while the southern region is characterized by savannas and grasslands.

Climate:

- Somalia experiences a predominantly arid to semi-arid climate with hot temperatures and limited rainfall. The coastal areas have a more moderate climate due to the influence of the Indian Ocean.

Islands:

- Somalia has several islands off its coast, including the Bajuni Islands and the Socotra Archipelago, which includes islands like Socotra, Abd al Kuri, and Samha. However, the Socotra Archipelago is administered by Yemen.



2. CYCLONE MIDHILI

Context:

- Cyclonic storm 'Midhili' to make landfall in Bangladesh coast in early hours of November 18.

About:

- The deep depression over the Bay of Bengal intensified into a cyclonic storm named 'Midhili'.
- It crossed the Bangladesh coast with a wind speed of 60-70 kmph, gusting to 80 kmph. The cyclone caused heavy rainfall and a storm surge reaching up to 2 meters.
- It was expected to bring heavy rain and strong winds to the coastal areas of Odisha, West Bengal, and Bangladesh.
- The cyclone was named 'Midhili' by the Maldives.

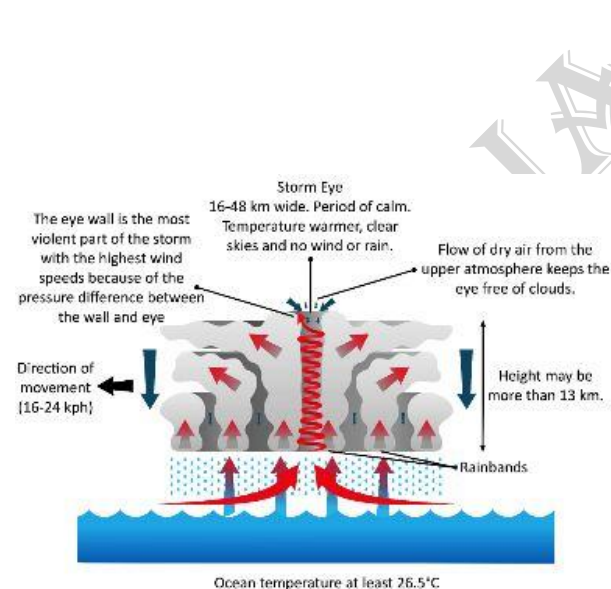
3. EARTHQUAKE SWARM

Context:

- Recently, a seismic swarm has hit the Reykjanes peninsula in southwest Iceland with more than 5,500 small earthquakes in the last three days.

About Earthquake swarm

- It is a series of many (sometimes thousands) low-intensity earthquakes without a discernible main shock that can occur over weeks in active geothermal areas.
- When seismic energy piles up inside the Earth and is released in small amounts from certain points, a series of earthquakes can occur.



TROPICAL CYCLONE	
Classification Tropical Cyclones; originate between the Tropics of Capricorn and Cancer Extra Tropical/ Temperate Cyclones; originate in the Polar Regions	
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)

What causes swarm sequences?

Fluid movement:

- In volcanic environments, this can be fluid released from deeper magma or circulating within active geothermal areas (in volcanic areas such as the Taupō Volcanic Zone).
- The earthquakes triggered by fluids occur as fault slip on the cracks and faults through which the water is moving.

Active volcanism:

- Magma movement can also act as the 'driving mechanism' for swarms, creating earthquakes as magma-filled cracks push their way through the Earth's crust.
- In such a case, earthquakes commonly occur near the crack tip (ahead of the magma where the crack is starting to open) or off to the side of the crack.

Slow-slip events

- A slow-slip event is essentially an earthquake in slow-motion, and typically involves centimetres to tens of centimetres of movement along a fault, over weeks to years.
- We commonly see slow slip events at the Hikurangi subduction zone, usually at least one or two per year.

Key facts about Reykjanes peninsula

- It is a peninsula in South West Iceland, characterized by immense lava fields, volcanoes, and heightened geothermal activity.
- It runs along the Mid-Atlantic Rift, where the Eurasian and the North American tectonic plates are drifting apart.

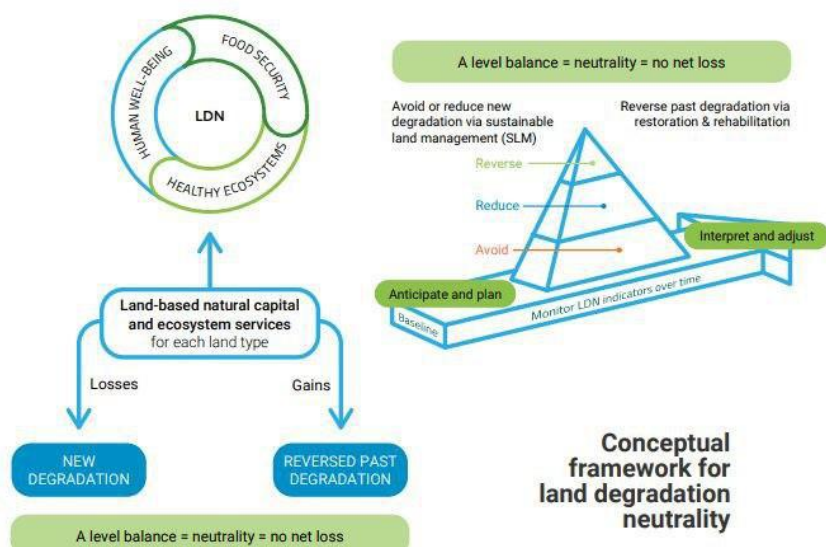
4. SAND AND DUST STORMS

Context:

- Recent meeting of the United Nations Convention to Combat Desertification (UNCCD) shed light on the far-reaching consequences of sand and dust storms and proposed crucial policy recommendations to mitigate their effects.

What are Sand and Dust Storms? About:

- Sand and dust storms are meteorological events that occur when strong winds lift large amounts of sand and dust particles from the ground and transport them over long distances.
- They mainly affect arid and semi-arid regions, but can also impact areas far from their source.
- Annually, over two billion tonnes of sand and dust traverse extensive distances across the Earth's atmosphere, creating a global phenomenon with profound implications.



Sources of Sand and Dust Storms:

- According to the UNCCD, sand and dust storms are caused by both natural and human factors.
- About 75% of global dust emissions originate from natural sources in the world's drylands, such as hyper-arid regions, topographic depressions, and dry ancient lake beds.
- The remaining 25% are attributed to human activities, mainly agriculture.

Some of the Anthropogenic Causes of Sand and Dust Storms are:

- **Unsustainable Agricultural Practices:** Agriculture stands as a primary anthropogenic source, with activities like tillage, land clearing, and abandoned croplands contributing to dust emissions.
- **Land Use Changes:** Alterations in land use patterns, including deforestation and urbanization, contribute to the destabilization of surfaces, enhancing dust emissions.
- **Water Diversion:** Excessive diversion of water from rivers for agricultural purposes can lead to the shrinkage of water bodies, creating new sources of sand and dust storms.
- For example, the excessive diversion of water from rivers in Central Asia over several decades towards agriculture has shrunk the Aral Sea, a pre-existing lake between Kazakhstan to its north and Uzbekistan to its south.
- It has now become the Aralkum Desert, a significant new source of sand and dust storms.

"Climate-Related Amplifiers:

- **Aridity and Minimal Precipitation:** High air temperatures, minimal precipitation, and arid conditions act as drivers, amplifying the likelihood and intensity of these storms.
- **Extreme Weather Events:** Intensified wind patterns and prolonged droughts due to climate change exacerbate the severity and frequency of sand and dust storms.

Impacts: Environmental Impacts:

- **Soil Degradation:** Sand and dust storms strip away fertile topsoil, affecting soil quality and fertility.
- This degradation reduces the land's ability to support vegetation, impacting agriculture and leading to desertification.
- The loss of fertile soil also affects water retention and nutrient availability.
- **Ecosystem Disruption:** These storms can alter ecosystems by burying vegetation, disrupting natural habitats, and affecting wildlife.
- Invasive species carried by the storms might outcompete native species, leading to biodiversity loss and ecological imbalance.

Socio economic Impacts:

- **Health Effects:** Health impacts are wide-ranging, affecting respiratory health, causing allergies, and exacerbating existing conditions like asthma.
- Recent incidents, such as a two-day storm in Mongolia in 2021, illustrate the devastating impact on human lives, displacing thousands and causing casualties alongside substantial livestock losses.

- **Economic Losses:** Sand and dust storms cause substantial economic losses by damaging infrastructure, reducing agricultural productivity, disrupting transportation, and increasing healthcare costs.
- These events can also impact tourism and trade, affecting local and regional economies.
- **Social Disruption:** Disrupted daily life due to these storms can lead to social unrest, migration, and displacement.

Global Implications:

- **Transboundary Impact:** Sand and dust storms do not adhere to geopolitical boundaries; they can cross borders, affecting multiple countries.
- **Climate Feedback:** The transportation of dust particles globally due to these storms can influence climate feedback loops, impacting weather patterns and potentially contributing to climate change."

What are Effective Ways to Minimize the Impacts of Sand and Dust Storms? Preventive Measures:

- **Soil Moisture Management:** Implement effective water conservation methods to retain soil moisture and prevent desertification.
- **Regulatory Framework:** Enforce strict land-use regulations to curb activities leading to soil degradation and dust emissions, such as overgrazing or improper land development.

Preparedness:

- **Early Warning Systems:** Developing and implementing effective early warning systems to forecast sand and dust storms. This allows communities to prepare and take necessary precautions.
- **Education and Awareness:** Educating communities about the risks, impacts, and protective measures against sand and dust storms can help reduce vulnerability.

Mitigation Strategies:

- **Infrastructure Development:** Building infrastructure like windbreaks, barriers, or green belts to reduce the speed and impact of wind carrying dust and sand.
- **Technological Solutions:** Researching and investing in innovative technologies for dust suppression and soil stabilization.

POLITY AND GOVERNANCE

1. ELECTORAL FUNDING:**Context:**

- Recently, the Supreme Court directed the Election Commission of India (ECI) to submit data on the electoral bonds received by political parties till September 30, 2023.

What is Political Funding?**About:**

- Political funding refers to the financial contributions provided to political parties or candidates to support their activities, campaigns, and overall functioning.
- Political funding is crucial for political parties to effectively participate in democratic processes, conduct election campaigns, and engage in various political activities.

Statutory Provisions in India:

- Representation of the People Act, 1951:** RPA Act outlines the rules and regulations regarding elections in India, including provisions related to the declaration of election expenses, contributions, and the maintenance of accounts.
- Income Tax Act, 1961:** The Income Tax Act governs the tax treatment of political parties and their donors.
- Political parties need to comply with tax regulations, and individuals or entities making political donations may be eligible for tax benefits under certain conditions.
- Companies Act, 2013:** The Companies Act regulates corporate donations to political parties, specifying the maximum amount a company can contribute, and mandates disclosure of political contributions in financial statements.

Methods of Raising Political Funding:

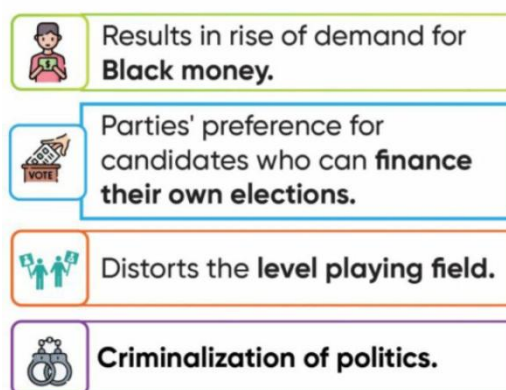
- Individual Persons:** Section 29B of RPA allows political parties to receive donations from individual persons while allowing taxpayers to claim a 100% deduction.
- State/Public Funding:** Here, the government provides funds to parties for election related purposes. State Funding is of two types:
 - Direct Funding:** The government provides funds directly to the political parties. However, direct funding is prohibited in India.
 - Indirect Funding:** It includes other methods except direct funding, like free access to media, free access to public places for rallies, free or subsidized transport facilities. It is allowed in India in a regulated manner.
- Corporate Funding:** In India, donations by corporate bodies are governed under section 182 of the Companies Act, 2013.
- Electoral Bonds Scheme:** The electoral bonds system was introduced in 2017 by way of a Finance bill and it was implemented in 2018.
 - They serve as a means for individuals and entities to make donations to registered political parties while maintaining donor anonymity.

- **Electoral Trusts Scheme, 2013:** It was notified by the Central Board of Direct Taxes (CBDT).
 - An Electoral Trust is a Trust set up by companies with the sole objective to distribute the contributions received by it from other Companies and individuals to the political parties.

Concerns associated with Electoral Funding

- **Huge expenditure:** Lok Sabha 2019 elections have been termed as the ‘most expensive election ever, anywhere’.
As per the Centre for Media Studies report, nearly Rs 55,000-60,000 crore was spent during the 2019 elections.
- **Disrupts Level playing field:** The increased use of money power in the election disrupts the level playing field.

IMPACTS OF SUCH FUNDING



Recent Steps Taken

- In March, 2018, the government passed a key amendment to the Foreign Contribution Regulation Act, 2010 allowing foreign companies to fund political parties in India.
- **Introduction of Electoral Bonds:** The government notified the Electoral Bond Scheme on 2nd January, 2018 to establish and cleanse the system of political funding in the country.
- An electoral bond is a bearer instrument like a Promissory Note. It can be purchased by any citizen of India or a body incorporated in India to donate to the political party of their choice. Donor's name is not there on the bond.
- These bonds can be used for making donations to the political parties registered under Section 29A of the Representation of the People Act, 1951 and which have secured not less than one per cent of the votes polled in the last general election to the House of the People or a Legislative Assembly.

Electoral Bonds Scheme Notified

To help cleanse the political funding system in the country

Nature

- Bearer instrument in the nature of a Promissory Note
- Interest free banking instrument

Lifespan

- Shelf life of only 15 days
- Can be used for making donation only to the political parties registered u/s 29A of the Representation of the Peoples Act, 1951

Eligibility

- A citizen of India or a body incorporated in India
- On fulfillment of all the extant KYC norms
- By making payment from a bank account

Value

- Issued / Purchased in multiples of Rs.1,000, Rs.10,000, Rs.1,00,000, Rs.10,00,000 and Rs.1,00,00,000
- Available from the Specified Branches of the State Bank of India (SBI)

Period of Purchase

- Available for purchase for a period of 10 days each in the months of January, April, July and October, as may be specified by the Government

Benefits of Electoral Bonds

WILL BRING substantial transparency in political donations against the present system of contributions in the election funding mechanism

HOW MUCH funding comes, what kind of funding it is, the source of funding and where it will be spent will be known clearly

NON DISCLOSURE of recipients will ensure people are free to donate to any political party of their choice

WILL REINFORCE the idea of moving away from a cash system towards clean money which cheque system could not achieve

15 DAYS between buying and selling will ensure they don't turn into a parallel economy

2. REFORMING THE SPECIAL AND LOCAL LAWS

Context:

- The recent tabling of Bills to amend the criminal laws has neglected the Special and Local Laws (SLLs) which encompass most critical offences and procedures.

What is Special and Local laws (SLL)?

- Cognizable crimes are categorized either under the 'Indian Penal Code (IPC)' or under the 'Special and Local Laws (SLL)'.
- The Special and Local Laws identify criminal activities that the state government frames for specific issues.
- For instance, the legislation that prohibits the selling of lottery tickets applies only to the state of Tamil Nadu
- Special laws are applicable to particular subject and local laws are applicable to particular part of India.
- In case of conflict, the local/special laws will prevail over Indian Penal Code.

Why Special and Local Laws needs reform?

- **Wider coverage-** Recent bills on criminal laws in the Indian Penal Code (IPC), Code of Criminal Procedure (CrPC) and Indian Evidence Act represent just one facet of a general criminal law.
- **High registration of cases-** As per the Crime in India Statistics of 2021, nearly 39.9% of all cognisable offences registered in 2021 were under SLLs.
- **Low quality-** SLLs have given rise to several fundamental debates, discourses and discussions regarding the limits on the state's power of criminalisation especially in the context of violation of individual rights and liberties.
- **Vague definition-** SLLs such as the Unlawful Activities (Prevention) Act, 1967 (UAPA) and the Maharashtra Control of Organised Crime Act, 1999 (MCOCA) suffer from deficient, ambiguous and vague definitions.

- Increased burden- The Protection of Children from Sexual Offences Act, 2012 is criticised for its applicability to consensual sexual activities between minors.
- Criminalisation - Concerns have also been raised regarding criminalisation of such conduct through SLLs which would otherwise fall within the domain of civil case.
- Complexity- The Supreme Court in the case of P. Mohanraj versus M/s Shah Brothers Ispat Ltd. (2021) referred to Section 138 of the Negotiable Instruments Act, 1881 and called it as a ‘civil sheep’ in a ‘criminal wolf’s’ clothing.
- Dilution of due process of law- The universally accepted due process values have been diluted through SLLs such as
- Increased powers of search and seizure under Section 43A of the UAPA
- Admissibility of confessions recorded by police officers under Section 18 of the MCOCA.

What lies ahead?

- It is imperative that a second generation of reforms be brought in, in order to reform the SLLs.
- All SLLs which criminalise or seek to criminalise a conduct should find a place as separate chapters within the larger structure of the penal code.
- The Governor's Role: Challenges and Reform Proposals

Why in the News?

- Recently, Kerala, Tamil Nadu and Punjab moved the Supreme Court against their respective Governors over the pending bills.
- Recently, the Supreme Court (SC) of India has stated when the Governor chooses to withhold assent to a Bill, it is mandatory for them to follow a specific course of action outlined in Article 200 of the Constitution.
- The key aspect of Article 200 is that it mandates the Governor to communicate their reasons for withholding assent and prompt the Legislature to reconsider the Bill.

Issues:

- The role, powers, and discretion of the Governor's Office in multiple States have been the subject of constitutional, political, and legal debate for decades.

What have been the friction points?

- Allegations of the Centre using the Governor's position to destabilise state governments have been made since the 1950s.
- In recent years, the issues have been largely about the
 - Selection of the party to form a government,
 - Deadline for proving the majority,
 - Sitting on Bills, and
 - Passing negative remarks on the state administration.

3. GOVERNOR'S POWERS OVER STATE BILLS

Context:

- Recently, the Supreme Court (SC) of India has stated when the Governor chooses to withhold assent to a Bill, it is mandatory for them to follow a specific course of action outlined in Article 200 of the Constitution.
- The key aspect of Article 200 is that it mandates the Governor to communicate their reasons for withholding assent and prompt the Legislature to reconsider the Bill.

What is the Ruling of the Supreme Court?

- If a Governor refuses to approve a Bill, they have to follow Article 200.
- The SC has held that if a Governor decides to withhold assent to a Bill, then he has to return the bill to the legislature for reconsideration.
- The Governor's withholding of assent without the necessary step of communicating the need for the Legislature to reassess the Bill violates constitutional principles.
- The elected Legislature has the final say on the Bill, and the Governor's message doesn't force them to agree. That is, once the House re-passes the returned Bill, with or without amendments, the Governor has no choice but to grant consent.
- The ultimate authority to accept or reject a Bill lies with the elected Legislature, and the Governor's message does not bind the legislative body.

What are the Governor's Powers over Bills?

Article 200:

- Article 200 of the Indian Constitution outlines the process for a Bill passed by the Legislative Assembly of a State to be presented to the Governor for assent, who may either assent, withhold assent or reserve the Bill for consideration by the President.
- The Governor may also return the Bill with a message requesting reconsideration by the House or Houses.

Article 201:

- It states that when a Bill is reserved for the consideration of the President, the President may assent to or withhold assent from the Bill.
- The President may also direct the Governor to return the Bill to the House or Houses of the Legislature of the State for reconsideration.

Options Available with the Governor:

- He may give assent, or he can send it back to the Assembly requesting it to reconsider some provisions of the Bill, or the Bill itself.
- He may reserve the bill for the consideration of the president. The reservation is obligatory where the bill passed by the state legislature endangers the position of the state high court. However, the governor can also reserve the bill if it is of the following nature:
 - Against the provisions of the Constitution
 - Opposed to the Directive Principles of State Policy (DPSP).
 - Against the larger interest of the country
 - Of grave national importance

- Deals with compulsory acquisition of property under Article 31A of the Constitution.
- Another option is to withhold the assent, but this is not normally done by any Governor because it would be an extremely unpopular action.

Can the Governor withhold His Assent to a Bill in Exercise of His Discretionary Powers?

- While a plain reading of Article 200 suggests that the Governor can withhold his assent, experts question whether he can do so only on the advice of the Council of Ministers.
- The Constitution provides that the Governor can exercise his executive powers only on the advice of the Council of Ministers under Article 154.
- The larger question is why a Governor should be allowed to withhold assent when the Bill is passed by the Assembly.

What are the Issues with Pending Bills?

Delay in Decision-Making:

- The Governor's failure to take a decision on the Bills passed by the legislature leads to a delay in decision-making, which affects the effective functioning of the state government.
- When the Governor fails to make a decision on a Bill passed by the assembly, it delays the implementation of policies and laws.

Undermines the Democratic Process:

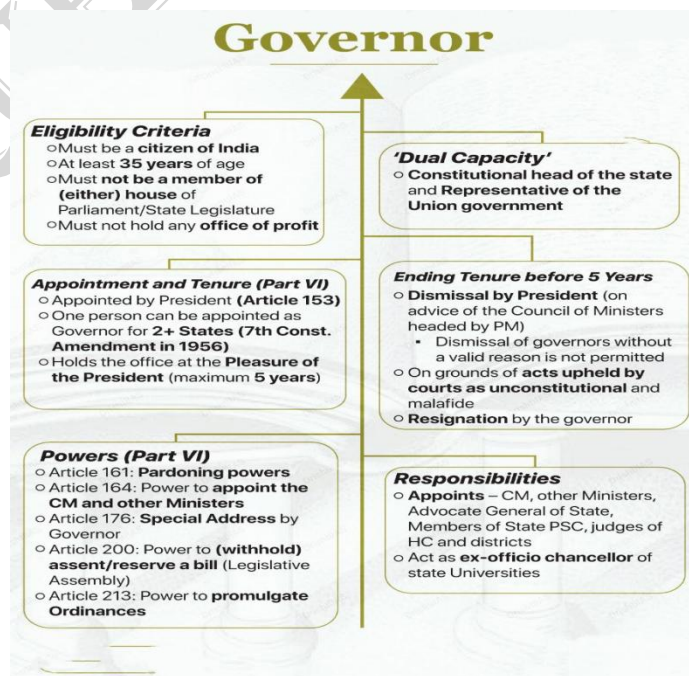
- The Governor, who is appointed by the Centre, can use his powers to delay or reject Bills passed by state assemblies for political reasons, which undermines the democratic process.

Public Perception:

- The public often views pending Bills with the Governor as a sign of inefficiency or even corruption in the state government, which can damage the government's reputation.

Lack of Accountability:

- When the Governor withholds assent, he does not provide any reason for his decision.
- This lack of accountability undermines the principles of transparency and accountability in governance.



4. SPEEDY DISPOSAL OF CASES AGAINST LAWMAKERS

Context:

- The Supreme Court has issued guidelines to monitor the speedy disposal of criminal cases against Members of Parliament (MPs) and Members of Legislative Assemblies (MLAs).
- Among the guidelines issued to high courts across the country, the court called for:
- the setting up of a special bench to monitor criminal cases against legislators as well as;
- suo motu registration of such cases by HCs.

Representation of the People Act, 1951

- RP Act 1951 was enacted before first general elections. The act provides for the actual conduct of elections in India.
- It deals with the following aspects of the election:
 - ✓ Actual conduct of elections;
 - ✓ Administrative machinery for conducting elections;
 - ✓ Poll;
 - ✓ Election offences;
 - ✓ Election disputes;
 - ✓ By-elections;
 - ✓ Registration of political parties.
- There are several provisions that deal with disqualification under the RPA.
 - ✓ Section 8 of the RPA deals with disqualification for conviction of offences.
 - ✓ Section 8(1A) of the act includes specific offences such as promoting enmity between two groups, bribery, and undue influence or personation at an election.
 - ✓ Section 8(2A) lists offences that deal with hoarding or profiteering, adulteration of food or drugs and for conviction and sentence of at least six months for an offence under any provisions of the Dowry Prohibition Act.
 - ✓ Section 8(3A) disqualifies a convicted person who has been sentenced to imprisonment for not less than two years.
 - ✓ He is disqualified from the date of such conviction and shall continue to be disqualified for a further period of six years since his release.
 - ✓ Section 9 deals with disqualification for dismissal for corruption or disloyalty, and for entering into government contracts while being a lawmaker.
 - ✓ Section 9(A): Disqualification for Government contracts, etc.
 - ✓ Section 10: Disqualification for office under Government company.
 - ✓ Section 10(A). Disqualification for failure to lodge account of election expenses.
 - ✓ Section 11: Removal or reduction of period of disqualification.
 - ✓ Section 11(A): Disqualification arising out of conviction and corrupt practices.
 - ✓ Section 11(B): Removal of disqualifications.

Cases against lawmakers: Statistics

- Trials are pending in 5,175 cases across the country in which MLAs and MPs are accused.
- Of them, trial in 2,116 cases, which accounts for around 40%, has been pending for over five years, and most of these cases are from Uttar Pradesh (1,377), Bihar (546), and Maharashtra (482).
- As per on report, 40% of sitting MPs have declared criminal cases against them, with 25% of legislators being accused of serious crimes including murder, attempt to murder, kidnapping, and crimes against women.

Background of the case

- The plea was filed by advocate Ashwini Kumar Upadhyay in August 2016.
- It sought speedy disposal of cases involving lawmakers.
- It also sought a lifetime ban on convicted politicians, including sitting legislators, from contesting elections rather than subjecting them to the six-year ban, as laid down under Section 8(3) of the Representation of People Act, 1951.
- Essentially, this section imposes a six-year ban on persons convicted of offences with a minimum two-year sentence.

5. SPECIAL CATEGORY STATUS

Context:

- Recently, the Bihar Cabinet has passed a resolution seeking the grant of Special Category Status (SCS) to Bihar.
- The demand comes in the backdrop of the findings from the “Bihar Caste-based Survey, 2022”, which revealed that nearly one-third of Bihar’s population continues to live in poverty.

What is a Special Category Status?

About:

- SCS is a classification given by the Centre to assist development of states that face geographical and socio-economic disadvantages.
- The Constitution does not make a provision for SCS and this classification was later done on the recommendations of the 5th Finance Commission in 1969.
- Status was first accorded to Jammu and Kashmir, Assam and Nagaland in 1969.
- SCS for plan assistance was granted in the past by the National Development Council of the erstwhile Planning Commission.
- Eleven States including Assam, Nagaland, Himachal Pradesh, Manipur, Meghalaya, Sikkim, Tripura, Arunachal Pradesh, Mizoram, Uttarakhand and Telangana have been accorded the special category state status.
- Telangana, the newest State of India, was accorded the status as it was carved out of another state Andhra Pradesh.
- SCS is different from Special status which imparts enhanced legislative and political rights, while SCS deals with only economic and financial aspects.

- For instance, J&K used to have Special status before Article 370 was repealed.

Parameters (Based on Gadgil Formula):

Hilly Terrain;

- Low Population Density and/or Sizeable Share of Tribal Population;
- Strategic Location along Borders with Neighbouring Countries;
- Economic and Infrastructure Backwardness; and
- Nonviable Nature of State finances.

Benefits:

- In the past, SCS states used to receive approximately 30% of central assistance, determined by the Gadgil-Mukherjee formula.
- However, following the recommendations of the 14th and 15th Finance Commissions (FC) and the dissolution of the Planning Commission, this assistance to SCS States has been subsumed in an increased devolution of the divisible pool funds for all States (increased to 41% in the 15th FC from 32%).
- The Centre pays 90% of the funds required in a Centrally-Sponsored Scheme to special category status states as against 60% or 75% in case of other states, while the remaining funds are provided by the state governments.
- Unspent money in a financial year does not lapse and is carried forward.
- Significant concessions are provided to these states in excise and customs duties, income tax and corporate tax.
- 30% of the Centre's Gross Budget goes to Special Category states.

Why is Bihar Demanding Special Category Status (SCS)?

Economic Disparities:

- Bihar faces significant economic challenges, including a lack of industrial development and limited investment opportunities.
- The bifurcation of the state resulted in the shifting of industries to Jharkhand, exacerbating the employment and economic growth issues in Bihar.

Natural Calamities:

- The state grapples with natural calamities like floods in the northern region and severe droughts in the southern part.
- These recurring disasters disrupt agricultural activities, affecting livelihoods and economic stability.

Lack of Infrastructure:

- Infrastructure, especially in terms of irrigation facilities and water supply, remains inadequate.
- The absence of sufficient resources for irrigation impacts agricultural productivity, a primary source of livelihood for a large portion of the population.

Poverty and Social Development:

- Bihar has a high poverty rate, with a significant number of families living below the poverty line.
- With a per-capita GDP of around Rs 54,000, Bihar has consistently been one of the poorest States. Bihar is home to around 94 lakh poor families and the granting of SCS will help the government get about RS 2.5 lakh crore required to fund various welfare measures over the next five years.

Funding for Development:

- Seeking SCS is also a means to secure substantial financial assistance from the central government, allowing Bihar to access funds required for development projects and addressing long-standing socio-economic challenges.

Does Bihar Fulfill Criteria for the Grant of SCS?

- Although Bihar meets most of the criteria for the grant of SCS, it does not fulfill the requirement of hilly terrain and geographically difficult areas, which is considered to be the primary reason for difficulty in infrastructural development.
- In 2013, the Raghuram Rajan Committee set up by the Centre, placed Bihar in the “least developed category” and suggested a new methodology based on a ‘multi -dimensional index’ for devolving funds instead of a SCS, which can be revisited to address the State’s socio-economic backwardness.

What are the Concerns Related to Special Category Status?

Resource Allocation:

- Granting SCS entails providing additional financial assistance to the state, which can strain the central government's resources. Balancing the allocation of funds among various states becomes crucial, and granting SCS might lead to disparities or dissatisfaction among non-SCS states.

Dependency on Central Assistance:

- States with SCS often become heavily reliant on central assistance. This could potentially discourage efforts toward self-sufficiency and independent economic growth strategies.

Implementation Challenges:

- Even after the grant of SCS, there might be challenges in utilizing the funds effectively due to administrative inefficiencies, corruption, or lack of proper planning. Ensuring that the allocated funds are used for intended purposes is a significant challenge.

Way Forward

- There is a need to revisit and refine the criteria for granting SCS to ensure fairness and transparency. Clearly define the parameters for eligibility based on socio-economic indicators, infrastructure development, and other relevant factors.
- There is a need to encourage states to create comprehensive development plans that focus on sustainable growth, job creation, infrastructure development, and human capital enhancement. SCS should be a part of a broader strategy for holistic development.
- Implement policies that gradually reduce states'

SPECIAL CATEGORY STATUS: WHAT IT MEANS...

Such states have greater leeway in getting funds and grants from the Centre

These are mostly small states, with low population density and/or large tribal population

Located in hilly or difficult terrain

Are backward economically and infrastructurally

Are located strategically along international borders

Have a low resource base and are unable to generate enough resources on their own for development

Currently there are 11 special category states



All states get Central funds as a mix of loans and grants. For special category states, the mix is

90% grant and 10% loan

For non-special category states, the mix is

30% loans and 70% grants

When allocating money to states, funds are first given to special category states and then to the rest

6. AAINA DASHBOARD FOR CITIES' PORTAL LAUNCHED

Context:

- The Ministry of Housing and Urban Affairs (MoHUA) has launched the 'AAINA Dashboard for Cities' portal, offering Urban Local Bodies (ULBs) a platform to voluntarily submit key data.

What is AAINA Dashboard for Cities Portal?

- AAINA aims to help cities assess their performance relative to others. It seeks to inspire cities by highlighting possibilities and areas for enhancement.
- The Dashboard categorizes data into five pillars: Political & Administrative Structure, Finance, Planning, Citizen-Centric Governance, and Delivery of Basic Services.
- ULBs will regularly submit data, including audited accounts and self-reported performance metrics, through a user-friendly portal.
- AAINA is envisioned as a permanent platform for ULB-related data, a comprehensive database of key performance metrics.
- With active ULB cooperation, the dashboard aims to become a public resource, allowing stakeholders to access and utilize the collected data.

ENCORE software

- The Election Commission of India has designed in-house software, ENCORE, for complete Candidate and election management.

About ENCORE software:

- This ENCORE software stands for Enabling Communications On Real-Time Environment.
- This provides a seamless facility for Returning Officers to process candidate nominations, affidavits, Voter turnout, counting, results, and data management.

- The ENCORE counting application is an end-to-end application for returning officers to digitize the votes polled, tabulate the round-wise data and then take out various statutory reports of counting.
- Another application called the ENCORE Scrutiny Application allows Returning Officers to do scrutiny of the nominations filed by the candidates online.
- After verification of the nomination the status is marked as Accepted, Rejected or Withdrawn helping the Returning Officer to prepare the final list of contesting candidates and assign the symbols.

7. PIRACY OF FILM CONTENT:

Context:

- The Ministry of Information and Broadcasting (MIB) has established an institutional mechanism to combat film content piracy.
- This move aims to curb the increasing piracy issue facilitated by the internet, which has caused significant losses of up to twenty thousand crore rupees in the film industry.

Key Highlights:

- Digital platforms hosting pirated content must remove internet links within 48 hours upon receiving directives from the Nodal Officers.
- Cinematograph (Amendment) Act 2023 was passed (amended the Cinematograph Act 1952) and includes stricter punishments for piracy, ranging from minimum three-month imprisonment and a fine of three lakh rupees to up to three years imprisonment and a fine of up to five per cent of the audited gross production cost.
- An original copyright holder or any person authorised by them can file complaint.
For complaints by non-authorized persons, the officer can hold hearings on a case to case basis to decide its genuineness.
- After directions from officer, the intermediaries (digital platform) have to remove internet links hosting pirated content within a period of 48 hours.

INTERNATIONAL RELATIONS

1. INDIA-UNITED KINGDOM (UK) RELATIONS

Context:

Recently, inaugural India-UK 2+2 Foreign and Defence Dialogue was held in New Delhi.

More on the news

- The 2+2 dialogue at Senior Official level is a mechanism to discuss and review all aspects of India-UK Comprehensive Strategic Partnership.
- Possibilities for further collaboration particularly in areas of trade and investment, defence, critical and emerging technologies, in Indo-Pacific, etc were discussed by two sides.

India – UK Bilateral Relationship:

- India and the UK share a strong and multi-dimensional strategic partnership.
- Following India's economic reforms in the early 1990s that placed the Indian economy on a high growth trajectory, the two countries have taken several initiatives to expand bilateral relations.
- India's multifaceted bilateral relationship with the UK intensified with its up-gradation to a Strategic Partnership in 2004.
- To advance trade and investment relations, they have formally launched negotiations for a free trade agreement (FTA) in January, 2022.

Economic and Commercial Relations:

- Total trade in goods and services (exports plus imports) between the UK and India was USD 32.7 billion during the period from April 2021 to March 2022.
- Total exports from India to UK amounted USD 21.5 billion while imports from UK to India amounted USD 10.2 billion.
- India has a trade surplus relationship with the UK.
- The UK is the 7th largest export destination for India.
- India is also the 2nd largest source of FDI for the UK.
- **India's major exports to UK –**
 - Ready-made garments and textiles, gems and jewellery, engineering goods, petroleum and petrochemical products, transport equipment and parts, spices, manufactures of metals, machinery and instruments, drugs & pharmaceuticals and marine products.
 - In the services sector, the UK is the largest market in Europe for Indian IT services.
- **India's major imports from UK –**
 - Precious and semi-precious stones, metal lifers, ores and metal scraps, engineering goods, professional instruments other than electronics, non-ferrous metals, chemicals and machinery.
 - Indian Diaspora in the UK:
 - Indians make up around 2.86% of the United Kingdom's population.
 - As per the UK Census 2021, Total Indian Population in the United Kingdom is around 19 Lakh or 1.9 million.
 - The UK is the largest source of European remittances to India.

India - UK free trade agreement:

- A Free Trade Agreement (FTA) is a formal pact between two or more countries aimed at reducing barriers to imports and exports, promoting the exchange of goods and services across international borders.
- It allows for trade without government tariffs, quotas, subsidies, or prohibitions, fostering economic cooperation.
- FTAs facilitate trade by lowering or eliminating barriers between nations.
- Free trade opposes trade protectionism or economic isolationism.

About India-UK FTA

- When signed, India-UK FTA would be the most comprehensive deal inked by India with any developed country.
- An early conclusion of the FTA is expected to give a fillip to bilateral trade.
- The bilateral trade between India and the U.K. increased to \$20.36 billion in 2022-23 from \$17.5 billion in 2021-22.

India's demands:

- The Indian industry is demanding greater access for its skilled professionals from sectors like IT, and healthcare in the UK market, besides market access for several goods at nil customs duties.

UK's demands:

- The U.K. is seeking a significant cut in import duties on goods such as scotch whiskey, automobiles, lamb meat, chocolates and certain confectionary items.
- Britain is also looking for more opportunities for U.K. services in Indian markets in segments like telecommunications, legal and financial services (banking and insurance).
- The UK has shortlisted products such as cement, chemicals, glass, iron and steel, non-ferrous metals, non-metallic minerals, paper and pulp, refining, fertilizers, and power generation.

Significance

Newer strategies:

- India is seen breaking from the look east policy for trade deals that saw widening deficits with Japan, South Korea, and ASEAN countries.
- The government is counting on economic integration with Western and African nations to fuel export growth.

Need for 'China-plus one' policy:

- The disruption of supply chains during the pandemic brought home to Western companies the risks of over-dependence on China, and the need for a 'China-plus one' policy.
- Australia's tensions with China, along with the complementarities with the Indian economy, presented a case for a trade deal with India; similar factors brought India and UK to opt for FTA negotiations.
- Trade deals with other RCEP members:
- India, after exiting the China-dominated Regional Comprehensive Economic Partnership (RCEP), has been looking at trade deals with the UK, Australia, the EU and, until recently, Canada, to hold off China in the region.

Template for future agreements:

- When signed, the India-UK FTA will serve as a template for an agreement with India's second-largest trade partner, the European Union (EU).

For UK:

For a post-Brexit UK, these talks represent a chance to access newer markets.

Advantages for India

India as a bigger exporter to the UK:

- For India, protecting its domestic industry remains a priority, especially given the focus on Make in India, but at the same time it hopes to become a bigger exporter to the UK.

Boost for Indian Exports:

- India's labour-intensive sectors such as apparel and gems and jewellery have seen a steep decline in market share over the last five years.
- Indian textile exports face tariffs walls as high as 10% in the UK; a trade deal could put India on par with competition such as Bangladesh, and revive textile exports.
- However, the British Parliament has been warned in a report that granting zero-duty access to Indian textiles under the FTA could bring stress on Least Developed Countries such as Bangladesh.

Boost for other negotiations:

- For India, protecting its domestic industry remains a priority, especially given the focus on Make in India, but at the same time it hopes to become a bigger exporter to the UK.

Boost for Indian Exports:

- India's labour-intensive sectors such as apparel and gems and jewellery have seen a steep decline in market share over the last five years.
- Indian textile exports face tariffs walls as high as 10% in the UK; a trade deal could put India on par with competition such as Bangladesh, and revive textile exports.
- However, the British Parliament has been warned in a report that granting zero-duty access to Indian textiles under the FTA could bring stress on Least Developed Countries such as Bangladesh.

Boost for other negotiations:

- The trade pact could also boost India's negotiations in at least two other deals:
- One with the European Free Trade Association—the four-nation bloc of Iceland, Liechtenstein, Norway and Switzerland—and
- An interim trade pact with Canada.

Potential benefits of FTA



Issues & Challenges

Deeper access for British goods:

- Many Indian exports to the UK already enjoy low or zero tariffs, while British exports to India such as cars, Scotch whisky, and wines, face considerable tariffs of 100-150%.

- Tariff reductions on these goods will potentially offer them deeper access into Indian markets.
- The average tariff on goods imported from India into the UK is 4.2% but the average tariff in India on goods imported from the UK is 14.6%.

Possible imposition of carbon tax:

- Like the EU, the UK is looking to impose a levy on metal imports based on carbon emissions.
- An EU-style carbon border adjustment mechanism (CBAM) will hurt India's exports to the UK even if India wins significant removal of tariffs.

The UK's carbon tax could be harsh, as one of its aims is to reduce dependence on Russian energy imports.

Issue of rules of origin:

- Rules of origin are the basis for extending duty concessions.
- Each trade pact contains a set of rules of origin that prescribe the norms to be fulfilled to meet the 'originating status' criteria in the exporting country.
- This is to ensure that countries with a trade agreement do not dump goods from a third country after just affixing a label on them.

Other issues which need resolution include:

Intellectual property rights (IPRs);

Social security agreement;

- Duty concessions on electric vehicles, scotch whiskey, lamb meat, chocolates and certain confectionary items;
- Liberalisation of norms in services sectors like banking and insurance.

Major concerns in conclusion of FTA



Deeper access for British goods:

- Challenges Involved in India – UK Free Trade Agreement:
- FTAs are arrangements between two or more countries or trading blocs that primarily agree to reduce or eliminate customs tariff and non-tariff barriers on substantial trade between them.
- Following are the major roadblocks impeding the signing of a FTA between India and the UK.

2. THE INDO-PACIFIC ECONOMIC FRAMEWORK (IPEF)

Context:

- The third Indo-Pacific Economic Framework for Prosperity (IPEF) Ministerial Meeting was held in San Francisco, USA.

More on the news

- During the meeting, negotiations under the IPEF Pillar-III (Clean Economy), Pillar IV (Fair Economy)) were concluded.
- Additionally, ministers also signed the IPEF Agreement Relating to Supply Chain Resilience negotiated under Pillar II.
- The agreement envisages establishment of:
 - ✓ IPEF Supply Chain Council: For overseeing collaboration on supply chain issues across the Indo-Pacific.
 - ✓ IPEF Supply Chain Crisis Response Network: To help prepare for and respond to future supply chain disruptions.
 - ✓ IPEF Labour Rights Advisory Board: To identify labour rights concerns across IPEF supply chains and develop recommendations.

What is IPEF?

- The Indo-Pacific Economic Framework (IPEF) was launched jointly by the US and other partner countries of the Indo-Pacific region in 2022.
- The 14 IPEF partners represent 40 percent of the global GDP and 28 percent of global goods and services trade.
- It seeks to strengthen economic partnerships among participating countries with the objective of enhancing resilience, sustainability, inclusiveness, economic growth, fairness, and competitiveness in the region.

The 14 members of the IPEF are as follows



- Together these countries represent 40% of world GDP and 28% of global goods and services trade.
- Modules: The framework is structured around four pillars.
- India has joined all pillars except the trade one.

- Lead agency: The US Trade Representative (USTR) is the lead agency for the trade pillar, while the department of commerce is leading the other three pillars.

Traditional trade agreements vs IPEF:

- Unlike Traditional trade blocs (like the RCEP) or Free Trade Agreements (FTAs), IPEF will not negotiate tariffs or market access.
- Also unlike in FTAs, where everything is negotiated under a single umbrella, IPEF negotiations under the four module (pillars) are in silos, independent of each other.
- While countries have to agree to all the components within a module, they need not participate in every module.
- IPEF merely focuses on increasing regulatory coherence between the member nations



What is the extent of India's participation in IPEF?

India has been actively participating in the IPEF, but not in all pillars:

- **India out of trade pillar:** India has decided to opt out of the trade pillar of the Indo-Pacific Economic Framework (IPEF) as most issues promoted by the IPEF do not align with India's trade policies.
- **India against market barriers:** The IPEF's focus on strong labour and environment standards conflicts with India's stance and may act as market access barriers.
- **No tariff cuts:** The fact that the IPEF does not provide for tariff cuts also makes it unsatisfactory for India.
- **Keeping economic interests as a priority:** Joining the IPEF is important to keep the growing influence of China in the Asia Pacific region in check. However, India's economic interests cannot be put at stake.
- **India pitching for data sovereignty:** The US has expressed concerns about India's potential demands for data localization. However, India has argued that data localization is necessary to maintain data sovereignty.

What is the significance of IPEF for India?

The significance of IPEF can be analyzed through the following dimensions:

- **Beneficial for Indian exports:** India's trade in the region is growing rapidly. Nearly 50% of India's trade is centered in the Indo-Pacific Region, and the Indian Ocean carries 90% of India's trade and its energy sources.
- **Countering China's hegemony:** The absence of China as a member of the group gives it a unique geopolitical character, as all the members of the group have common concerns regarding China's expansionist aspirations.
- **Collaboration for energy projects:** IPEF is expected to yield significant short-term economic advantages for India by fostering collaboration in clean energy investment and technology development.
- **India's leadership in Indo-Pacific:** India's decision to join the IPEF is a robust indication of its dedication to advancing Indo-Pacific objectives and regional collaboration following its withdrawal from the RCEP.
- **Supply-chain resilience:** India can gain by expanding supply chains beyond China and also keeping itself resilient from situations like the Covid pandemic.

What are the challenges and limitations of IPEF?

The challenges and limitations of IPEF include:

- **Lack of clarity:** The IPEF's status as a non-free trade agreement and the ambiguity around the four pillars can lead to confusion and uncertainty about its purpose and utility.
- **Divergent economic arrangements:** The countries involved in the IPEF have very different economic arrangements, making it difficult to find common ground and set standards together.
- **Departures from traditional positions:** Progress in some areas may require countries to depart from their traditional positions, which can be politically challenging.
- **Taxation:** Tax provisions are a sensitive issue and may be difficult to negotiate.
- **Limited business representation:** The views of potentially competitive Indian businesses may not be heard, and there may be a tendency towards protectionism.
- **Complex negotiation process:** Trade negotiations involve multiple ministries and can be cumbersome and complex.
- **Credibility:** Earlier similar initiatives, such as the Blue Dot Network and the Build Back Better World (B3W) Initiative, have had limited success in addressing the region's infrastructure requirements.

What are the future prospects of IPEF?

The future prospects of the Indo-Pacific Economic Framework (IPEF) include

- **Strengthen regional economic architecture:** The IPEF should focus on strengthening the regional economic architecture by promoting greater coordination and cooperation among existing regional institutions.
- **Expand trade and investment:** The IPEF should promote greater trade and investment in the region by reducing barriers to trade and investment, improving connectivity, and enhancing the business environment.
- **Develop infrastructure:** Infrastructure development is critical for economic growth and development. The IPEF should work to develop high-quality infrastructure such as transportation, energy, and telecommunications.

- **Promote innovation and technology transfer:** It should promote greater innovation and technology transfer among member countries to enhance their competitiveness and resilience.
- **Foster sustainable development:** It needs to promote sustainable development by encouraging investment in green infrastructure, promoting clean energy, and supporting sustainable business practices.
- **Address emerging challenges:** The focus of IPEF should be on addressing emerging challenges, such as digital trade and e-commerce, cyber security, and climate change.

3. INDO-PACIFIC REGIONAL DIALOGUE 2023

Context

- The annual apex-level international conference of the Indian Navy – the Indo-Pacific Regional Dialogue (IPRD) – will be held in New Delhi from 15 to 17 November 2023.

Details

- The IPRD is an annual apex-level international conference conducted by the Indian Navy.
- It serves as a platform to discuss and address holistic maritime security issues across the Indo-Pacific region.
- Previous Editions 2018 & 2019: Held in New Delhi
- 2020: Canceled due to COVID-19
- 2021: Conducted online
- 2022: Resumed physical format in New Delhi

Organizers and Theme

Organizers:

- The National Maritime Foundation (NMF) serves as the primary organizer and knowledge partner for each edition of IPRD.
- The NMF was accordingly established, in 2005, as the nation's first maritime think-tank for the conduct of independent and policy-relevant research on all 'matters maritime'.
- It was, from its very inception, designed to create and heighten maritime awareness amongst India's policy-makers, intellectual echelons, and civil society at large.

Theme of IPRD-2023:

- The overarching theme is "Geopolitical Impacts upon Indo-Pacific Maritime Trade and Connectivity."
- Goa Maritime Conclave vs. IPRD
- Goa Maritime Conclave: Focuses on strategic-operational cooperation among maritime agencies in the Indian Ocean Region.
- IPRD: Addresses strategic-level international engagement concerning comprehensive maritime security issues in the Indo-Pacific.

Objectives

- Reviewing maritime trends in the Indo-Pacific
- Assessing regional opportunities and challenges
- Facilitating solution-oriented dialogue among key stakeholders.
- Focus Areas

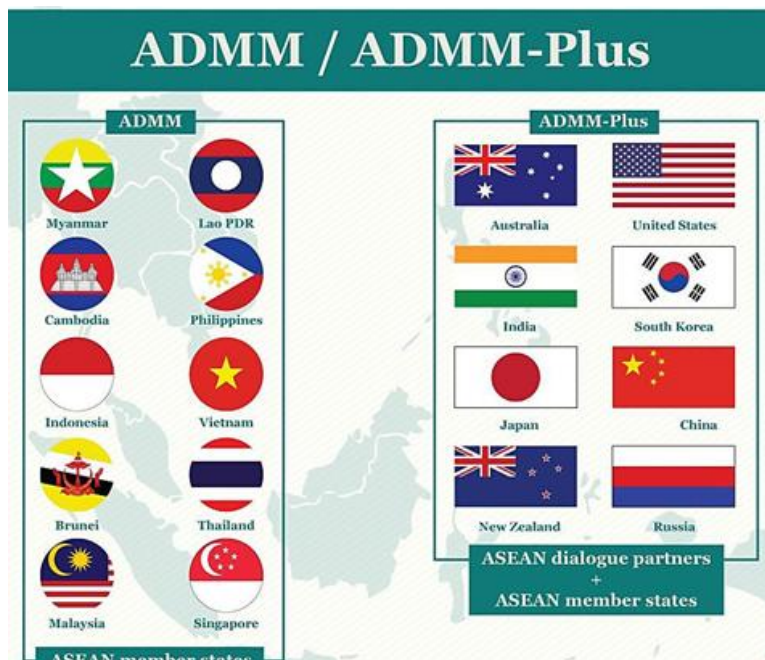
- Examination of geopolitical impacts on maritime trade and connectivity
- Exploration of diverse regional perspectives through expert discussions

4. 10TH ASEAN DEFENCE MINISTERS' MEETING-PLUS

Context:

- Recently, the Defence Minister of India has participated in the 10th Association of SouthEast Asian Nations (ASEAN) Defence Ministers' Meeting-Plus (ADMM-Plus) in Jakarta, Indonesia.

ADMM-Plus



What are the Key Highlights of the Indian Address in ADMM-Plus Meeting?

ASEAN Centrality:

- India affirmed the importance of ASEAN's central role and commended its efforts in fostering dialogue and consensus in the region.

Commitment to International Laws:

- India reiterated its commitment to freedom of navigation, over flight, and lawful commerce in international waters, aligning with international laws, notably the United Nations Convention on the Law of the Sea (UNCLOS) 1982.

Regional Security Initiatives:

- India advocated for consultative and development-oriented security initiatives that reflect consensus among stakeholders, aiming for practical, forward-looking cooperation within ADMM-Plus to enhance Maritime Security in the region.

Dialogue and Diplomacy:

- India stressed the significance of dialogue and diplomacy for enduring peace and global stability, emphasizing moving away from an "us versus them" mindset, asserting that this is not an era of war.

Collaborative Initiatives:

- India appreciated ASEAN Member States' participation in joint initiatives like the Initiative for Women in UN Peacekeeping Operations, Initiative for Marine Plastic Pollution Response, ASEAN-India Maritime Exercise, and Expert Working Group (EWG) on Humanitarian Assistance & Disaster Relief (HADR).
- India proposed to co-chair the EWG on Counter-Terrorism, a concern endorsed by ADMM-Plus due to terrorism's serious threat in the ASEAN region.
- In the present cycle from 2021-2024, India is co-chairing EWG on HADR along with Indonesia.

ASEAN



5. INDIA-US 2+2 MINISTERIAL DIALOGUE

Context:

- Recently, 5th Edition of the India-US 2+2 Ministerial Dialogue took place, where both countries highlighted progress in various areas of bilateral cooperation including defense, semiconductors, emerging technology, space, health etc.
- The 2+2 meetings have been held annually with the US leaders since 2018.

India's 2+2 Partners:

- The US is India's oldest and most important 2+2 talks partner.
- Additionally, India has held 2+2 meetings with ministers from Australia, Japan, the United Kingdom and Russia.

What are the Key Highlights of the India-US 2+2 Dialogue?

Defense Deals:

- Both nations aimed to collaboratively co-develop and co-produce defence systems, fostering a deeper partnership in defence technologies.
- India and the U.S. are currently negotiating deals for the purchase of MQ-9B unmanned aerial vehicles and the licensed manufacturer of General Electric's F-414 jet engine in India.

Infantry Combat Vehicles and Future Plans:

- Both sides discussed infantry combat vehicles, particularly the Stryker, as part of the defence industry cooperation roadmap.

Advancements in Defence Technology Cooperation:

- Both sides reviewed the progress of the India-U.S. Defence Industrial Ecosystem, INDUS-X, launched in June 2023, aimed at expanding the strategic technology partnership and defence industrial cooperation.

Maritime Security:

- Both nations shared a focus on maritime security in the Indo-Pacific region, acknowledging the importance of safeguarding vital sea lanes and promoting stability.

Discussion on Chinese Aggression:

- The US emphasized that the bilateral relationship extends beyond addressing the challenges posed by China.

Space and Semiconductor Collaboration:

- The Ministers welcomed the rapid progress made under the India-US Initiative on Critical and Emerging Technology (iCET) to build science and technology and critical technology value chain collaborations in both the commercial and defence sectors.
- They called on the respective governments, academic, research, and corporate sectors to continue to proactively build these strategic partnerships in emerging technologies like quantum, telecom, biotechnology, Artificial Intelligence, and semiconductors to accelerate global innovation and benefit the economies of both countries.
- They welcomed the early meeting of the Strategic Trade Dialogue Monitoring Mechanism.

Discussion on Chinese Aggression:

- The US emphasized that the bilateral relationship extends beyond addressing the challenges posed by China.

India-Canada Row:

- The ongoing row between India and Canada, particularly concerning security concerns related to a Khalistan separatist based in the US and Canada, was addressed.
- India communicated its position on core security concerns to its partners.

Israel-Hamas War:

- India reiterated its stance on the Israel-Hamas Conflict, advocating for a two-state solution (Two countries officially demarcated and Internationally Recognised) and the early resumption of dialogue.
- Humanitarian assistance has been provided, emphasizing adherence to international humanitarian law and the condemnation of civilian casualties.



The Four Foundational Agreements

- **General Security of Military Information Agreement (GSOMIA)** – enables the sharing of military intelligence and requires each country to protect the others' classified information
- **Logistics Exchange Memorandum of Association (LEMOA)** – permits the military of either country to use the others' bases for re-supplying or carrying out repairs
- **Communications Compatibility and Security Agreement (COMCASA)** – enables the two countries to share secure communication and exchange information on approved equipment
- **Basic Exchange and Cooperation Agreement for Geo-spatial Cooperation (BECA)** – will allow India to use US geospatial maps to get pinpoint military accuracy

INDIA-US RELATIONSHIP OVERVIEW

The confluence of common factors like democratic values, Shared areas of Interests, Stand against terrorism makes India and US enjoy a comprehensive strategic partnership.



6. INDIA-AUSTRALIA 2+2 MINISTERIAL DIALOGUE

Context:

Recently, the 2nd India-Australia 2+2 Ministerial Dialogue was held in New Delhi, India, where foreign Affairs Ministers and Defense Ministers of both countries attended the Meeting.

What are the Key Highlights of the India-Australia 2+2 Ministerial Dialogue?

Enhanced Cooperation:

- Both nations emphasized further cooperation in information exchange and Indo-Pacific Maritime Domain Awareness (MDA), underlining the importance of these aspects in strengthening their strategic ties.
- The Quad’s Indo-Pacific MDA is in the implementation phase, slated to be a prominent agenda item at the upcoming Quad summit hosted by India.

Implementing Arrangements:

Both sides discussed the implementing arrangements on hydrography cooperation and cooperation for air-to-air refueling, signaling a step toward concrete collaboration in defense areas.

Niche Training Areas:

There's a shared vision to collaborate in specialized training areas such as Artificial Intelligence (AI), Anti-Submarine Warfare, anti-drone warfare, and the cyber domain, highlighting a commitment to developing advanced defense capabilities.

Defense Industry Collaboration:

Both countries recognized the potential of deepening cooperation in defense industry and research as a means to enhance their already strong relationship.

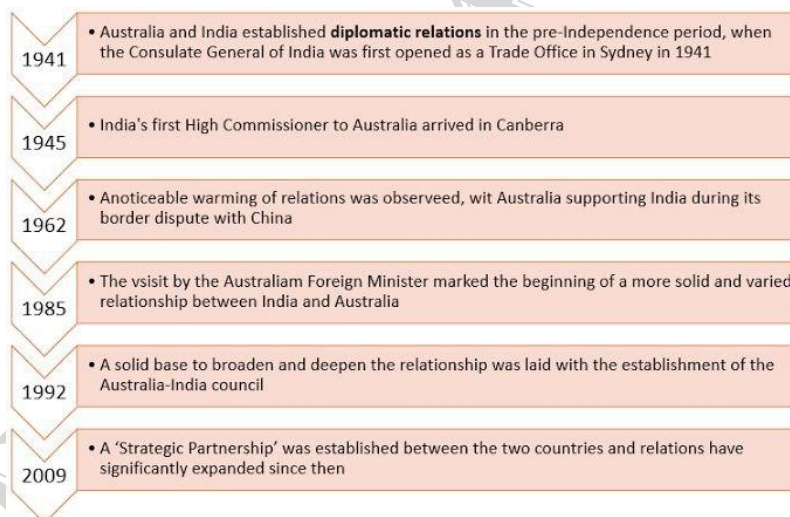
They Identified potential areas of collaboration including shipbuilding, ship repair and maintenance, as well as aircraft maintenance, repair, and overhaul.

Research in Underwater Technologies:

Discussion on joint research in underwater technologies and collaboration between defense start-ups signifies a push for innovation and technological advancement in defense strategies.

Reaffirmed Bilateral Defense Relations:

Both countries reaffirmed commitment to strengthen bilateral defense relations and expressed satisfaction over increasing military-to-military cooperation, joint exercises, exchanges, and institutional dialogues.



HIGHLIGHTS OF BILATERAL RELATIONSHIP

- 1941:** India Trade Office in Sydney established
- 2009:** Establishment of **Strategic Partnership**
- 2014:** PM Modi's 1st official visit to Australia for G20 Brisbane Summit; became the 1st Indian to address the Australian Parliament
- 2020:** Relations upgraded to **Comprehensive Strategic Partnership**
- 2021:** 1st India-Australia 2+2 Foreign & Defence Ministerial Dialogue held
- 2022:** - Mechanism for India-Australia Annual Summit Institutionalized
- 75th Anniversary of diplomatic relations

Trade Booster

INDIA'S TRADE WITH OZ (\$ b)

	Goods	Services
Export	6.9	3.6
Import	15.1	1.9

(Calendar year 2021)

INDIA'S GAINS

GOODS

Immediate nil duty on 96.4% exports; **No duty on** textiles, leather, furniture, sports goods, jewellery

Phasing out to zero duty on remaining **113** tariff lines

Steel, aluminium, garments to gain from cheap raw material import but **no concession to** milk, dairy products, chickpeas, apple, wheat, rice, sugar, iron ore, medical devices



OZ BENEFITS

SERVICES

4-year visa for 1,800 chefs, yoga teachers every yr

Post study work visa of 2-4 years for Indian students on reciprocal basis

Multiple entry work & holiday visa to 1,000 young Indians

Immediate nil duty on 85% of Aus exports

No or low duty on 30.3% tariff lines in 3-10 yrs

Limited quota for oranges, mandarins, almonds, pears, cotton

ECONOMY

1. INDIA'S DIGITAL PUBLIC INFRASTRUCTURE (DPI)***In Context***

- India's digital public infrastructure (DPI), loosely the India Stack and more, is shaped in a unique partnership between governments (Union and States), regulators, the private sector, selfless volunteers, startups, and academia/think tanks.

What is Digital Public Infrastructure (DPI)?

- Digital public infrastructure (DPI) refers to blocks or platforms such as digital identification, payment infrastructure and data exchange solutions that help countries deliver essential services to their people, empowering citizens and improving lives by enabling digital inclusion.

What DPI Does?

- Put simply, foundational DPIs mediate the flow of people, money and information.
- First, the flow of people through a digital ID System.
- Second, the flow of money through a real-time fast payment system.
- And third, the flow of personal information through a consent-based data-sharing system to actualise the benefits of DPIs and to empower the citizen with a real ability to control data.

Major Challenges with DPI

- There is a disturbing trend of the weaponization of data and technology or Digital Colonisation (Hicks, 2019) resulting in a loss of agency, sovereignty and privacy.
- Therefore, proactively deliberating on how to build good DPI is key to avoiding such challenges.

Need of DPI

- Public infrastructure has been a cornerstone of human progress. From the transcontinental railways of the nineteenth century to telecommunication in the twentieth century, infrastructure has been vital to facilitating the flow of people, money and information.
- Built on top of public infrastructure, democratic countries with largely free markets have fostered public and private innovation and, therefore, generated considerable value creation in societies.
- DPI has emerged as the most feasible model due to its low cost, interoperability and scalable design, and because of its safeguards against monopolies and digital colonisation.
- The COVID-19 pandemic accelerated the use of these systems as enforced isolation left people with no choice but to rely on these digital alternatives

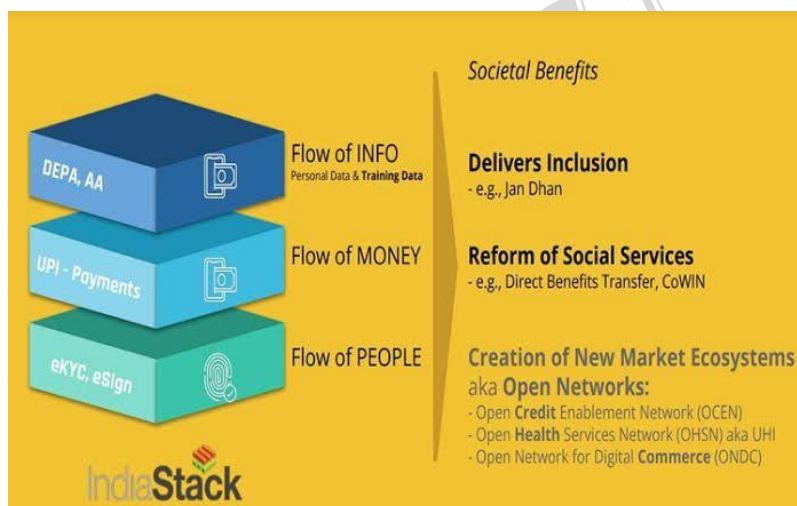
India's Digital Public Infrastructure (DPI)

- In India, DPI has been a key focus area of the government in recent years, with several initiatives aimed at building a robust DPI ecosystem.

- As India aspires to become a \$5 trillion economy in the future, and the world's third-largest economy within a decade, its thriving DPI will be central to delivering on this economic promise and achieving these audacious goals.
- India today has 850 million internet users, compared to 5.5 million users in 2000. According to the central government, India is the world's largest "digitally connected democracy".

Key Components of DPI in India

- **Digital Identity:** The Unique Identification Authority of India (UIDAI) has developed Aadhaar, a unique identification system that provides every Indian citizen with a unique identification number based on their biometric data.
- **Unified Payment Interface:** UPI enables anyone with a bank account to make real-time digital payments using a mobile device.
- **DigiYatra and DigiLocker:** DigiYatra is a Biometric Enabled Seamless Travel (BEST) experience based on a facial recognition system (FRS), again through a partnership between industry and government, which ensures seamless identification of passengers at key checkpoints such as airport entry, security check and boarding gate clearance.



Way Ahead

- For India's DPI success to become a worldwide revolution, three types of institutions must be built.
- First, we need independent DPI steward institutions.
- Secondly, we need to develop global standards through a multilateral dialogue led by India.

2. GLOBAL DEBT OF DEVELOPING COUNTRIES

Context:

- According to the Institute of International Finance (IIF), Global Debt rose to an all-time high of USD 307 trillion in the second quarter 2023.
- Global debt has risen by about USD 100 trillion over the last decade. Further, global debt as a share of Gross Domestic Product (GDP) has started to increase once again to hit 336% after dropping quite steeply for seven consecutive quarters.

What is Global Debt?

About:

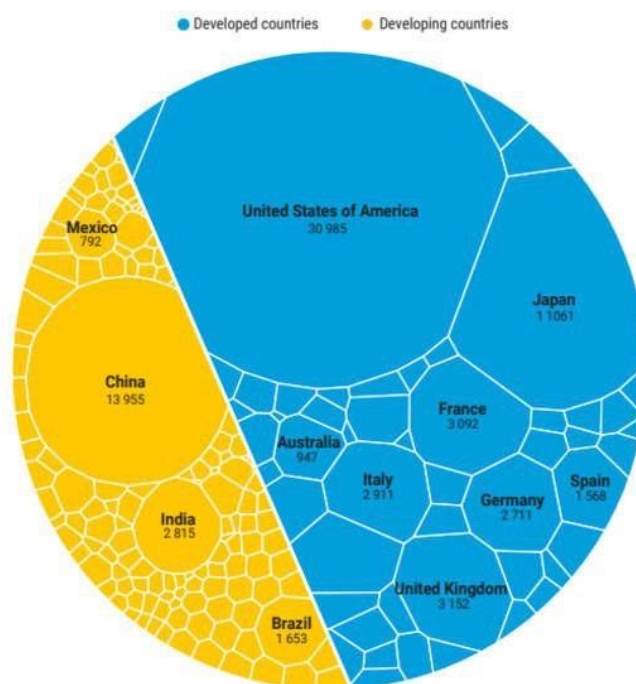
- Global debt refers to the borrowings of governments as well as private businesses and individuals.
- Governments borrow to meet various expenditures that they are unable to meet through tax and other revenues.
- Governments may also borrow to pay interest on the money that they have already borrowed to fund past expenditures.
- The private sector borrows predominantly to make investments.

- **30%** of the global public debt is held by Developing countries, of which 70% is represented by China, India and Brazil.
- **60%** is the total public debt to GDP of developing countries in 2021 (an increase for 35%)
- **59** developing countries face a debt-to-GDP ratio above 60% – a threshold indicating high levels of debt.

Regional Contributors to Debt Growth:

- In the first half of 2023, advanced economies, including the US, U.K, Japan, and France, accounted for over 80% of the rise in global debt.
- Emerging market economies like China, India, and Brazil also witnessed substantial debt growth during this period.

Almost 30% of global public debt is owed by developing countries
Public debt by country in 2022 (USD billion)



Source: UN Global Crisis Response Group calculations based on IMF World Economic Outlook (April 2023).

Reasons Behind Rising Global Debt:

- Economic growth, population expansion, and increased government spending drive the need for borrowing. During economic downturns, governments intensify borrowing to stimulate economic activity and provide financial support.
- During the first half of 2023, total global debt rose by USD10 trillion. This has happened amid rising interest rates, which was expected to adversely affect demand for loans.
- But a rise in debt levels over time is to be expected since the total money supply usually steadily rises each year in countries across the globe.

Why is the Growing Global Debt a Cause for Concern?

Debt Sustainability and Fiscal Imbalance:

- Rising debt can lead to concerns about its sustainability. If a country's debt grows faster than its economy, it may become increasingly challenging to service the debt in the long term without resorting to extreme measures.

Reduced Economic Flexibility:

- High debt levels can limit a government's ability to respond to economic downturns effectively. It constrains fiscal policy options, making it difficult to implement stimulus measures during recessions.

Financial System Risks:

- A high concentration of debt in the financial system can pose systemic risks, particularly if the debt is held by a few major institutions. If a significant borrower defaults, it could trigger a chain reaction affecting the stability of the entire financial system.

Impact on Interest Rates:

- As debt levels rise, governments may face higher interest rates on new borrowings, which can exacerbate debt burdens.
- Elevated interest rates can also lead to increased borrowing costs for businesses and individuals, hindering investment and consumption.

What can be Done to Tackle Debt Growth?

- The International Monetary Fund (IMF) during the G20 Finance Ministers and Central Bank Governors potential actions and methods to enhance the Global Debt Architecture.

Debt Resolution and Restructuring:

- Conducting a fair, objective, and in-depth analysis of global debt issues is crucial. This analysis should guide debt restructuring decisions, including potential debt haircuts or accepting losses on loans to ensure sustainability and fairness.

Strengthening Financial Architecture:

- Implement urgent reforms to strengthen the international financial architecture, especially in the area of debt resolution.

- This includes enhancing frameworks for debt restructuring, promoting transparency in debt-related transactions, and improving the efficiency and effectiveness of debt resolution mechanisms.

Support for Vulnerable Economies:

- Focus on developing and low-income countries facing acute economic stress and limited policy space.
- Provide targeted financial support, debt relief, or restructuring mechanisms tailored to their specific needs and circumstances.

Global Financial Safety Net:

- Strengthen and improve the global financial safety net to respond effectively to economic shocks and crises. This involves optimizing lending mechanisms, ensuring rapid disbursement of funds, and increasing access to financial assistance for countries in need.

International Collaboration and Cooperation:

- Encourage collaboration and cooperation among nations, international organizations, and financial institutions to develop comprehensive solutions. Multilateral efforts can foster coordinated action, knowledge sharing, and the pooling of resources to address debt challenges effectively.

Global initiatives to solve debt crisis in developing countries

- **Role of IMF:** The IMF is helping countries address large financing needs to prevent debt crises or, for countries already in debt distress, to restore economic and financial stability.
- **Global Sovereign Debt Roundtable (GSDR):** Launched in February 2023 by the IMF in coordination with the World Bank and India's G20 presidency, the GSDR brings together key stakeholders involved in sovereign debt restructuring to foster consensus on debt and debt-restructuring challenges and how to address them.
- **Debt Management and Financial Analysis System (DMFAS) programme of UNCTAD:** The development objective of the DMFAS Programme is to strengthen the Government's capacity to manage its debt effectively and sustainably.
- **Heavily Indebted Poor Countries (HIPC) Initiative:** The IMF and World Bank launched the HIPC Initiative in 1996 to ensure that no poor country faces an unmanageable debt burden.

3. EXCHANGE RATE MANAGEMENT IN INDIA

Context:

- Indian rupee's valuation against currencies of major trading partners has surged to a near two-year high on central bank intervention and elevated domestic inflation.

What is Currency Valuation?

- It refers to the process of determining the relative worth or value of one currency in terms of another.
- It is influenced by several factors including interest rates, Inflation, capital flow, and money supply etc.
- The most common method to value currency is through exchange rates.
- An exchange rate represents the value of one currency in terms of another. For example, if the exchange rate from USD to INR is 80, you can exchange 1 USD for 80 INR.

Methods for Exchange Rate Determination

- **Fixed Exchange Rates:** Here, the value of a currency is pegged or fixed to the value of another currency, a basket of currencies, or a commodity like gold.
 - Central banks actively intervene to maintain the fixed rate.
- **Flexible Exchange Rates:** Also known as floating exchange rates, the exchange rate is determined by the forces of the market i.e., demand and supply of currency in international market.

Year	The Foreign Exchange Market and Exchange Rate
 Fixed Exchange Rate Era	
1947-1971	Rupee's external par value was fixed in terms of gold with the pound sterling as the intervention currency.
1971	Breakdown of the Bretton-Woods system and floatation of major currencies. The rupee was linked to the pound sterling in December 1971.
1975	Rupee was pegged to a basket of currencies . Currency selection and weight assignment was left to the discretion of the RBI and not publicly announced.
 Balance of Payments crisis (1991)	
 Start of Floating exchange era	
1991	End to the pegged exchange rate regime
1992	Liberalized Exchange Rate Management System (LERMS) was put in place,
1993	Market determined exchange rate regime was introduced.

Effects of exchange rate on other key economic variables

- **Inflation:** An over-valued currency can contribute to lower inflation by reducing the cost of imported goods and services and vice versa.
- **Economic growth:** While a stronger currency can contribute to lower inflation, it may reduce export-driven sectors, consequently a decline in overall economic growth.
- **Trade:** A stronger currency may contribute to trade deficits as exports become less competitive and imports become more attractive to domestic consumers.
- **Capital Flow:** A stronger currency may attract more foreign direct investment as investors seek higher returns due to currency appreciation.
- **Business decisions:** Exchange rates can be highly volatile, making it challenging for businesses to predict costs, prices, and profits accurately.

Nominal Effective Exchange Rate (NEER)	The Real Effective Exchange Rate (REER):
Measure of the value of a country's currency against a basket of other currencies, taking into account exchange rates with its major trading partners.	Measure of the value of a country's currency against a basket of other currencies, adjusted for differences in price levels or inflation rates between the home country and its trading partners.
• It is a weighted average of bilateral exchange rates, where the weights reflect the importance of each trading partner in a country's overall trade. ◦ It does not account for differences in price levels (inflation).	• It provides a more accurate reflection of a currency's purchasing power in the international market.

Effects of exchange rate on other key economic variables

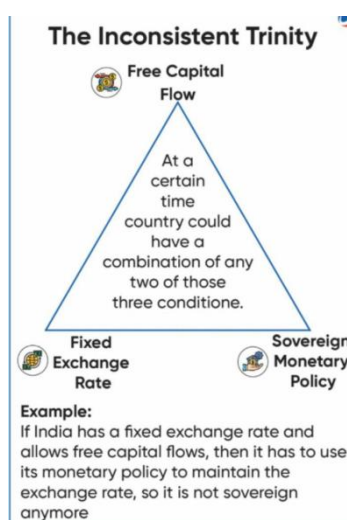
- **Inflation:** An **over-valued currency** can contribute to **lower inflation** by reducing the cost of imported goods and services and vice versa.
 - For example, when the country imports goods and services from other countries, it needs fewer units of its own currency to purchase the same amount of foreign goods and services.
- **Interest rates:** Central banks may respond to a strengthening currency by **lowering interest rates** to stimulate economic activity and exports.
 - Similarly, Central Banks respond to a weakening currency by increasing the interest rates.

Do you know?

- > As per RBI's monetary policy report, the **rupee's 40-currency real effective exchange rate (REER)** shows the rupee was **overvalued by 5.7% in September 2023**.
- > **Overvaluation** occurs when a currency's exchange rate is higher (stronger) than its fundamental or intrinsic value.

Challenges in managing exchange rates

- **Unpredictable geopolitical Events:** Unexpected global events, such as Trade war (e.g., U. S.-China trade war), geopolitical tensions (e.g., Ukraine-Russia war) or natural disasters, can lead to sudden and unpredictable movements in exchange rates.
- **Speculation and Manipulation:** Buying and selling of currency in the forex market for speculation and manipulation can exacerbate exchange rate volatility, creating challenges for policymakers in maintaining stable economic conditions.
- **Government Intervention:** Interventions by governments or central banks (e.g., devaluation, depreciation) to stabilize or influence exchange rates may impact market perceptions and create challenges for policymakers.
- **Impossible trinity (or inconsistent trinity):** It refers to the idea that an economy cannot pursue independent monetary policy, maintain a fixed exchange rate, and allow the free flow of capital across its borders at the same time.



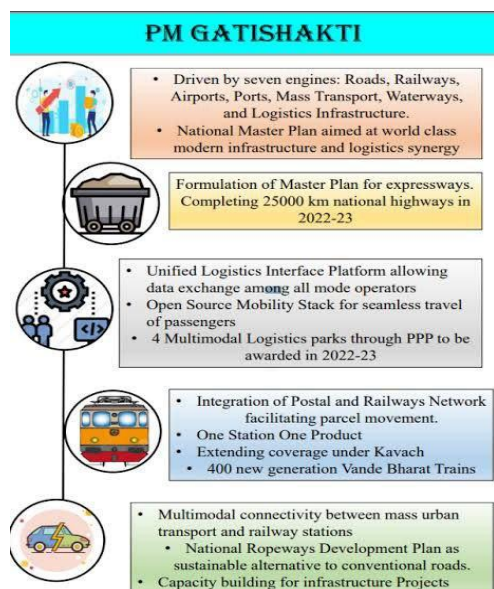
4. PM GATI SHAKTI INITIATIVE

Context:

- Recently, PM GatiShakti Initiative completed two years since its inception in October 2021.

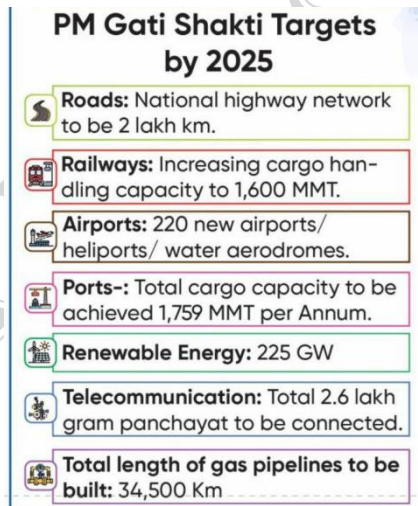
About GATI Shakti Plan

- PM GatiShakti National Master Plan (PMGS-NMP) is aimed to provide multimodal connectivity infrastructure to various economic zones of India.
- Economic zone refers to a cluster where any economic activity in the form of manufacturing or value addition services or other services, is being carried out.



Objectives of the Plan:

- To incorporate Economic zones like textile clusters, pharmaceutical clusters, defence corridors, electronic parks etc. in PMGS-NMP.
- To set up a unified portal that would bring 16 Ministries including Railways and Roadways together.
- Primary Focus: Strategic planning, innovative financing methods, leveraging technology, and expediting implementation processes.



Impact of the GATI Shakti Initiatives

- Saving Cost:** By cutting logistics costs and improving supply chains, it enhances the global competitiveness of local products. E.g., digitization of NOC (No Objection Certificate) for all projects.
- Expediting implementation processes across projects:** E.g., Reduction of the pre-alignment finalization time for infrastructure projects from 3-4 months earlier to 1 month.
- Increasing information availability:** By providing valuable data on upcoming connectivity projects, business hubs, and industrial areas.

E.g., Use of Digital Master Planning tool by BISAG-N (Bhaskaracharya National Institute for Space Applications and Geo-informatics) in a dynamic Geographic Information System (GIS) platform.

- **Developing Multi-modal logistics:** By establishing seamless transportation connectivity through various modes.
 - E.g., Integrating infrastructure schemes like Bharat Mala, Sagar Mala, inland waterways, dry/land ports.
- **Reducing traveling distances:** It will facilitate the last mile connectivity of the infrastructure so that road, rail, power, optic fibre cable, gas pipeline etc. are available to the people.
 - E.g., Integrating Public transport platforms such as the Indian Railways, Metro Trains, Regional Rapid Transit System (RRTS), Interstate Buses, Bus Rapid Transit (BRT) etc.

Challenges in implementation

- **Structural Problems:** Securing approvals for land access, obtaining environmental clearances, and resettlement and compensation issues for affected communities.
- **Financial Constraints:** Private banks are reluctant to provide credit due to fear of increasing Non-Performing Assets.
- **Centre-State Coordination issue:** Involvement of multiple authorities without clear flow of accountability and issue of disputes arising during the implementation of the project.
- **Balancing infrastructure development with environmental considerations:** E.g., need to minimize the ecological impact of new projects.

5. RAPID TRANSIT SYSTEM (RRTS) PROJECT

Context:

- Recently, the Indian Prime Minister flagged off India's first regional rapid train service, Namo Bharat.
- Namo Bharat: India's Indigenous Semi-High-Speed Regional Train Project
- Background: Namo Bharat was previously known as "RAPIDX".
- Namo Bharat is India's first semi-high-speed regional train service project being run by NCRTC.
- National Capital Region Transport Corporation (NCRTC), which is implementing India's first semi-high-speed regional rail service project, has named the RRTS trains as 'RAPIDX' but later the name is changed to Namo Bharat.

About RRTS:

- It is a new commuter train system that runs on rails and is semi-high-speed and high-frequency. Its top speed is 180 km/h.
- Make in India: Namo Bharat is indigenously manufactured with a designed speed potential of 180 kmph and operational speed potential of 160 kmph.
- The train set was created by Alstom, a French company that makes coaches, in its engineering center in Hyderabad.
- Namo Bharat was made at an Alstom plant in Gujarat.

Key Features of Namo Bharat: India's Cutting-Edge Semi-High-Speed Regional Train

- **Seating for passengers:** There will be six coaches, and each coach will have two rows of two seats.
- With 72 seats, the normal coach is the largest. The premium coach has 62 seats.

- **Accessible:** Wheelchairs and stretchers will have their own space in the last car of the trains.
- **Speed:** Namo Bharat will take less than an hour to cover 82 km between Delhi and Modipuram in Meerut.

RRTS: Revolutionizing Regional Transit

- About: It is a state-of-the-art regional mobility solution comparable to the best in the world.
- Features: It is set to offer secure, reliable, and contemporary intercity transportation solutions in the nation.
- RRTS is a new rail-based, semi-high-speed, high-frequency commuter transit system.
- High-Speed Platform: RRTS is a transformational, regional development initiative, which is designed to provide high-speed trains for intercity commuting every 15 minutes, which can go up to a frequency of every 5 minutes as per requirement.”

A new start

The 84-km Regional Rapid Transit System (RTS) corridor from Delhi to Meerut, being built at a cost of ₹30,274 crore, will start from south Delhi's Jangpura

₹30,274cr
Total project cost

1 hour
Approx travel time from Meerut to Jangpura

84 km
Approx length of the corridor

The corridor

Length of the corridor in Delhi	Portion of the RTS line underground, 3.8km in Delhi	Total number of proposed stations	Number of stations in Delhi	Estimated ridership daily
14km	11km	25	4	8 lakh

Jangpura
1.5-2km
Proposed extension from Sarai Kale Khan to Jangpura

Delhi

Meerut

GHAZIABAD

Stations: Modipuram depot, Modipuram, Meerut North, Dauri, MES Colony, Begumpur, Bhaissali, Meerut Central, Brahmapur, Shatabdi Nagar, Rithani, Partapur, Meerut South, Modi Nagar North, Modi Nagar South, Murad Nagar, Duha, Guldhar, Sahibabad, Ghaziabad, Anand Vihar, Sarai Kale Khan, New Ashok Nagar.

Legend: Red line = Elevated, Blue line = Underground

NEED FOR SPEED

82 km | Length of **Delhi-Meerut RRTS corridor**

160 kmph | Operational speed of RRTS trains

180 kmph | Design speed between RRTS stations

5-10 km | Distance between RRTS stations

2022 | Year when the first train will start operating

30 | Six-coach trains for RRTS corridor

10 | Three-coach trains for local transit in Meerut

6 | Automatic and wide plug doors, three on each side

4 | Doors in business class coach, two on each side

FEATURES

- Transverse 2x2 seats with adequate leg room
- Optimised aisle width with grab handles and railings for standing passengers
- Overhead luggage rack
- Onboard **Wi-Fi, mobile and laptop charging sockets**
- Double glazed, large safety glass windows for panoramic view of the outside
- Lighting and temperature control systems
- Public announcement system, dynamic route map display, infotainment display, etc
- Automatic plug doors to reduce air friction and noise
- CCTV, fire and smoke detector, fire extinguisher, and door indicator
- Dedicated wheelchair space located near train doorway for easy access
- Lightweight and compact propulsion system
- Push buttons for selective opening of doors. All doors will not open at every station
- One business-class coach per train, with spacious and reclining seats
- Special business lounge at platform
- One coach in every train reserved for women
- All RRTS stations will have platform screen doors





ABOUT NCRTC



6. DEDICATED FREIGHT CORRIDORS (DFCS)

Context:

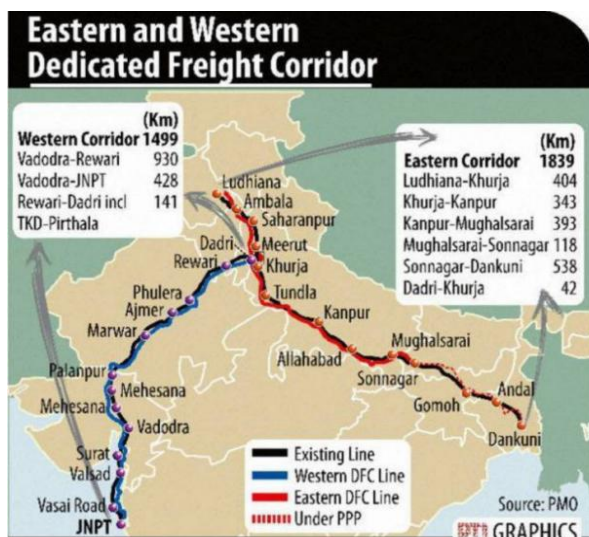
The Eastern Dedicated Freight Corridor (EDFC) has been completed fully in October 2023.

What is a Dedicated Freight Corridor?

- It is a railway corridor designed for the rapid and efficient transportation of goods and commodities, characterized by high speed and high capacity.
- Aim:** Decongesting India's railway network by separating freight traffic from passenger traffic on the railway network.
- Implementing agency:** Dedicated Freight Corridor Corporation of India Limited (DFCCIL).
- It is a wholly owned enterprise of the Ministry of Railways set up in 2006 for the construction, maintenance, and operation of DFCs.

The salient features of DFC are as under:

- Maximum permissible Speed – 100Kmph
- Long haul and Higher Trailing load – upto 13000 tonnes per train
- Double stack trains on WDFC
- Efficient handling and value added services at freight terminals of DFC.
- Enhanced axle load of 25 tonnes
- Higher maximum moving dimension of Wagons
- Automatic Signalling with Mobile Train Radio communication
- Overall enhanced throughput



Significance

- The diversion of freight to DFCs on trunk routes will free up the existing network for the kind of **capacity expansion** needed for passenger movement.
- It will also integrate the Industrial Corridors.

In short

- Logistics costs will be reduced.
- Reduction in the unit cost of transportation,
- Smaller organization & management cost,
- Higher efficiency & lower energy consumption.
- Faster movement of goods.
- It is environmentally friendly.
- Helps in generating more employment.

Importance of DFCs:

- **Relieving Traffic Congestion:** DFCs are crucial in separating freight and passenger traffic, enhancing the speed of freight movement, and alleviating congestion on the country's major routes.
- **Diverse Cargo Transportation:** The corridor will be utilized for transporting various commodities such as fertilizers, food grains, salt, coal, iron & steel, and cement.
- **National Integration:** It will be integrated with the Eastern DFC, forming four significant hubs – Delhi, Mumbai, Chennai, and Kolkata, effectively linking major parts of the country.

7. TOWARDS REALISING 'THE MARITIME INDIA VISION 2030'

Context:

- According to recently released World Bank's Logistic Performance Index (LPI) Report 2023, India (overall ranked 38th) has moved up to 22nd rank in the global rankings on the "International Shipments" category from the 44th position in 2014.
- The global recognition of the operational efficiencies of Indian ports and the Indian maritime sector is an important step in India's endeavour to become a global maritime power as envisaged in the Maritime India Vision, 2030.

Maritime India Vision, 2030

- A 10-year blueprint with the aim of overhauling the Indian maritime sector, the vision was launched at the Maritime India Summit in November 2020.
- It is the latest venture of the Sagarmala Programme which outlines a series of policy initiatives and development projects.
- The development project will see an investment of Rs. 3.4 lakh crore to increase cargo volumes to the tune of 2600 million tones.
- This will lead to the creation of additional jobs (direct or indirect) and create more sources of revenue of about 20,000 cores for state-owned major ports.

Maritime India Vision 2030 150+ initiatives identified across Ports, Shipping and Waterways		
Ports	Shipping	Waterways
World-class port infrastructure 11	Atmanirbhar in ship building, repair & recycling 11	Promoting cargo movement 6
'Smart Ports' to improve EoDB 8	Reforming shipping policy and institutional framework 13	- Regional connectivity - Multi-modality - Coastal integration
Reducing logistics cost and enabling multi-modal shift 18	Enhancing India's global stature 8	River cruise tourism 5
Institutional, regulatory and legislative reforms 19	Ocean, coastal and island cruise hub 15	Urban water transport 4
Safe, sustainable and green maritime sector 1	World-class maritime research, education and training 29	

Maritime AmritKaal Vision 2047

It outlines strategic initiatives spread across 11 overarching themes to transform India's maritime sector. These themes include:

- **Sustainable and Green Maritime Sector:** Aims at making all 14 major ports carbon neutral, embracing green fuel and making India a hub for hydrogen production and distribution.
- Encouragement to adoption of multi-fuel engine with alternative fuels.
- An Inland Vessel Green Transition Program will be launched.
3 ports to set up the green hydrogen bunkers - Paradip Port (Odisha), Deendayal Port (Gujarat) and VO Chidambaranar Port (Tamil Nadu).

Port modernisation:

Transforming ports into smart, automated and ports of the future through enhanced operational agility, accelerated digitalization etc.

- It also aims at placing Indian ports among world's top 25 ports.
- Global player in shipbuilding, repair & recycling to attain a spot in top 5 global shipbuilding centres.
- **Improving India's tonnage:** Quadruple port capacity to reach 10,000 million tons port capacity with 100% PPP (Public Private Partnership) model at major ports.
- **Ocean, Coastal & River Cruise Sector:** Making India a leader in cruise tourism in the Asia Pacific region and develop 25 cruise terminals.
- **Enhanced logistics:** Enhance modal share of coastal shipping and inland waterways from 6% to 12% through infrastructural and policy reforms.
- Government aims at increasing operational waterways more than twofold.
- Coastal cargo traffic has doubled in the last decade, and cargo handling of national waterways grew by four times.
- **Offer maritime professional service:** Through enhancing competitiveness in maritime law, finance and insurance sector and ensuring compliance with international standards and best practices.
- **Maritime cluster development:** To optimize the entire supply chain, thereby elevating economic productivity by enhancing effectiveness and efficiency of logistics sector.

Global maritime presence:

- Push to international corridors such as India-Middle East-Europe Corridor (IMEC) will integrate various regional projects and link maritime activities, creating robust supply chain networks.
- India will drive the establishment of a 5000 km multi-country waterway system, known as Eastern Waterways Connectivity – Transport Grid.

Maritime sector in India

- Maritime Sector in India comprises Ports, Shipping, Shipbuilding and Ship repair and Inland Water Transport Systems.
- Ministry of Shipping is the nodal central agency administering the issues related to them.
- India has 13 Major Ports and about 200 minor ports along the coastline and Island.
- Major Ports are the ports which are administered by the Union Government, while Non-major Ports are administered by the State Governments.
- In the last decade, the capacity of India's major ports has doubled, and turnaround time for big vessels has come down to less than 24 hours as compared to 42 hours in 2014.



Significance of developing India's maritime sector

- **Livelihood opportunities for coastal population:** Most coastal regions of India are densely populated and low-lying, with around 250 million people active within a 50-kilometre range of coast.
- **Food security:** India is the second-largest fish producing nation in the world with a fleet of 250,000 fishing boats.
- **International trade:** Indian Ocean is the corridor of the global economy and India is strategically located commercial shipping lanes between Strait of Hormuz and Strait of Malacca.
- **Regional power aspiration:** India has the potential and capability to play the role of net security provider and a reliable partner in the Indian Ocean region.

8. LEAP AHEAD INITIATIVE: LAUNCHED BY STPI FOR STARTUPS**Context:**

- The Ministry of Electronics & Information Technology (MeitY) launched the LEAP AHEAD initiative, a collaborative effort between the Software Technology Parks of India (STPI) and The Indus Entrepreneurs (TiE) Delhi-NCR, aimed at supporting and accelerating the success of tech startups in India.

About the LEAP AHEAD initiative:

- Launch pad for Tech Entrepreneurs towards Accelerated Growth and Pioneering AHEAD (LEAP AHEAD) aims to support tech startups by offering them access to funding (up to 1 Crore), mentorship and global connections.

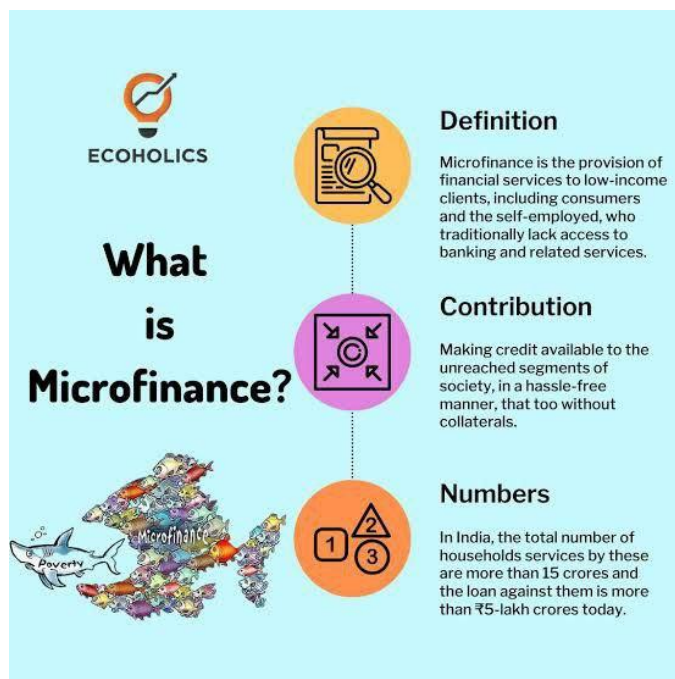
Aspects	Details
Launched by	Software Technology Parks of India (STPI) and The Indus Entrepreneurs (TiE) Delhi-NCR
Aim	To support tech startups by offering them access to funding, mentorship and global connections.
Full Form	Launchpad for Tech Entrepreneurs towards Accelerated Growth and Pioneering AHEAD (LEAP AHEAD)
Benefits for Startups	1.Intensive Three-Month Mentorship Program 2.One-on-One Mentorship with investors and industry experts. 3.Funding Potential of upto ₹1 crore 4.Access to networks and exposure in the global market. 5.One year of free associate membership with TiE Delhi-NCR
Eligibility	Startups involved in software product development, registered with DPIIT under the Startup India program and have demonstrated revenue generation and external investment.

What are Start-Ups?

- Start-ups are companies in their early stages of operation, founded by entrepreneurs aiming to meet demand with innovative products or services. India has become the 3rd largest start-up ecosystem in the world after the US and China. India is home to as many as 75,000 Startups.
- Global Innovation Index:** India has moved up from 81st (2015) to 46th in 2021 among 130 economies of the world.
- Publications:** Globally ranked 3rd (2021) from 6th in 2013 based on the National Science Foundation database.
- Patents:** Globally ranked 9th (2021) in terms of resident patent filing.

9. MICROFINANCE IN INDIA

- Recently a report titled “Micro Matters: Macro View” was released by Microfinance Industry Network (MFIN)’.
- MFIN is an Association of Non-Bank Finance Company Micro Finance Institutions (NBFC-MFIs) established in 2009.
- It is an umbrella body of Micro Finance Institutions (MFIs) of the country.



The key findings of the report

- NBFC-MFIs followed by banks are the largest provider of micro-credit amongst other regulated entities.
- MFIs' gross Non-Performing Assets (NPA) decreased from 5.6% (FY22) to 2.7% (FY23).

The share of East and Northeast states fell to 34.9% from 37.7% from last year.

Microfinance refers to the financial services provided to low-income individuals or groups who are typically excluded from traditional banking.

Significance of Microfinance in India

Financial Inclusion

- Women empowerment
- Poverty Alleviation
- Community Development



10. DEVAS INVESTORS CASE

- Court in Hague rejected Indian government plea against compensation to Devas investors.
 - Mauritius investors of Devas Multimedia were awarded \$111 million in compensation by the UN Commission on International Trade Law (UNCITRAL) tribunal over a failed 2005 deal with Antrix Corp.
 - The cabinet terminated the agreement due to security reasons in 2011.
- Indian government approached the district court of Hague for cancellation of the UNCITRAL award citing a 2022 Indian Supreme Court (SC) order.
- SC ruled for the liquidation of Devas Multimedia on the charge of fraud.

Arbitration laws in India

- India's Arbitration and Conciliation Act 1996 (last amended in 2021) has been modeled on lines of the UNCITRAL framework of laws.
- It aims to modernize Indian arbitration law and bring it in line with the best global practices and also make India a global hub for arbitration.
- New Delhi International Arbitration Centre Act, 2019 established the New Delhi International Arbitration Centre later renamed India International Arbitration Centre.

11. BHARATIYA BEEJ SAHKARI SAMITI LIMITED (BBSSL)

Context:

- Union Home and Cooperation Minister Amit Shah has established a new cooperative society, Bharatiya Beej Sahkari Samiti Limited (BBSSL), to boost domestic production as well as exports of certified seeds.

Background	
1.	On January 11, 2023, the Union Cabinet had approved the formation of Indian Seed Cooperative Society Limited.
2.	The BBSSL was registered in January, 2023.
3.	The three major cooperative societies of the country and two major statutory bodies of the Government of India are the promoters of the BBSSL: –
A. Cooperative Societies	
i)	Indian Farmers Fertilizer Cooperative Limited (IFFCO)
ii)	Krishak Bharati Cooperative Limited (KRIBHCO)
iii)	National Agricultural Cooperative Marketing Federation of India (NAFED)
B. Statutory bodies	
i)	National Dairy Development Board (NDDB)
ii)	National Cooperative Development Corporation (NCDC)

What Is a Primary Agricultural Credit Society (PACS)?

- PACS are village level cooperative credit societies that serve as the last link in a three-tier cooperative credit structure headed by the State Cooperative Banks (SCB) at the state level.
- Credit from the SCBs is transferred to the District Central Cooperative Banks (DCCBs), that operate at the district level.
- The DCCBs work with PACS, which deal directly with farmers.
- Since these are cooperative bodies, individual farmers are members of the PACS, and office-bearers are elected from within them. A village can have multiple PACS.
- PACSs provide short-term, and medium-term agricultural loans to the farmers for the various agricultural and farming activities.
- The first PACS was formed in 1904.
- Currently, there are more than 1,00,000 PACS in the country with a huge member base of more than 13 crore farmers. However, only 63,000 of them are functional.

Benefits/Advantages of PACS:

- The attraction of the PACS lies in the last mile connectivity they offer.
- For farmers, timely access to capital is necessary at the start of their agricultural activities.
- PACS have the capacity to extend credit with minimal paperwork within a short time.
- With other scheduled commercial banks, farmers have often complained of tedious paperwork and red tape.
- For farmers, PACS provide strength in numbers, as most of the paperwork is taken care of by the office-bearer of the PACS.
- In the case of scheduled commercial banks, farmers have to individually meet the requirement and often have to take the help of agents to get their loans sanctioned.

12. IMF QUOTA

Overview:

- The IMF Executive Board approved a 50% quota increase to provide critical resources to developing nations.
- The proposal emphasizes the need for fair representation, safeguarding the poorest members' shares.

Quota Increase Proposal:

- The proposal advocates for a 50% quota increase to be distributed to members based on their current quotas.
- If approved by the Board of Governors, it will strengthen global financial stability and minimize reliance on borrowed resources.
- The proposed increase is aimed at preserving the IMF's robust, quota-based, and adequately funded structure within the Global Financial Safety Net.

Boosting Financial Stability:

- Quotas serve as the IMF's financial and governance foundation, determining lending capacity and voting power.
- The plan is to decrease borrowed resources like Bilateral Borrowing Agreements and New Arrangements to Borrow (NAB) to maintain the Fund's current lending capacity.

Future Quota Realignment:

- The proposal acknowledges the importance of realigning quota shares to reflect members' relative positions in the world economy.
- The Executive Board is called upon to work on possible approaches for further quota realignment by June 2025 under the 17th General Review of Quotas.

Expectations and Decision:

- The proposal seeks broad support from the membership and highlights the IMF's ability to foster cooperative solutions amid global challenges.
- The Board of Governors is scheduled to vote on the proposal by December 15, 2023, requiring an 85% majority of the total voting power.

About International Monetary Fund (IMF) –

- Founded in 1944, the IMF fosters global monetary cooperation and financial stability.
- Works to facilitate international trade, promote employment, sustainable economic growth, and reduce global poverty.
- World Economic Outlook, published by IMF, accompanied by lengthy discussions on the effect of fiscal, monetary, and trade policies on growth prospects and financial stability

Functions:

- **Surveillance:** Gathers extensive economic data, providing updated economic forecasts globally.
- **Capacity Building:** Offers technical assistance, training, and policy advice to member countries.
- **Lending:** Provides loans with specific conditions to nations facing financial challenges.

Organization:

- **Board of Governors:** Oversees IMF operations, advising the Managing Director.
- **Executive Board:** Consists of 24 directors representing member countries, responsible for day-to-day operations.
- **Managing Director:** Leads the IMF's staff and the Executive Board.
- **Voting Power and Quotas:** Quotas determine financial commitments and voting power of member countries.
- **Notable Contributions:** The IMF has played a crucial role in managing various global financial crises, including the Suez Crisis, OPEC oil embargo, and the Asian financial crisis, among others.
- **India and IMF:** India holds a significant SDR quota and votes in the IMF, benefiting from technical assistance and financial aid during crises.
 - India currently holds 2.75% of SDR quota, and 2.63% of votes in the IMF
 - The IMF has supported India during economic challenges, offering advice and financing assistance.
 - SDR is one of the components of the Foreign Exchange Reserves (FER) of India.

13. INSURANCE SURETY BOND

Context:

- It is the first time this innovative instrument (Insurance Surety Bond) is being utilized as a Bank Guarantee (BG) in the road infrastructure sector for monetization of bids.

- NHAI has been working closely with Highway Operators Association of India (HOAI), SBI General Insurance and AON India Insurance to implement this initiative.

About Insurance Surety Bond:

- These bonds can be defined in their simplest form as a written agreement to guarantee compliance, payment, or performance of an act.
- These are instruments where insurance companies act as 'Surety' and provide the financial guarantee that the contractor will fulfill its obligation as per the agreed terms.
- Surety is a unique type of insurance because it involves a three-party agreement.

The three parties in a surety agreement are:

- **Principal:** The party that purchases the bond and undertakes an obligation to perform an act as promised.
- **Surety:** The insurance company or surety company that guarantees the obligation will be performed. If the principal fails to perform the act as promised, the surety is contractually liable for losses sustained.
- **Obligee:** The party who requires and often receives the benefit of the surety. For most surety bonds, the obligee is a local, state or federal government organisation.

14. 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.

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.

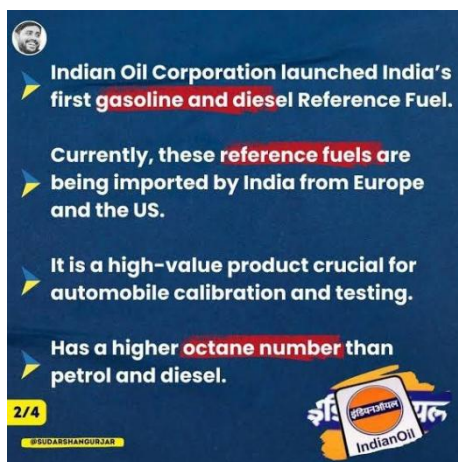
Features:

- 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.
- E0, E5, E10, E20, E85, E100 refer to different ethanol-gasoline blends. Ethanol blending is the process of mixing ethanol with gasoline to create various ethanol-gasoline blends. This blending is aimed at reducing the overall carbon footprint and emissions from gasoline-powered vehicles.

- Diesel B7 is a fuel with added biocomponents of up to 7%



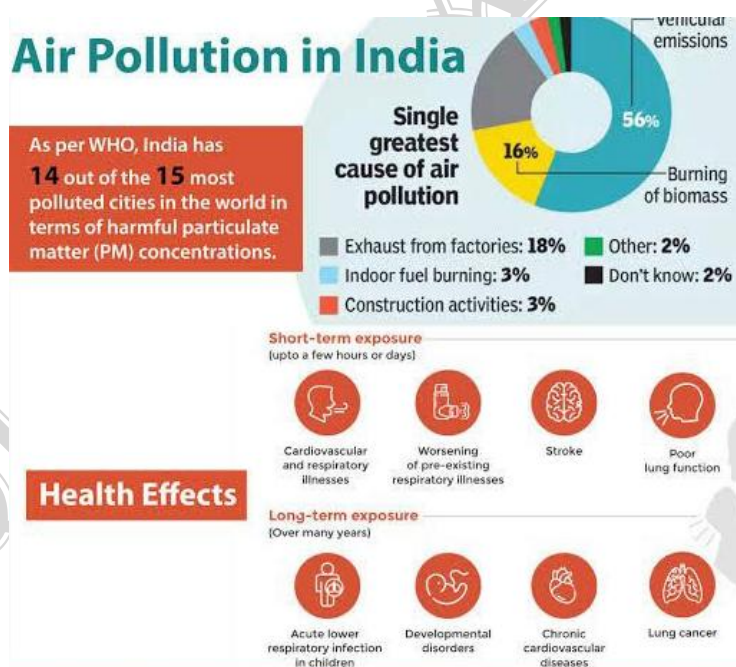
ENVIRONMENT

1. AIR POLLUTION IN URBAN INDIA

Context:

- Recently, Delhi, Mumbai, and Kolkata were among the world's 10 most polluted cities, according to a Swiss air quality technology company, IQAir. Urban Air Pollution Sources

Causes of air pollution in cities



Transportation

- The usage of private vehicles, particularly older, diesel versions, is the main contributor to urban air pollution.
- Domestic use of fossil fuels
- Solid fuels are still used for heating and cooking by half of the world's population.
- Additionally, 1.2 billion people are thought to use paraffin lamps at home, which adds to air pollution and raises the risk of cardiovascular and respiratory ailments.

Electricity generation

- The need for energy increases in tandem with population growth. Fossil fuels are widely employed to generate energy in order to meet that demand because they are affordable and easily accessible.

Combustion and Agriculture

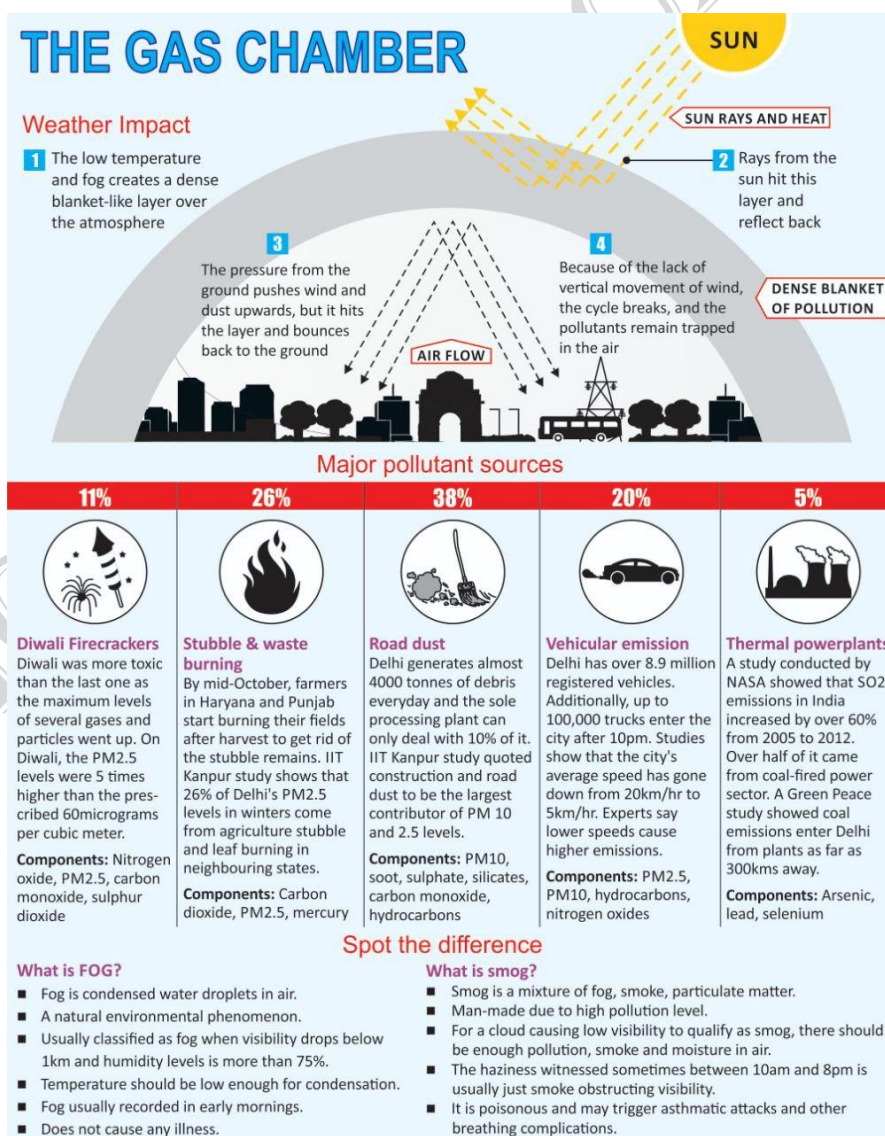
- Urban air pollution is a result of the activity of material combustion, which releases harmful gases into the environment.
- CO₂ and CO are released during complete and incomplete combustion, respectively. These two gases add to the smog in cities.

Stubble Burning

- The haze that covers Delhi in the winter is attributed to the burning of twigs in Punjab, Rajasthan, and Haryana.

Beauty Products

- A recent study found that using cosmetic products increases urban air pollution.
- The majority of cosmetics and colognes include volatile organic compounds (VOCs), which when used emit into the air and contribute to urban air pollution.



Pollutants & Impact

- **Adverse health outcomes:** It increases the risk of respiratory infections, heart disease and lung cancer. Children, elderly, and poor people are more susceptible.
- **Climate Change:** Certain air pollutants, such as black carbon (soot) and methane, contribute to climate change.
 - Methane is a potent greenhouse gas, contributing to global warming.
- **Environmental Damage:** Air pollution contributes to environmental degradation, including damage to ecosystems, soil, and water bodies.
 - For instance, Acid rain, resulting from the release of sulphur dioxide and nitrogen oxides, can harm forests, aquatic systems, and soil quality.
- **Reduced Agricultural Productivity:** Ground-level ozone damages plant tissues, affecting photosynthesis and reducing crop productivity.
 - Particulate matter can also get deposited on crops, affecting their growth.
- **Economic Costs:** Health impacts of air pollution result in significant economic costs, including healthcare expenses, lost productivity due to illness, and the cost of premature mortality.
 - Environmental damage and reduced agricultural productivity can impact various sectors of the economy.

Regulatory measures taken to improve air quality

Vehicular Emission:

- BS-IV to BS-VI norms and introduction of cleaner/alternate fuels like CNG, LPG, and ethanol blending in petrol.
- Faster Adoption and Manufacturing of Electric Vehicles (FAME) -2 scheme has been rolled out.
- Industrial Emissions: Ban on the use of pet coke and furnace oil in NCR, use of pet coke in processes in cement plants, lime kilns and calcium carbide manufacturing units.

Shifting of brick kilns in Delhi-

- NCR to zig-zag technology(zigzagging the air flow in brick kilns) for reduction of pollution.
- **Air Pollution due to dust and burning of waste:** Extended Producer Responsibility (EPR) framework for plastic packaging, battery waste, tire waste and e-waste have been implemented.
- **Monitoring of Ambient Air Quality:** System of Air Quality and Weather Forecasting And Research (SAFAR) was launched to know the Air Quality and Overall city pollution and Location-specific Air Quality through AQI.
- **National Clean Air Programme (NCAP):** Envisages to achieve reductions up to 40% or achievement of National Ambient Air Quality Standards for PM 10 concentrations by 2025-26.

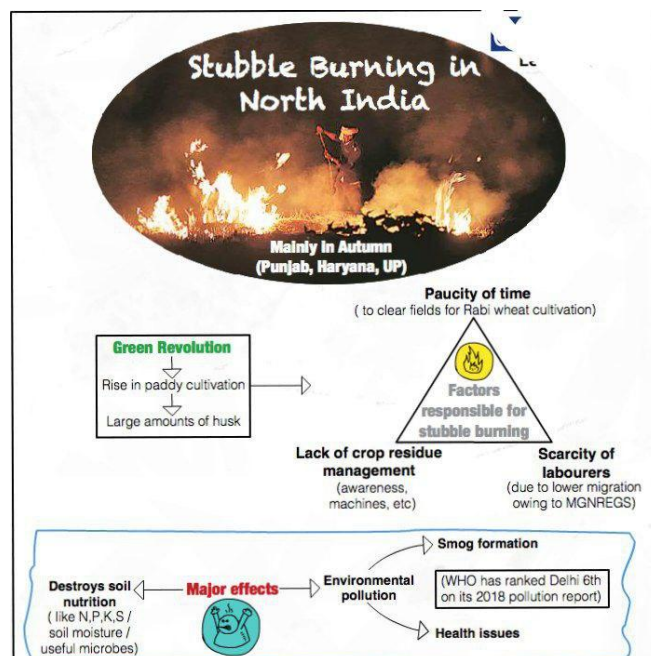
2. STUBBLE BURNING:

Context:

Recently, Supreme Court asked the Punjab government why it could not fund the costs of crop residue management machines for marginal farmers.

stubble burning

- Also called as parali burning, stubble burning is a method of removing paddy crop residues from the field to sow wheat.
- It is usually done in the last week of September to November.
- It is usually required in areas that use the combined harvesting method which leaves crop residue behind.
- It is practised by the farmers to prepare the land for the next cultivation.
- It is practised mainly in the Indo-Gangetic plains of Punjab, Haryana, and UP to clear the fields for rabi crop sowing.



Why stubble burning is practised?

- Limited duration- Multiple cropping and shortened intervals between crops give a very short window of about 10–15 days during which the field needs to be prepared for the next crop.
- Cheap- It is considered one of the cheapest methods to clean the field after the harvesting season.
- Labour shortage- Use of expensive labour for stubble extraction is not feasible, especially in Punjab and Haryana where farm sizes are large.
- Clears all stubble- The use of mechanized harvesters leaves stubble of 10– 30 cm in the field, depending on the type of crop, which was not the case earlier with manual harvesting.
- Clears all stubble- The use of mechanized harvesters leaves stubble of 10– 30 cm in the field, depending on the type of crop, which was not the case earlier with manual harvesting.
- Low crop residue- The low commercial and economic value of crop residue, coupled with the high costs of processing, reduces its value for farmers.



What are the impacts of stubble burning?

- **Air pollution-** It emits toxic pollutants in the atmosphere containing harmful gases like carbon monoxide (CO), methane (CH₄), carcinogenic polycyclic aromatic hydrocarbons, volatile organic compounds (VOC).
- **Soil fertility-** Soil becomes less fertile and its nutrients are destroyed when the husk is burnt on the ground.
- **Heat penetration-** Stubble burning generates heat that penetrates into the soil, causing an increase in erosion, loss of useful microbes and moisture.
- **Climate change-** The release of toxic gases from stubble burning will increase global warming, further aggravating the climate change.
- **Uncontrolled firing-** Risk of fires spreading out of control, could turn into huge pit of flames.



What are the strategies to reduce stubble burning?

- **Promote agri-implements-** Punjab has rolled out schemes for providing subsidy for mechanical implements that can mix the crop residue with soil to improve fertility
- **Foster awareness-** Farmers should understand the value of crop residues and use of agri implements in extraction and packaging.
- **Power generation-** State governments need to incentivise establishment of biomass-based power plants through fiscal interventions and prioritization. Example- Biomass co-firing
- **Promote R&D-** Punjab Agricultural University is developing a variant of paddy straw that has lower silica content, thereby making it suitable for utilisation in biomass-based power plants.

- Biofuel production- The State governments, along with appropriate policy interventions from the Central government need to incentivise utilisation of biofuels.

Regulatory Measures and Policies

- National Policy for Management of Crop Residue (NPMCR) 2014: Envisages adoption of technical measures including diversified uses of crop residue, capacity building & training along with formulation of suitable law/legislation.

National Green Tribunal (NGT) had issued the following directions in 2015:

- Mechanism for collection of crop residue, transportation, and utilization to be evolved.
- For persistent defaulters of crop residue burning, appropriate coercive and punitive action could be taken.
- Every state must provide machines, mechanisms and equipment or cost to the farmers to remove, collect and store straws.
- Commission on Air Quality Management in NCR and Adjoining Areas (CAQM) has developed an action plan for effective prevention and control of Stubble Burning.
- In-situ Crop Residue Management: Setting up of Custom Hiring Centers, high yield, and short duration paddy varieties, staggering of harvesting schedule, extensive use of bio-decomposer.
- Ex-situ Crop Residue Management: Alternative usage of paddy straw viz. Biomass Power Projects, Co-firing in Thermal Power Plants, Feed stock for 2G Ethanol plants, Feed stock in Compressed Biogas plants, fuel in industrial boilers, WTE plants, packaging materials etc.

3. UNITED NATIONS FORUM ON FORESTS (UNFF)

Context:

- The Ministry of Environment, Forest and Climate Change is hosting a Country-Led Initiative (CLI) event as part of the United Nations Forum on Forests (UNFF) at the Forest Research Institute in Dehradun, Uttarakhand.

Aim of the initiative:

- The event aims to contribute to discussions on Sustainable Forest Management and the UN Strategic Plan for Forests (UNSPF), focusing on thematic areas related to forest fires and forest certification.
- The meeting is expected to result in frameworks and recommendations for forest fire and forest certification management, to be discussed at the 19th session of UNFF in May 2024.

United Nations Forum on Forests (UNFF):

About:

- The UNFF is an intergovernmental policy forum that promotes the management, conservation, and sustainable development of all types of forests and aims to strengthen long-term political commitment to this end.
- Establishment: UNFF was established in 2000 by the UN Economic and Social Council. It has universal membership and is composed of all Member States of the United Nations.

United Nations Strategic Plan for Forests 2017–2030



GLOBAL FOREST GOALS

The United Nations Strategic Plan for Forests 2017–2030 provides a global framework for action to sustainably manage all types of forests and trees outside forests, and to halt deforestation and forest degradation.

At the heart of the Strategic Plan are six Global Forest Goals (GFGs) which directly support the UN Sustainable Development Goals.



GFG 1

Reverse Forest Cover Loss

Reverse the loss of forest cover worldwide through sustainable forest management, including protection, restoration, afforestation and reforestation, and increase efforts to prevent forest degradation and contribute to the global effort of addressing climate change.



GFG 2

Improve Forest Benefits and Livelihoods

Enhance forest-based economic, social and environmental benefits, including by improving the livelihoods of forest-dependent people.



GFG 3

Protect Forests and Use Sustainable Forest Products

Increase significantly the area of protected forests worldwide and other areas of sustainably managed forests, as well as the proportion of forest products from sustainably managed forests.



GFG 4

Mobilize Resources

Mobilize significantly increased, new and additional financial resources from all sources for the implementation of sustainable forest management and strengthen scientific and technical cooperation and partnerships.



GFG 5

Promote Inclusive Forest Governance

Promote governance frameworks to implement sustainable forest management, including through the United Nations forest instrument, and enhance the contribution of forests to the 2030 Agenda for Sustainable Development.



GFG 6

Cooperate and Work Across Sectors

Enhance cooperation, coordination, coherence and synergies of forest-related issues at all levels, including within the United Nations system and across member organizations of the Collaborative Partnership on Forests, as well as across sectors and relevant stakeholders.

Major Related Events related to the forest:

- 1992: UN Conference on Environment and Development adopts the “Forest Principles” and Agenda 21.
- Intergovernmental Panel on Forests (1995) and Intergovernmental Forum on Forests (1997) were established to implement the Forest Principles from 1995 to 2000
- 2000: UNFF is established as a functional commission of the UN Economic and Social Council
- 2006: UNFF agrees on four Global Objectives for Forests
- 2007: UNFF adopts the UN Non-Legally Binding Instrument on All Types of Forests (Forest Instrument)
- 2009: UNFF adopts a decision on financing for sustainable forest management, calling for the creation of a Facilitative Process to assist countries in reversing a 20-year decline in forest financing, with an initial focus on Small Island Developing States (SIDS) and Low Forest Cover Countries (LFCCs).
- 2011: The International Year of Forests, “Forests for People”
- The Four Global Objectives on Forests: Reverse the loss of forest cover worldwide through sustainable forest management (SFM)
- Enhance forest-based economic, social, and environmental benefits
- Increase significantly the area of sustainably managed forests
- Reverse the decline in official development assistance for SFM and mobilize increased financial resources for the implementation of SFM.

Forest Certification

- Forest certification is a market mechanism to promote the sustainable use and management of forests and to identify “sustainably produced” products for the consumer.
Some countries consider forest certification as an effective means to ensure Sustainable Forest Management (SFM) and a tool for preventing forest degradation or deforestation.
- Total forest area under certification has increased by 35% (or 120 million ha) since 2010.
Developing countries continue to face several challenges such as excessive costs of certification, audit and compliance issues, inaccessibility to forest owners in remote regions and lack of capacity due to the complexity of various certification standards.

Sustainable Forest Management (SFM)

Definition:

- According to Food and Agriculture Organization (FAO), SFM is the stewardship and use of forests and forest lands in a way, and at a rate, that:
- maintains their biodiversity, productivity, regeneration capacity, vitality and maintains their potential to fulfil, now and in the future, relevant ecological, economic, and social functions, at local, national, and global levels, and does not cause damage to other ecosystems.
- Constituents: It implies various degrees of human intervention, ranging from administrative, legal, technical, economic, social and environmental actions aimed at safeguarding and maintaining forest ecosystems
- Outcomes: Sustainably managed forests provide important ecosystem services, such as carbon sequestration, biodiversity conservation, and the protection of water resources.

Need for sustainable forest management

- Biodiversity Conservation by maintaining ecosystems, protecting endangered species, and allowing for natural regeneration.
- **Tackling climate change:** Forests act as carbon sinks, playing a crucial role in mitigating climate change and SFM is essential to minimizing the impact of climate change.
- **Community development:** Forests are the lifeline of millions of people in India, especially the tribal communities and forest conservation cannot be isolated from the well-being of communities that rely on forest resources.
- **Forest fire management:** In recent years, the world has witnessed an alarming increase in the scale and duration of wildfires.

What are the benefits of certified sustainable forests?	
Environmental aspects	Social aspects
 Existing local biodiversity is maintained and enhanced.	 Consultations are carried out with the populations bordering the forest.
 Ecologically important forest areas are protected.	 Property and land tenure rights are respected.
 No use of hazardous chemicals or genetically modified organisms (GMOs).	 Respect for the health and well-being of forest communities is guaranteed.
 Climate-positive practices, such as reduction of GHG emissions , are applied.	 Human and workers' rights compliant with ILO recommendations are respected.

4. WATER STRESS, CLIMATE CHANGE AND CHILDRENS AT CROSSROADS

Context:

- The latest United Nations Children's Fund (UNICEF) report states that nearly half of the world's children faced high to extremely high water stress in 2022.
- The report also captured how the various climate and environmental shocks driven by climate change are impacting the lives of children.

What are the Major Highlights of the Report?

- **Water Stress and Climate Impact on Children:** In 2022, 953 million children encountered high or extremely high water stress, while 739 million experienced water scarcity, and 436 million lived in areas with high water vulnerability.
- **Climate change is intensifying these challenges,** with projections indicating that by 2050, over 2 billion children could face the impacts of frequent heat waves.
- **Factors Contributing to Water Vulnerability:** It includes inadequate drinking water services, elevated water stress levels, interannual and seasonal variability, groundwater decline, and drought.
- **Health and Nutrition Impacts on Children:** Climate-related events like floods compromise access to safe water and sanitation, leading to diseases like diarrhea among children.
- **Rising temperatures and erratic rainfall patterns** affect food production, worsening child malnutrition due to crop failures and increased food prices.

- UNICEF's Call for Child-Centric Climate Action: UNICEF emphasizes the criticality of 28th Conference of Parties (COP28) to the United Nations Framework Convention on Climate Change, urging a shift in focus to prioritize children in climate agendas.
- Advocacy for integrating children and climate-resilient essential services into decisions related to the Global Goal on Adaptation (GGA).
- Emphasizing the need for child-responsive funding arrangements and governance within the Loss and Damage Fund to support climate-impacted countries.

What is Water Stress?

About:

- Water stress occurs when the demand for water exceeds its available supply or when poor quality limits its usability.
- A region is considered water stressed if there is less than 1,000 cubic meters of water available per person per year.
- According to the World Resources Institute report, globally at least 50% of the world's population live under highly water stressed conditions for at least one month of the year, the WRI report noted.
- And by 2050, that number could be closer to 60%.

Factors Responsible for Water Stress:

- This condition arises due to factors such as population growth, inefficient resource management, climate change, and pollution, leading to challenges in accessing clean water for societal, economic, and environmental needs, impacting agriculture, industry, and overall well-being.

Falkenmark Indicator or Water Stress Index:

- The Falkenmark Indicator (which is mostly used for measuring water scarcity throughout the world) or Water Stress Index gauges the strain placed on a country's freshwater reserves by relating the total available water resources to its population.
- It reflects the pressure exerted on water resources, encompassing the requirements for natural ecosystems.

When the renewable water per person falls:

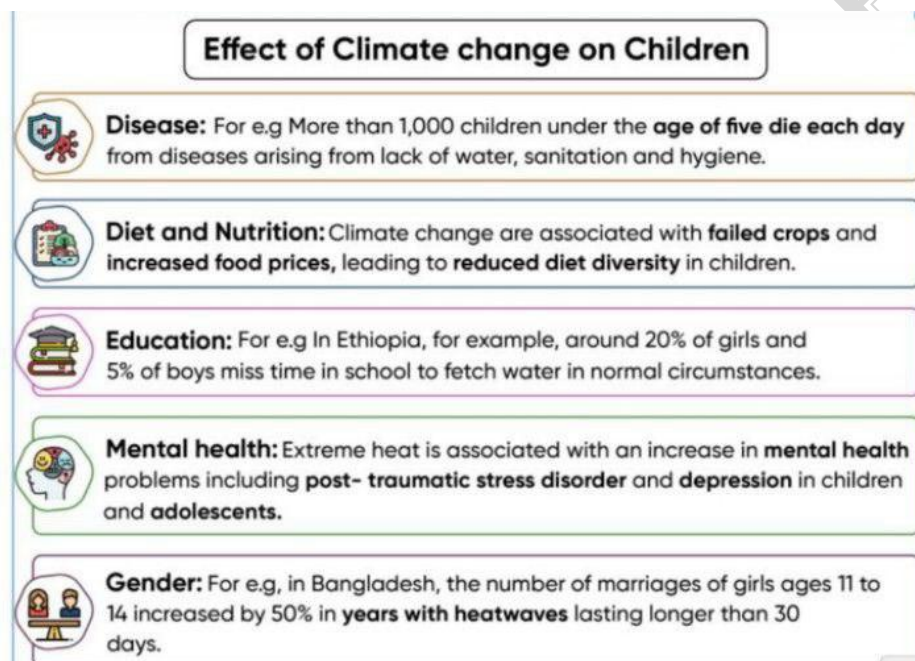
- Under 1,700 m³, the country is deemed to face water stress.
- Under 1,000 m³, it's classified as experiencing water scarcity.
- Under 500 m³, it's deemed to be facing absolute water scarcity within its borders.

ESTIMATED NUMBER OF DISPLACEMENTS BY
HAZARD TYPE BETWEEN 2016 AND 2021

HAZARD TYPE	DISPLACEMENTS (IN MILLIONS)	CHILD DISPLACEMENTS (IN MILLIONS)
 STORMS	69.7	21.2
 FLOODS	58.4	19.7
 DROUGHTS	2.6	1.3
 WILDFIRES	3.4	0.8
TOTAL	134.1 MILLION	43.1 MILLION

Impact on Childrens:

- **Health Risks:** In areas facing water scarcity, children often bear the brunt of health risks associated with inadequate access to clean water.
 - They face a higher likelihood of waterborne diseases such as diarrhea, cholera, and dysentery due to using contaminated water sources.
- **Long-term Developmental Impact:** Chronic water stress during critical developmental stages can have long-term effects on children's growth, cognitive development, and overall health, potentially affecting their future opportunities and quality of life.
- **Impact on Gender Roles:** In many societies, gender roles dictate water-related responsibilities.
 - Water scarcity often places a disproportionate burden on girls and women, affecting girls' education and perpetuating gender inequalities.
 - This can shape children's perceptions of gender roles and social expectations.



Way Forward

- **Hygiene Education Programs:** Develop comprehensive hygiene education programs in schools and communities. Teach children about proper hand washing, sanitation practices, and personal hygiene to prevent waterborne diseases.
- **School-Based Initiatives:** Integrate water-saving practices into school curricula. Create student-led water conservation clubs or initiatives to raise awareness and implement water-saving measures within schools.
- **Education and Awareness:** Integrate climate change education into school curricula to raise awareness among children. Teaching them about climate science, sustainability, and actions they can take part in to mitigate and adapt to climate change.
- **Children Centered Policies:** Strengthen global policies and frameworks that protect children's rights in the face of climate change and water stress.
 - Incorporate child-centered approaches in international agreements, ensuring their voices are heard and their needs considered in related policies.

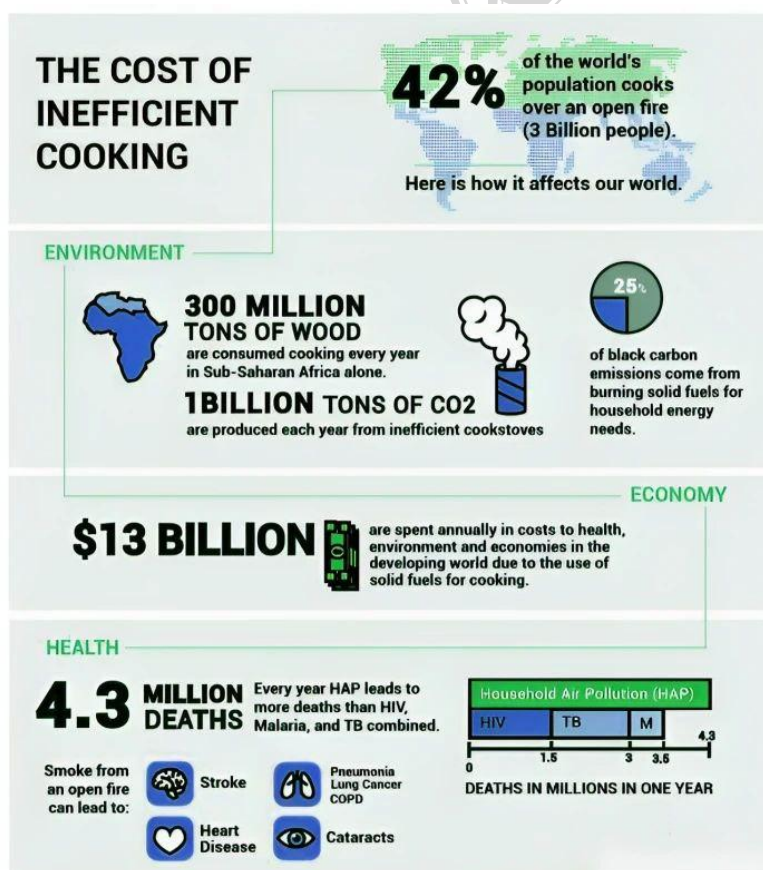
5. NATIONAL EFFICIENT COOKING PROGRAMME

Context:

- Recently, the Energy Efficiency Services Limited (EESL) launched its groundbreaking National Efficient Cooking Programme (NECP) and Energy Efficient Fans Programme (EEFP).

About the National Efficient Cooking Programme:

- It is a subset of the Clean Cooking Scheme.
- It focuses on Non-Solar/Electricity-based Induction Cook stoves, aligning with the Go- electric initiative by the Ministry of Power.
- This programme introduces induction-based cook stoves.
- Target: To deploy 20 Lakh Induction cook-stoves across India.
- EESL seeks to reduce the environmental impact of cooking methods, ensuring cleaner air and improved health for citizens.
- EESL has also partnered with Modern Energy Cooking Services (MECS) for the large-scale deployment of induction cook tops.
- The deployment is expected to accelerate the acceptance and large-scale adoption of modern electric cooking devices in Indian kitchens.
- Benefit: It offers a cost advantage of 25-30% over traditional cooking methods, promising both energy savings and cost-effective cooking solutions.



Key Facts about Energy Efficiency Services Limited

- It is promoted by the Ministry of Power, Government of India, as a Joint Venture of four reputed public-sector undertakings NTPC Limited, Power Finance Corporation Limited, REC Limited and POWERGRID Corporation of India Limited.
- It is registered under the Companies Act, 1956 on 10th December 2009.
- It was formed to create and sustain market access to energy efficient technologies, particularly in public facilities like municipalities, buildings, agriculture, industry etc. and to implement several schemes of the Bureau of Energy Efficiency, Ministry of Power and Ministry of New & Renewable Energy, Government of India.
- It is also leading the market-related activities of the National Mission for Enhanced Energy Efficiency (NMEEE).



Other schemes for alternate cooking solutions

- Unnat Chulha Abhiyan programme (2014): For the promotion of improved biomass cook stoves in the country to reduce consumption of fuel wood with higher efficiency and low emissions.
- National Biogas and Manure Management Programme (NBMMP): For setting up of family-type household biogas plants to meet the cooking energy needs of rural and semi-urban areas.
- Promoting solar cookers to reduce indoor air pollution.
- Pradhan Mantri Ujjwala Yojana (PMUY): For providing them with clean cooking fuel through LPG.

Significance of the initiative

- **Benefits of e-cooking:** Efficient and safer alternative to traditional gas and electric stoves with portability, convenience, and safety.
- **Fulfilling rising demand for induction stoves:** With over 10 million units sold in 2021-22, increased demand is attributed to factors like modular kitchens, rising LPG costs, and the versatility of cooking with induction.

- **Carbon footprint reduction:** These initiatives are aimed to enhance energy efficiency in Indian households and contribute to carbon mitigation goals.
- **Economic savings:** It offers a cost advantage of 25-30% over traditional cooking methods.
- **Other benefits:** Reduce dependence on imported sources of energy, no difference in food cooked on flame versus that cooked using induction cookers.

6. CLIMATE EQUALITY: A PLANET FOR THE 99%” REPORT

Context:

- A recently released report highlights a glaring disparity in carbon emissions, revealing that the richest one percent of the global population emitted as much carbon as the poorest five billion people, comprising 66 percent of the world’s population.

Alarming Impact on Human Lives and Environment

- The volume of emissions from the wealthiest individuals, equivalent to causing 1.3 million deaths due to heat, is a cause for concern. The report, titled “Climate equality: A planet for the 99%,” underscores the detrimental effect of the annual emissions of the super-rich, negating the carbon savings from nearly a million onshore wind turbines.

Role of the Super-Rich in Climate Breakdown

- Understanding the role of the “super-rich and rich people” is deemed crucial in stabilizing the planet and ensuring a “good life” for all, according to Oxfam.
- In 2019, super-rich 1% were responsible for 16% of global carbon emissions, equivalent to emissions of the poorest 66% of humanity
- The super-rich play a pivotal role in climate breakdown through their daily emissions, consumption patterns, lifestyles, investments, and holdings in heavily polluting industries. Their undue influence extends to media, economy, politics, and policymaking.

Dire Projection for Emissions in 2030

- The report projects that the emissions of the top one percent are set to be over 22 times more than the safe limit required to stay below 1.5 degrees Celsius of global warming by 2030.

Policy recommendations:

Calls for Government Action

- Governments are urged to address the dual crises of inequality and climate change by specifically targeting the excessive emissions of the super-rich. The report advocates for investments in public services and meeting climate goals.

Taxation as a Solution

- The report proposes that taxes on the wealth and income of the wealthiest could significantly reduce carbon pollution and generate over \$9 trillion annually for investment in a green and equitable future. A suggested 60 percent tax on the incomes of the super-rich globally could have a substantial impact.

Impact on Vulnerable Countries

- Highlighting the unequal impact of climate change, the report emphasizes that low-emitting nations, least responsible for global warming, are suffering the worst consequences. Vulnerable countries in Africa, South

Asia, Central and South America, Small Island Developing States, and the Arctic are disproportionately affected.

Joint Research Findings

- Referencing a joint research report by the Stockholm Environment Institute and Oxfam from September 2020, the document illustrates how the richest income groups contribute significantly to carbon emissions growth, while the impact of the poorest half of the world's population is minimal.

Policy recommendations

- **Radical increase in equality:** Governments must implement proven policies to dramatically drive down the gap between the richest and the rest.
- **Fast and just transition away from fossil fuels:** Implement a new wave of taxes on the corporations and billionaires to drive down emissions dramatically and fund transition.
- **New purpose for a new age:** Prioritize human and planetary well-being over endless profit, extraction and consumption.

7. STATE OF CLIMATE SERVICES REPORT 2023

Context:

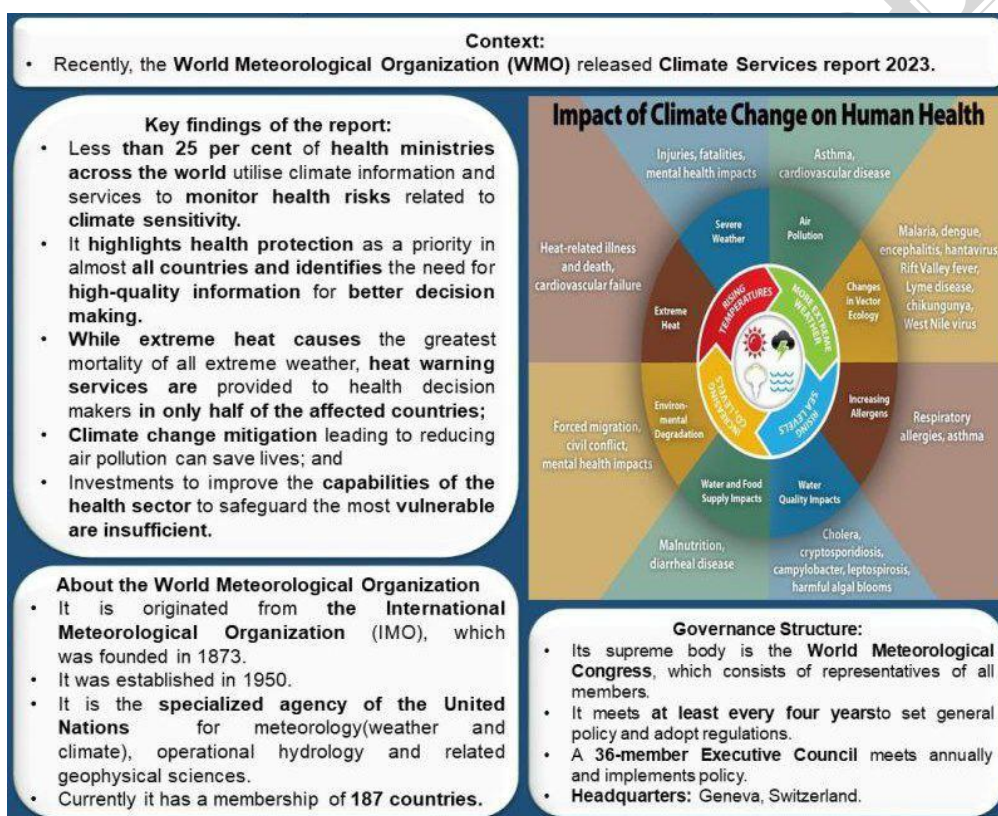
- The WMO recently published the State of Climate Services in 2023. According to the report by the WMO, the healthcare sector is not adequately equipped to protect individuals from the consequences of heatwaves and other extreme weather conditions.

Key Findings of State of Climate Services Report for 2023:

- The health sector is not well-prepared to protect people from the impact of extreme weather events caused by climate change.
- It is predicted that there will be a significant increase in these events by 2030. Vulnerable countries and populations will be particularly affected, experiencing heat waves, droughts, floods, and wildfires.
- Most national climate plans now acknowledge the threat of climate change to human well-being and are starting to consider the benefits of mitigation activities.
- However, less than a quarter of health ministries use climate information and services to monitor health risks related to climate change.
- There is a lack of tailored data services for the health sector, and most nations do not have formal agreements between health ministries and meteorological services for data sharing.
- Only a small percentage of health ministries have surveillance systems that use meteorological information to monitor climate-related health risks.
- This lack of cooperation and partnership between health and climate agencies needs to be addressed to protect current and future generations.
- Africa, despite being the least responsible for greenhouse gas emissions, is disproportionately affected by climate change, with a significant number of deaths and limited climate services for health in the region.
- Heat is the most deadly extreme weather event, causing hundreds of thousands of deaths annually.
- The 2023 El Nino is expected to worsen extreme weather events and increase temperatures, posing severe health risks to vulnerable populations.

Details about the World Meteorological Organization:

- The World Meteorological Organization (WMO) is an organisation that operates under the United Nations, with a specific focus on meteorology and related scientific fields.
- This organisation is in charge of encouraging global collaboration in the fields of atmospheric science, climatology, hydrology, and geophysics.
- The WMO consists of 193 countries and territories and its headquarter is present at Geneva, Switzerland.
- It is governed by the World Meteorological Congress, made up of member states, which holds meetings every four years to establish policies and priorities.
- This organisation promotes the open sharing of data, information, and research among its members in the field of meteorology and hydrology.
- It also works with non-governmental partners and other international organisations on various issues such as environmental protection, climate change, resource management, and socioeconomic development.



8. WORLD'S LARGEST SOLAR FACILITIES

- Recently launched Noor Abu Dhabi of the UAE is one of the world's largest stand-alone operational solar plants with a total capacity of 1.2 GW.

About Noor Abu Dhabi Solar Plant:

- It is ranked among the world's largest single-site solar power facilities.
- Capacity: 1.17 Gigawatt (GW), powering over 900,000 homes.
- It will result in annual reduction of over 1 million tons of carbon dioxide emissions.
- The facility is adorned with approximately 3.2 million solar panels, capitalizing on the region's abundant sunlight.

- With over 1,400 robotic cleaning systems, the plant ensures the cleanliness of its modules without using a single drop of water.
- It will achieve a 50% share of renewable energy in its total energy mix by 2050.

Other largest solar power plants

- Bhadla Solar Park (multiple plants) in Rajasthan has a capacity of 2.25GW.
- Pavagada Solar Park in Karnataka has a capacity of 2 GW.
- Ramagundam Floating Solar PV Project at Ramagundam, Telangana is India's largest floating solar power project (commissioned in 2022).
- Cochin International Airport is the world's first solar-powered airport.

Solar Energy potential in India:

- From less than 10 MW in 2010, India has added significant PV capacity over the past decade, achieving over 50 GW by 2022 .
- By 2030, India is targeting about 500 GW of renewable energy deployment, out of which ~280 GW is expected from solar PV.
- This calls for 30 GW of solar capacity every year until 2030.
- India's current solar module manufacturing capacity is limited to around 15 GW per year rest is met through imports.
- An estimated 85 per cent of this import need is met by three countries China, alongside Vietnam and Malaysia.
- The value of solar imported since 2014 adds up to \$12.93 billion, or Rs 90,000 crore.

Govt. of India Initiatives:

- The govt. of India established a 19,500-crore production linked incentive (PLI) scheme on 'national programme on high efficiency solar PV modules', seeking to attract Rs 94,000-crore investment in the sector.
- Modified Special Incentive Package Scheme (M-SIPS) of Ministry of Electronics & Information Technology offers a 20-25 per cent subsidy for investments in capital expenditure for setting up a manufacturing facility.
- **Atal Jyoti Yojana (AJAY):** The AJAY scheme was launched in September 2016 for the installation of solar street lighting (SSL) systems in states with less than 50% of households covered with grid power (as per Census 2011).
- **PM KUSUM:** The scheme aims to add solar and other renewable capacity of 30,800 MW by 2022 with total central financial support of Rs. 34,422 Crores.
- **Solar Park Scheme:** The Solar Park Scheme plans to build a number of solar parks, each with a capacity of nearly 500 MW, across several states.
- **SRISTI Scheme:** Sustainable rooftop implementation of Solar transfiguration of India (SRISTI) scheme to promote rooftop solar power projects in India.
- **National Solar Mission:** It is a major initiative of the Government of India and State Governments to promote ecologically sustainable growth while addressing India's energy security challenge.

9. RAPID ICE MELT IN WEST ANTARCTICA

Context:

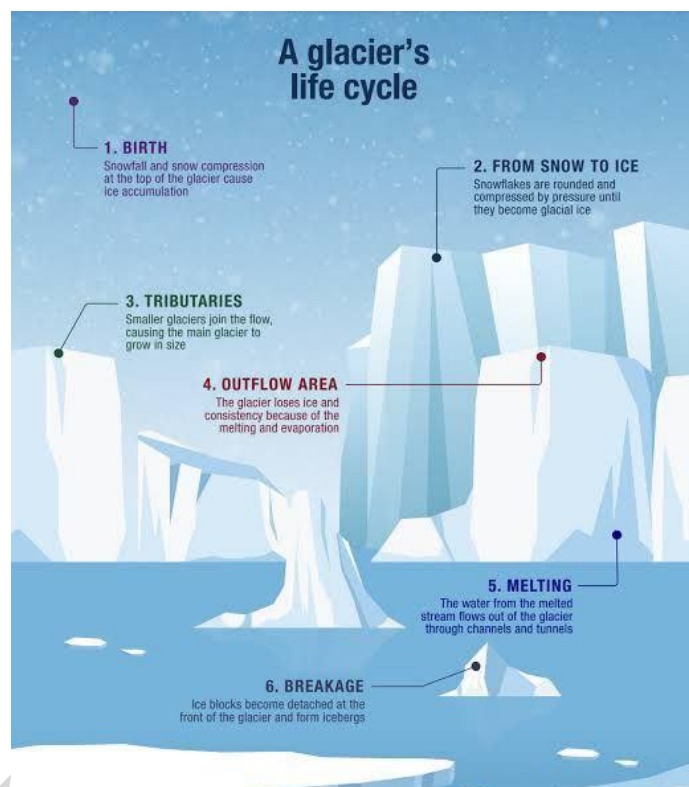
- A new study has pointed out that rapid melting of West Antarctica's ice sheet due to warm waters around it, is now unavoidable, no matter how much carbon emissions are cut.

What is an ice sheet?

- Ice sheet - An ice sheet is essentially a mass of glacial ice that covers more than 50,000 square kilometres of land.
- Ice sheets contain about 99% of the fresh water on Earth, and are sometimes called continental glaciers.

Major ice sheets include

- Antarctica ice sheet- World's largest volume of land-based ice



Greenland ice sheet

- Ice shelf- As ice sheets extend to the coast and over the ocean, they become ice shelves.
- Ice cap- A mass of glacial ice covering less area than an ice sheet is called an ice cap.
- Ice field- A series of connected ice caps is called an ice field.
- Individual glaciers- They make up the ice fields, ice caps, and eventually ice sheets.
- Sea ice – It is the free-floating ice that surrounds the polar regions created by sea water freezing.

What is the recent study about?

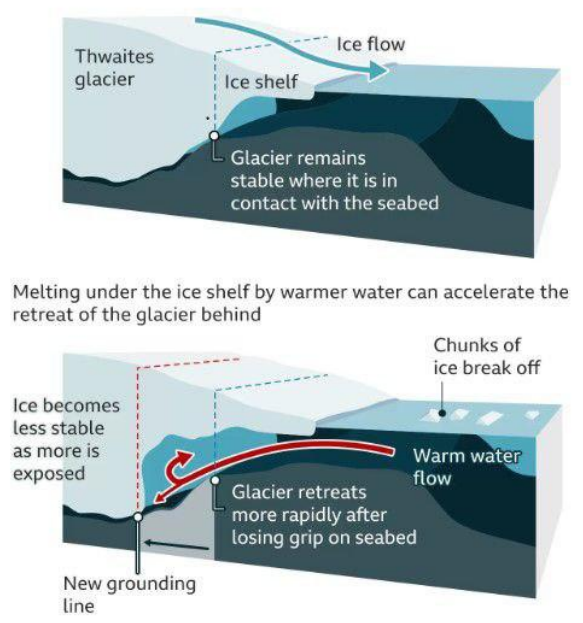
- The scientists have used a high-resolution computer model of the Amundsen Sea, the most vulnerable sector of the ice sheet, to provide comprehensive assessment of warming in West Antarctica.
- Findings - Amundsen Sea will warm roughly 3 times faster than the historical rate through the rest of this century leading to much more rapid melting of ice shelves.
- The study worsens the outlook for Thwaites Glacier that is rapidly melting beneath its connected ice shelf.
- The processes triggered by faster ice shelf melting could lead to the collapse of the West Antarctic Ice Sheet.

- If lost completely, the ice sheet would raise the global mean sea level by 5.3 metres or 17.4 feet, a devastating consequence for people living in coastal cities across the world, including in India.

What is the recent study about?

- The scientists have used a high-resolution computer model of the Amundsen Sea, the most vulnerable sector of the ice sheet, to provide comprehensive assessment of warming in West Antarctica.
- Findings - Amundsen Sea will warm roughly 3 times faster than the historical rate through the rest of this century leading to much more rapid melting of ice shelves.
- The study worsens the outlook for Thwaites Glacier that is rapidly melting beneath its connected ice shelf.
- The processes triggered by faster ice shelf melting could lead to the collapse of the West Antarctic Ice Sheet.
- If lost completely, the ice sheet would raise the global mean sea level by 5.3 metres or 17.4 feet, a devastating consequence for people living in coastal cities across the world, including in India.

How Thwaites glacier is melting



10.GLOBAL LANDSCAPE OF CLIMATE FINANCE 2023 REPORT

- The report is released by Climate Policy Initiative.
- Climate finance refers to financing, from public, private, and alternative sources, that seeks to support mitigation and adaptation actions to address climate change.

Mitigation tackles the causes of climate change, whereas adaptation tackles the effects of climate change.

Key highlights of the report

- Average annual climate finance flows reached almost USD 1.3 trillion in 2021/2022, nearly doubling then the previous year.
- China, US, Europe, Brazil, Japan, and India received 90% of increased climate finance.
- Climate finance is uneven across sectors, energy and transport continue to attract the majority of flows.
- Private actors provided 49% of total climate finance.

- Adaptation finance continues to lag, with 98% coming from the public sector.

Recommendations:

- Reforming international financial institutions, with rules, and incentives aligned with climate needs.
- Leveraging concessional finance to expand private flows.
- Mainstreaming climate adaptation and resilience into financial systems.
- Phasing out unabated fossil fuels through a just transition.
- Making climate finance data widely available and accessible.
- Work across countries to harmonize and enhance interoperability

Agenda	Action	
Transforming the financial system	Reforming international financial institutions	Build on existing momentum to reform mandates, operations, and business models to reduce the cost of capital and ensure private capital mobilization
	Leveraging concessional finance to expand private flows	Transform the use of scarce concessional finance so it is accessible, flexible, and applied where it is most needed
	Strengthening private financial sector net zero integrity	Expand from announcing 2050 targets to establish transparent and verifiable shorter-term transition plans with a focus on impacts in the real economy
Bridging climate and development needs	Harnessing synergies between development and climate action	Align more closely on these two investment agendas to accelerate action on both fronts
	Mainstreaming climate adaptation and resilience into financial systems	Increase understanding of climate risks to improve resilience and financial flows
	Phasing out unabated fossil fuels through a just transition	Ensure that pathways for ending fossil fuel development account for the impacts on all key stakeholders at all levels, from national to local
Mobilizing domestic capital	Aligning Nationally Determined Contributions (NDCs) with 1.5°C scenarios	Better align NDCs with Paris Agreement goals to create stronger domestic policy and investment signals
	Improving the local ecosystem for climate investment	Bolster capacity building and create stronger enabling environments to unlock untapped domestic private capital, particularly in EMDEs
Acting to improve data	Simplifying and standardizing taxonomies and reporting	Work across countries to harmonize and enhance the interoperability of these tools to reduce reporting burdens
	Making climate finance data widely available and accessible	Achieve greater transparency and leadership from governments and DFIs on a new, standardized, and centralized approach to tracking climate finance data

SCIENCE & TECHNOLOGY

1. DEEP FAKES

Context:

- A Deep fake video showing an Indian actress has sparked outrage and concern over the misuse of artificial intelligence (AI) to create realistic but fake videos, as known as deep fakes.

What are Deep fakes?

About:

- Deep fakes are synthetic media that use AI to manipulate or generate visual and audio content, usually with the intention of deceiving or misleading someone.

Deep fake Creation:

- Deep fakes are created using a technique called generative adversarial networks (GANs), which involve two competing neural networks: a generator and a discriminator.
- The generator tries to create fake images or videos that look realistic, while the discriminator tries to distinguish between the real and the fake ones.

- The generator learns from the feedback of the discriminator and improves its output until it can fool the discriminator.
- Deep fakes require a large amount of data, such as photos or videos, of the source and the target person, which are often collected from the internet or social media without their consent or knowledge.
- Deep fakes are a part of Deep Synthesis, which uses technologies, including deep learning and augmented reality, to generate text, images, audio and video to create virtual scenes.

Positive Applications of Deep Learning:

- Deep learning technology has enabled positive advancements, such as restoring lost voices and recreating historical figures.
- Deep learning techniques have been applied in comedy, cinema, music, and gaming to enhance artistic expression.
- Synthetic avatars of people with physical or mental disabilities will help express themselves online.
- It enhances medical training and simulation by generating diverse and realistic medical images. It also creates virtual patients and scenarios for simulating medical conditions and procedures, improving training efficiency.
- It can also be used to enhance the interaction and immersion of augmented reality (AR) and gaming applications.

Concerns Regarding the Deep fakes:

Deep fakes are a problem because they can be used for various malicious purposes, such as

- Spreading propaganda, and fake news;
- Influencing elections and public opinion;
- Blackmailing and extortion individuals or organizations;
- Damaging the reputation and credibility of celebrities, politicians, activists, and journalists; and
- Creating non-consensual pornography and revenge porn.
- Deep fakes can cause various harms, such as eroding trust in institutions, media, and democracy, and undermining the rule of law and human rights.
- Deep fake technology can violate the privacy, dignity, and reputation of individuals, and harm the mental health and well-being of the victims, especially women, who are often the targets of such malicious manipulation.



Spotting Deep fakes

- **Unnatural Eye Movements:** Look for irregular eye movements, as genuine videos have smoother eye coordination with speech and actions.
- **Mismatches in Color and Lighting:** Check for inconsistencies in lighting on the subject's face and surroundings.
- **Compare Audio Quality:** Deep fake audio may have imperfections, so compare it with the video's visual content.
- **Strange Body Shape or Movement:** Watch for unnatural body proportions or movements, especially during physical activities.
- **Artificial Facial Movements:** Identify exaggerated or unsynchronized facial expressions that don't match the video's context.
- **Unnatural Positioning of Facial Features:** Look for distortions or misalignments in facial features.
- **Awkward Posture or Physique:** Pay attention to awkward body positions, proportions, or movements that seem implausible.

What are the Global Approaches Related to Deep fake Regulation?

India:

- India does not have specific laws or regulations that ban or regulate the use of deep fake technology.
- India has called for a global framework on the expansion of "ethical" AI tools.
- Existing laws such as Sections 67 and 67A of the Information Technology Act (2000) have provisions that may be applied to certain aspects of deep fakes, such as defamation and publishing explicit material.
- Section 500 of the Indian Penal Code (1860) provides punishment for defamation.
- The Digital Personal Data Protection Act, provides some protection against the misuse of personal data.
- The Information Technology Rules, 2021, mandate the removal of content impersonating others and artificially morphed images within 36 hours.
- India needs to develop a comprehensive legal framework specifically targeting deep fakes, considering the potential implications for privacy, social stability, national security, and democracy.

Global:

- The recent world's first ever AI Safety Summit 2023 involving 28 major countries, including the US, China, and India, agreed on the need for global action to address AI's potential risks.
- The Bletchley Park Declaration declaration at the summit acknowledged the risks of intentional misuse and the loss of control over AI technologies.

European Union:

- The European Union's Code of Practice on Disinformation requires tech companies to counter deep fakes and fake accounts within six months of signing up to the Code.
- If found non-compliant, tech companies can face fines up to 6% of their annual global turnover
- United States:

- The U.S. introduced the bipartisan Deep fake Task Force Act to assist the Department of Homeland Security in countering deep fake technology.

China:

- China introduced comprehensive regulation on deep synthesis, effective from January 2023.
- Aimed at curbing disinformation, the regulation requires clear labelling and traceability of deep synthesis content.
- The Regulations impose obligations on the providers and users of so-called “deep synthesis technology”.

Tech Companies:

- Big tech companies like Meta and Google have announced measures to address the issue of deep fake content.
- However, there are still vulnerabilities in their systems that allow the dissemination of such content.
- Google has introduced tools for identifying synthetic content, including watermarking and metadata.
- Watermarking embeds information directly into content, making it resistant to editing, while metadata provides additional context to original files.

Way Forward

- Developing and implementing comprehensive laws and regulations that specifically target the creation and dissemination of deep fakes, while balancing the freedom of speech and expression.
- Enhancing the public awareness and media literacy of the potential risks and impacts of deep fakes, and encouraging critical thinking and verification of the sources and content of media.
- Creating and adopting technical solutions and standards that can detect, prevent, and remove deep fakes, such as digital watermarks, and block chain.
- Promoting ethical and responsible use of deep learning technology and synthetic media, and establishing codes of conduct and best practices for the creators and users of deep fakes.
- Fostering collaboration and coordination among various stakeholders, such as governments, media, civil society, academia, and industry, to address the challenges and opportunities posed by deep fakes.

2. EU'S LANDMARK AI LEGISLATION

Context:

- Recently, the European Union (EU) has set the stage for the world's first comprehensive legislation aimed at regulating the use of Artificial intelligence (AI).
- The EU's proposed framework will undergo a parliamentary vote in early 2024, potentially becoming enforceable by 2025.

What are the Key Components of the EU Framework for AI Regulation?

Safeguards in Legislation:

- **Empowerment of Consumers:** Ability for individuals to launch complaints against perceived AI violations.
- **Restrictions on Law Enforcement Adoption:** Clear boundaries on AI usage by law enforcement agencies.
- **Strict Limitations on AI:** Strong restrictions on facial recognition technology and AI manipulation of human behaviour.
- **Penalties for Violations:** Provision for tough penalties for companies found breaking the rules.

- **Limited Biometric Surveillance:** Governments permitted to use real-time biometric surveillance in public areas only in cases of serious threats like terrorist attacks.

Categorization of AI Applications:

- **Four Risk Classes:** AI applications classified into four risk categories based on their level of risk and invasiveness.
- **Banned Applications:** Mass-scale facial recognition and behavioral control AI applications are largely banned, with exemptions for law enforcement.
- **High-Risk Applications:** Allowed with certification and provision for backend technique transparency, such as AI tools for self-driving cars.
- **Medium-Risk Applications:** Deployable without restrictions, like generative AI chatbots, with explicit disclosure to users about AI interaction, transparency obligations, and detailed tech documentation.

Other EU's Regulatory Achievements:

- **General Data Protection Regulation (GDPR) Implementation:** Enforced since May 2018, focusing on privacy and explicit consent for data processing.

Sub-Legislations: DSA and DMA:

- **Digital Services Act (DSA):** Focus on regulating hate speech, counterfeit goods, etc.
- **Digital Markets Act (DMA):** Identifying "dominant gatekeeper" platforms and addressing non-competitive practices and dominance abuse.

What is India's Strategy Regarding AI Regulation?

Stance:

- India is yet to have a comprehensive framework for regulating AI. However, India has shifted from a stance of not considering AI regulation to actively formulating regulations based on a risk-based, user-harm approach.

Advocacy for Inclusive and Responsible AI:

- India's initial national AI strategy, AIFORALL, aimed at inclusivity, debuted in 2018.
- NITI Aayog's National Strategy for AI (2018) included a chapter on responsible AI.
- In 2021, NITI Aayog issued a paper, 'Principle of Responsible AI'. Seven broad principles were enumerated in the paper: equality, safety and reliability, inclusivity and non-discrimination, transparency, accountability, privacy and reinforcement of positive human value.
- In March 2023, the Ministry of Electronics and Information Technology introduced India AI, the national program on AI, aimed at serving as a comprehensive initiative to cover all AI-related research and innovations.
- In July, 2023 Telecom Regulatory Authority of India issued a paper, that recommended setting up a domestic statutory authority to regulate AI through the lens of a "risk-based framework" and constitution of an advisory body with members from multiple government departments, academia and experts.

Major Sector-specific AI Frameworks in India:

Healthcare Sector:

- Indian Council of Medical Research issued ethical guidelines for AI in biomedical research and healthcare in June 2023.

Capital Market:

- SEBI issued a circular in January 2019 to guide policies and create an inventory for AI systems in the capital market.

Education Sector:

- National Education Policy 2020 recommends AI awareness integration in school courses

3. ROLE OF ARTIFICIAL INTELLIGENCE IN HEALTHCARE**Context:**

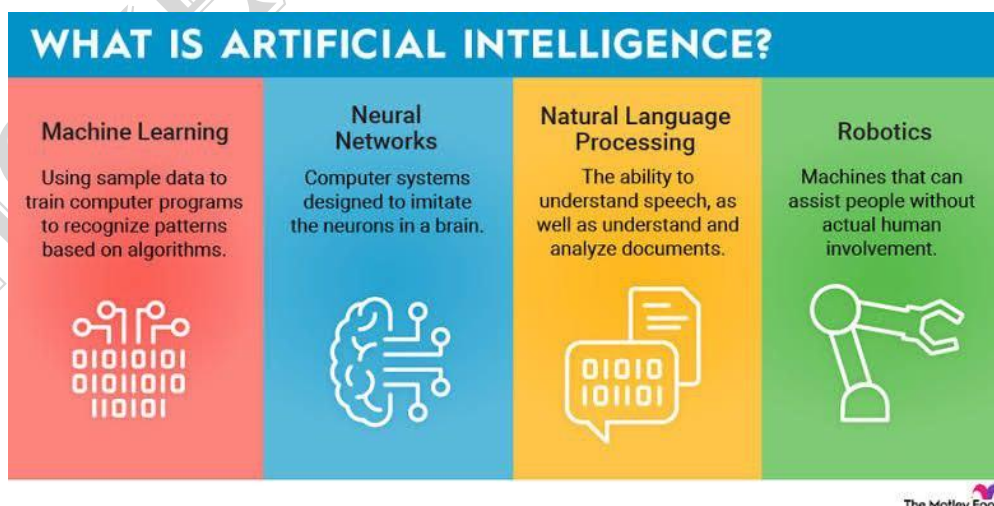
- Artificial Intelligence has potential to revolutionize India's healthcare model, making it a global leader in AI-driven healthcare solutions and healthcare more accessible and affordable.

More on News:

- India is now the world's diabetes capital with over 100 million diabetics individuals and millions having hypertension, and youth are succumbing to heart attacks, cancer, respiratory issues, depression and more.
- The Indian healthcare AI industry is anticipated to expand at a compound annual growth rate (CAGR) of 40 per cent from 2019 to 2025, according to a NASSCOM analysis.
- While India is already one of the leading destinations for patients seeking care abroad, there is adequate headroom for growth.

About Artificial Intelligence:

- According to NITI Aayog, "AI refers to the ability of machines to perform cognitive tasks like thinking, perceiving, learning, problem solving and decision making."
- AI uses various technologies such as computer vision, audio processing, cognitive robotics, speech analytics, language processing and machine learning techniques to derive AI-based solutions.
- AI has the capability to help human beings contribute more effectively to society and also helps bring in more timely, accurate and fast solutions.
- It has an immense potential to transform the healthcare landscape of India.





Healthcare Sector in India:

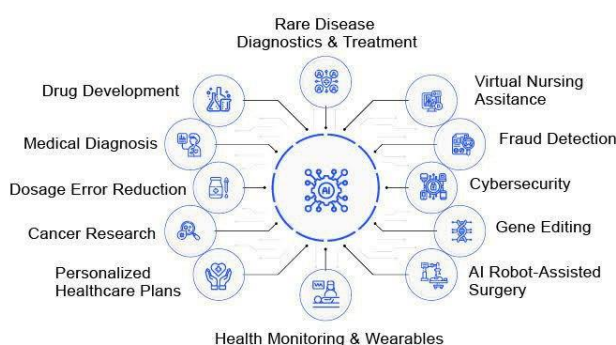
- Indian healthcare is known as one of the largest sectors, both in terms of employment and revenue generation opportunities.
- As per the NASSCOM report, the market size of healthcare industry in India was valued at \$372 billion in 2022 and is expected to grow at a compound annual growth rate (CAGR) of nearly 20% from 2023 to 2030.
- AI expenditure in India is expected to reach \$11.78 billion by 2025 and add \$1 trillion to India's economy by 2035, as per a World Economic Forum report. The AI in Healthcare Market is projected to grow from \$14.6 Billion in 2023 to \$102.7 Billion by 2028.
- The pandemic not only pushed rapid advancements in technology but also propelled the AI related investment in the Indian medical and healthcare start-ups.
- Union Budget 2023-24: The healthcare sector has been allocated INR 89,155 crore to undertake all the new-age research and innovation-based healthcare initiatives on a massive scale.
- The government has also encouraged several industry players to invest in research and development in the priority areas including innovative technologies in healthcare.

Potential of AI in Healthcare:

- Medical imaging:** AI in MRI and CT imaging is the new boon in the radiology segment which allows deep learning of every organ of the body under scan.
- For instance, the AIIMS (All India Institute of Medical Sciences) in Delhi has created a technology that uses artificial intelligence to detect oral cancer in its early stage.
- Analysis of Electronic Health Records (EHRs):** Using this technology, it is possible to identify patients who are at a high risk of developing chronic diseases.

- For instance, Apollo Hospitals teamed up with Microsoft to create an AI-powered cardiovascular disease risk score.
- **Addressing the Healthcare Crisis:** A report on the National Strategy for Artificial Intelligence by the NITI Aayog showed that shortage of qualified healthcare professionals and non-uniform accessibility to healthcare across the country prevails.
 - For example, India has only 64 doctors available per 1,00,000 people compared to the global average of 150.
- **Reduce Out of Pocket Expenditure:** According to the Economic Survey 2022-23, almost half of all health spending in India is still paid by patients themselves directly at the point of treatment.
 - According to Harvard, using AI to make diagnoses may reduce treatment costs by up to 50% and improve health outcomes by 40%
 - According to research by Accenture, AI might save the Indian healthcare sector \$4.4 billion by 2025.
- **Accuracy in Patient Treatment:** AI-powered Robotic Process Automation (RPA) solutions can minimise human error, streamline workflows, and ensure more accurate patient treatment.
- **Early Diagnosis of Diseases:** AI algorithms can be utilised in wearable devices, such as smart watches or fitness trackers, to continuously monitor vital signs, collect health data, and identify patterns or anomalies.
 - By analysing this data in real time, AI-powered smart devices can alert users and healthcare providers about potential health risks or early signs of diseases.
- **Promoting Medical Value Travel (MVT):** India has emerged as a global MVT hub, particularly in the fields of oncology, orthopaedics, and robotic surgery.
 - MVT is gaining strategic importance given its ability to create employment as well as earn foreign exchange.
- **Precision Medicines:** By using AI algorithms and patient data, tailor made treatment plans or personalised treatments for individuals can improve efficiency and efficacy.
- **Quick Disease Prediction:** Additionally, AI can help predict disease outbreaks, analyse health-care data, and optimise treatment plans, expediting health-care procedures, and revolutionizing drug discovery ultimately making health care more personalized and effective.
- **Healthcare Management:** AI optimizes hospital and healthcare facility operations by predicting patient admissions, managing bed allocations, and streamlining supply chain logistics.
 - Chat bots and virtual assistants enhance patient engagement and streamline administrative tasks.

Applications of AI in Healthcare



Challenges:

In India, there are not many EHRs that are standardized, and the data is frequently jumbled and unfinished.

- **Biases:** There are AI models that use audio data to diagnose diseases such as Alzheimer's. If these models are not trained with a wide range of accents, their outputs can be biased.
 - For example, an AI algorithm created in Canada used speech samples from only Canadian English speakers, putting English speakers of other accents in the country at a disadvantage.
- **Privacy:** Sensitive healthcare data may be jeopardized since AI systems must be educated on enormous volumes of data. Therefore, protecting healthcare data and guaranteeing that it is only used for specific purposes is a challenging task.
- **Misuse:** The linking of health data with other systems will create new avenues for discrimination.
 - For example, health insurance data can be leveraged by banks to evaluate eligibility for loans which could lead to discrimination in patient treatment.
- **Ethical Issues- Accountability and Transparency:** Determining liability in cases of AI-driven medical errors can be challenging. Is it the responsibility of the healthcare provider, the AI software developer, or a combination of both? A Comprehensive Legal framework must define liability and accountability.
- **Cultural Acceptance:** While AI offers remarkable capabilities, the expertise, intuition, and compassion of healthcare professionals which make a critical difference remain indispensable.
 - For example, an AI system may be able to allocate a patient to a particular care centre based on a specific diagnosis. However, it may not account for patient economic restrictions or other personalized preferences

Government Steps for Integrating AI in Healthcare:

The government of India has also created a national digital health infrastructure to implement the digital health systems across the country, which includes:

- **Health locker:** Digital national health database backed with cloud-based storage system which serves as a single source of health data for the nation.
- **Personal Health Records (PHR):** Allow data to be available for citizens and for medical research purposes.
- **Digi Doctors:** A digital directory of doctors along with their name, specialization, qualifications, number of years of experience.

Way Forward:

- **Boosting investments:** AI integration into healthcare requires critical investments in the workforce, infrastructure, regulatory mechanisms, stakeholders, and business models.
- **Promoting Telemedicine:** Incorporating AI with telemedicine platforms can extend quality healthcare access to rural and underserved areas.
- **Research & Development:** Government must also invest in public and private organisations like NITI Aayog, Tata Institute of Healthcare, Apollo Hospitals, etc. to facilitate the research being done to integrate AI-based solutions into healthcare.
- **Ensuring Data Security:** Digital transformation success is not possible without security thus safeguarding of patient data against breaches or data loss and ensuring robust data security is the need of the hour.

- **Data Standardization:** Promoting the standardization of healthcare data formats by encouraging EHRs and interoperability between different healthcare systems and providers.

4. WI-FI 7 TECHNOLOGY

Context

In October 2023 U.S. based company Qualcomm suggested that India should adopt the newest Wi-Fi 7 technology.

About Wi-Fi 7

- Wi-Fi, or Wireless Fidelity, is a wireless technology that enables devices to connect to the internet and communicate with each other.
- The device utilizes radio waves to offer high-speed wireless internet and network connections.
- The transmission of Wi-Fi signals requires three mediums: a base station, a router, and accessing devices (Eg. Laptop).
- Wi-Fi 7 is set to launch as the next-generation Wi-Fi standard, based on IEEE 802.11be, which is known for its extremely high throughput (EHT).
- The Institute of Electrical and Electronics Engineers (IEEE) is the largest technical professional organization globally dedicated to advancing technology for the benefit of humanity.

Wi-Fi generations					
	Wi-Fi 4	Wi-Fi 5	Wi-Fi 6	Wi-Fi 6E	Wi-Fi 7 (expected)
Launch date	2007	2013	2019	2021	2024
IEEE standard	802.11n	802.11ac	802.11ax		802.11be
Max data rate	1.2 Gbps	3.5 Gbps	9.6 Gbps		46 Gbps
Bands	2.4 GHz and 5 GHz	5 GHz	2.4 GHz and 5 GHz	6 GHz	1–7.25 GHz (including 2.4 GHz, 5 GHz, 6 GHz bands)

Key Features of Wi-Fi 7

- **Lower Latency:** This facilitates faster cloud-based operations such as file transfers and gaming.
- **Multi-Link Operation (MLO):** The system combines multiple channels on different frequencies to enhance network performance.
- **Speed and Capacity:** Wi-Fi 7 can theoretically support a bandwidth of up to 330 Gigabits per second per access point, four times faster than Wi-Fi 6.
- **Backward Compatibility:** The device connects to devices in 2.4GHz, 5GHz, and 6GHz bands without the need for new hardware.
- The solution will not be limited to a single frequency but will utilize a mix of available spectrum frequencies.

Benefits of Wi-Fi 7

- **Augmenting User Experiences:** Wi-Fi 7 is capable of enabling the streaming of high-resolution content, including 8K videos.
 - The technology could also improve performance in cloud gaming, AR/VR, and other data-intensive activities.

- **Medicinal Field:** Tele-diagnostics and tele-surgery are two innovative medical technologies that allow for remote healthcare services.
- **Addressing emerging technologies demands:** Wi-Fi 7 has the potential to accommodate the increasing number of Internet of Things (IoT) devices, including smart home devices, wearables, and industrial IoT applications.
- **Promising Developments in India:** The enterprise sector is undergoing digital transformation, with fixed wireless connectivity, smartphone technology, and the potential of Artificial Intelligence, particularly Edge AI, playing a significant role.
- **Alignment with India's Tech Adoption:** Wi-Fi 7 facilitates India's swift adoption of cloud-based and wireless applications, promoting the government's digital initiatives for security and privacy.

5. CAR-T CELL THERAPY

Context:

- Following India's approval of CAR-T cell therapy, a pioneering treatment for cancer, a patient recently underwent the procedure, achieving freedom from cancer cells, marking a significant advancement in cancer treatment accessibility in the country.

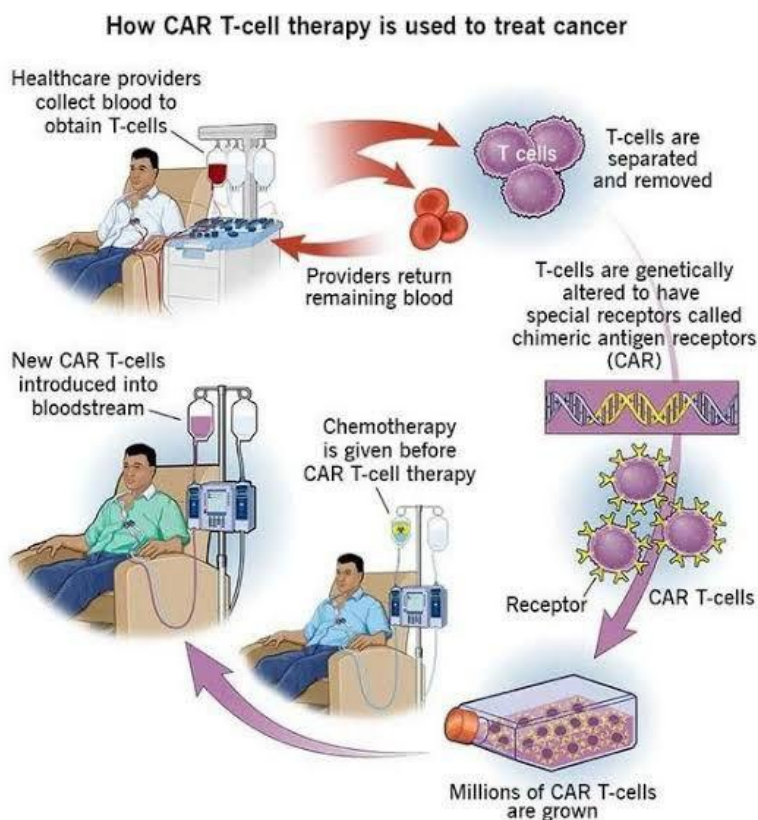
What is CAR-T Cell Therapy?

About:

- CAR-T cell therapy, also known as chimeric antigen receptor T-cell therapy, is a type of immunotherapy that uses a patient's own immune system to fight cancer.
- 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).
- CAR-T cell therapies, often referred to as 'living drugs'.

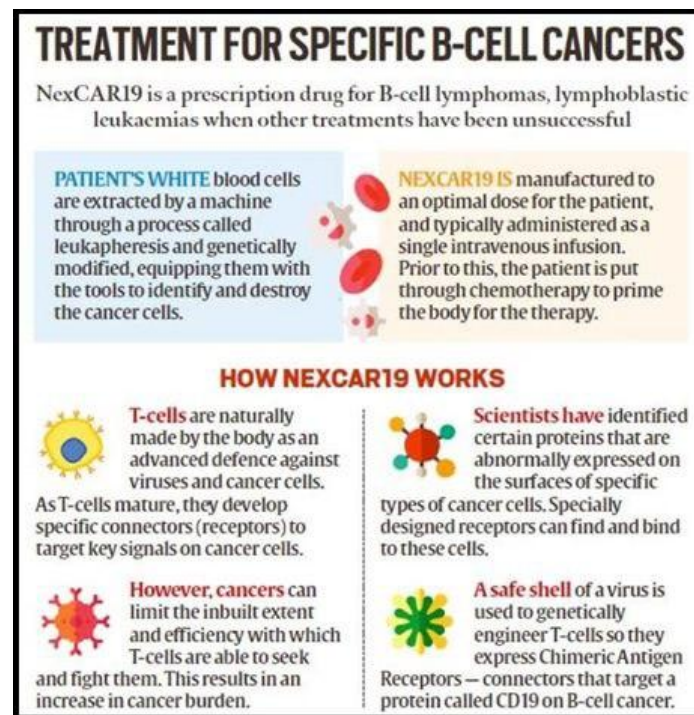
Procedure: It is a complex and personalised treatment process that involves:

- **Collecting T cells:** T cells, a type of white blood cell that helps fight infection, are extracted from the patient's blood through a process known as Apheresis.
- **Genetic Engineering:** In the laboratory, the T cells are genetically modified to express a special protein called a chimeric antigen receptor (CAR) on their surface.
- **This CAR is designed to recognize and bind to a specific antigen (marker) found on cancer cells.**
- **Expansion:** The engineered T cells are multiplied in large numbers in the lab.
- **Infusion:** The expanded CAR-T cells are then infused back into the patient's bloodstream, where they can identify and attack cancer cells that express the targeted antigen.



About NexCAR19

- NexCar19 is a type of CAR-T and gene therapy developed indigenously in India by Immuno ACT, which is a company incubated at IIT Bombay.
- This therapy is tailored to target cancer cells bearing the CD19 protein, effectively marking these cancer cells for destruction.
- The therapy is for people with B-cell lymphomas who didn't respond to standard treatments like chemotherapy, leading to relapse or recurrence of the cancer.
- B-cell lymphoma is a type of cancer that starts in white blood cells called lymphocytes.
- Mechanism and Effectiveness: NexCAR19 is designed to target cancer cells expressing the CD19 protein, effectively eliminating them from the body. The therapy has shown promising results, with around 70% of patients exhibiting positive responses, particularly in cases of leukemia and lymphoma.



Significance:

- While the therapy is currently approved for patients aged 15 years and older, ongoing trials at Tata Memorial Hospital are exploring its potential application in pediatric cases as well.
- The therapy's unique attributes have demonstrated reduced toxicities such as neurotoxicity and cytokine release syndrome, ensuring enhanced safety for patients.
- **High Remission Rates:** For some patients with advanced cancers who have not responded to other treatments, CAR-T therapy can lead to high rates of complete remission.
- **Personalised Approach:** The therapy is tailored to each individual patient's cancer, making it a highly targeted treatment.

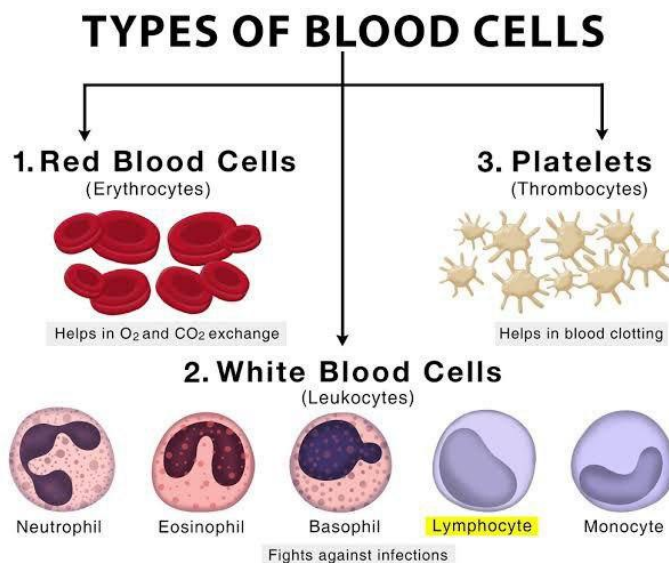
Challenges related to CAR-T Cell Therapy

- **Preparation:** The complexity of preparing CAR T-cell therapies has been a major barrier to their widespread adoption. The first successful clinical trial was conducted a decade ago, and India's first indigenous therapy was performed in 2021.
- **Side Effects:** While CAR T-cell therapy shows high efficacy, around 90% in certain types of leukemia and lymphomas, it is less effective in other cancer types.
 - Furthermore, potential side effects, including cytokine release syndrome (resulting in widespread immune system activation and damage to normal cells) and neurological symptoms (severe confusion, seizures, and speech impairment), are significant concerns.
- **Affordability:** The introduction of CAR T-cell therapy in India may encounter challenges related to cost and accessibility. Critics argue that developing this therapy in India may not necessarily make it cost-effective, as it could still be financially out of reach for many individuals.

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.



6. DIVERSE EPIGENETIC EPIDEMIOLOGY PARTNERSHIP (DEEP)

Context:

- CSIR-Centre for Cellular and Molecular Biology (CCMB) is collaborating with research groups across the world on the Diverse Epigenetic Epidemiology Partnership (DEEP) project.

About Diverse Epigenetic Epidemiology Partnership (DEEP):

- It is a ground-breaking integrated genomics and epigenomics study to understand the genetics behind Non-Communicable Diseases (NCDs) in diverse populations, including South Asians.
- The project is to uncover the effects of genomic and environmental diversity in disease risk observed in people across the world, including those in Asia, Africa and North and South America.
- It is a five-year international project.
- Researchers will be studying individuals representing diverse genetic and environmental contexts and learn which DNA methylation patterns contribute to their disease risk in each context
- The study will develop software and infrastructure and conduct advanced statistical analyses to build new resources.
- These new resources will sit alongside international health and genetics databases to look at trends in variation in DNA methylation.

Significance of this initiative

- This research will enable identification of disease-causing mechanisms that are common worldwide and those which are unique to particular groups or regions.
- It will help with answering questions such as whether medicines developed in one part of the world will be effective for all.

- Ultimately the DEEP study hopes to enable targeted interventions or treatments and reduce global health disparity and inequity.
- Significance for India: Through this, CCMB (Centre for Cellular and Molecular Biology) is expecting to understand the genetics behind Non-Communicable Diseases (NCDs) in diverse populations especially in India and other South Asian countries.
- It helps in understanding implications for common diseases like type 1 and 2 diabetes, chronic pancreatitis, etc.

Challenges in implementing the Project

- **Data Privacy and Security:** Genomic data is highly sensitive and contains personal information.
Ethical Considerations: Genome projects often involve human subjects, raising ethical questions about the informed consent of individuals and their long-term effects on the community.
- **Data Storage and Management:** The vast amount of data generated in genome projects requires advanced storage and computational resources.
- **Dynamic Nature of the Genome:** Understanding the dynamics of genome evolution, including factors such as mutation rates, selection pressures, and adaptation, poses challenges in tracking changes accurately.
- **Integration of Clinical and Genomic Data:** Connecting genomic data with clinical information, including electronic health records, poses integration challenges.

What is Epigenetic Epidemiology?

- **Epigenetics:** It is the study of how your behaviours and environment can cause changes that affect the way your genes work.
- Unlike genetic changes, epigenetic changes are reversible and do not change the DNA sequence, but they can change how body reads a DNA sequence.
- **Epidemiology:** It is the scientific discipline that examines patterns and factors related to health and disease in populations.
- It aims to understand how diseases spread, identify risk factors, and develop strategies for prevention and control.
- As a combination of the two, epigenetic epidemiology might be defined as ‘the part of epidemiology that studies the effects of epigenetic changes on the occurrence and distribution of diseases’.
- One common epigenetic modification is DNA methylation which involves the addition of a methyl group to the DNA molecule (refer to the info graphics).
- High levels of DNA methylation at a gene promoter region can lead to gene silencing, preventing the gene from being expressed.
- For example, during stress, DNA may undergo increased methylation, leading to the suppression of those genes.

What is DNA methylation?

- It is a process where chemical groups attach to DNA in order to help to turn genes on and off.
- It is a type of epigenetic modification, helps the body to respond to environmental signals and ultimately contributes to whole system health and disease status.

- Understanding relationships between DNA, genetics and environment is essential for understanding pathways of health, disease and consequences.

7. ULTRA PROCESSED FOOD

Context:

- A joint report by the World Health Organization (WHO) and the Indian Council for Research on International Economic Relations revealed that the Ultra-Processed Food Sector in India experienced a Compound Annual Growth Rate (CAGR) of 13.37% in terms of retail sales value between 2011 and 2021.

WHAT IS ULTRA PROCESSED FOOD?

- Ultra-processed food is a category of highly transformed food products that goes beyond regular processing. It typically involves adding salt, sugar, and fat for enhanced flavor, but what sets it apart is the incorporation of five or more additional ingredients to the original product.
- These extra components often include flavor enhancers, emulsifiers, colors, and preservatives, all aimed at improving taste, prolonging shelf life, and providing convenience.

Examples:

- Unprocessed: Raw atta (flour).
- Processed: Dalia (porridge) with added salt and sugar.
- Ultra-processed: Cookies made from atta with various additional ingredients.

Health Implications

- **Salt, Sugar, and Fat:** Commonly added to processed food, contributing to taste but posing health risks.
- **Negative Health Outcomes:** Regular consumption of ultra-processed foods can lead to obesity, hypertension, cardiac issues, and lifestyle diseases.
- **Gut Health Impact:** Artificial chemicals in ultra-processed food harm gut health, potentially causing various problems from neurological issues to obesity.

Addictive Nature

- **Taste Enhancers:** Ultra-processed foods often contain taste enhancers that can lead to addiction.
- **Rapid Absorption:** Ultra-processing breaks down natural food quickly, leading to rapid absorption by the body.
- **Sugar's Impact:** High doses of simple sugar trigger insulin release, causing hunger and cravings, contributing to sugar addiction.

Challenges in Curtailing Ultra-Processed food

- **Lack of standard definition:** Like absence of a clear definition of ultra-processed food or HFSS (High in saturated Fat, Salt and Sugar) food and their categorisation.
- **Lack of a nutrition-based tax model:** This model focuses on higher taxes for products which have sugar, salt or fat beyond recommended levels and lower taxes for the healthier options.
- The goods and services tax (GST) rates are not aligned with nutrition content in the food nor are they aligned with the product classification of the FSSAI.

- **Lack of data:** For certain subcategories like carbonated drinks by sugar content is not available, a detailed survey is needed to capture such data in order to undertake policy decisions.
- **Lack of Subsidies and other fiscal incentives:** For manufacturers for making healthy products and to consumers to encourage consumption.

Key Highlights of the Report on Indian Ultra-Processed Food Sector

Pandemic Impact

- **Temporary Disruption:** Covid-19 Pandemic led to a decline in annual growth rate of Indian ultra-processed food sector from 12.65% (2019) to 5.50% (2020).
- **Remarkable Rebound:** The sector demonstrated resilience, bouncing back with an impressive 11.29% growth in 2020-2021.

Popular Food Categories

- **Leading Categories:** Notable ultra-processed food categories include chocolate and sugar confectionery, salty snacks, beverages, ready-made and convenient foods, and breakfast cereals.
- **Retail Sales Volume:** From 2011 to 2021, beverages accounted for the largest share in retail sales volume, followed by chocolate and sugar confectionery, and ready-made convenience foods.

Consumer Shifts

- **Health-conscious Choices:** During the pandemic, health-aware consumers transitioned from carbonated sugar-sweetened beverages to fruit and vegetable juices, possibly due to perceived immune-boosting properties.
- **Sugar Concerns:** Alternative beverages, while seen as healthier, may still contain significant levels of free sugars, highlighting the need for balanced consumption.

Recommendations from the Report on Indian Ultra-Processed Food Sector

Stricter Advertising and Marketing Regulations

- **Focus on Children:** Implement stringent regulations for advertising and marketing of products like sweet biscuits that appeal to children.

Addressing Salt Content in Salty Snacks

- **Health Risks:** High salt content in salty snacks poses health risks. Regulations should be put in place to address this issue effectively.

Defining High Fat Sugar Salt (HFSS) Foods

- **Collaboration with FSSAI:** The Food Safety and Standards Authority of India (FSSAI) should collaborate with stakeholders to establish a clear and comprehensive definition of HFSS foods.

Taxation for Healthier Options

- **GST Council Involvement:** Link tax structure with HFSS food definition through the GST Council. Higher taxes can incentivize reformulated products and healthier alternatives by taxing items exceeding recommended fat, sugar, and salt levels.

Comprehensive National Nutrition Policy

- **Addressing Under- and Over-Nutrition:** Develop a robust national nutrition policy through consultations with stakeholders. Ensure comprehensive coverage of both under nutrition and diet-related diseases.

Healthier Lifestyle Promotion

- **Reduce Ultra-Processed Food Consumption:** Encourage a healthier lifestyle by advocating reduced consumption of ultra-processed foods and promoting higher intake of whole grains.
- **Address Noncommunicable Diseases:** Recognize low whole grain intake as a key dietary risk factor for noncommunicable diseases in India.

Unprocessed or minimally processed foods	Processed culinary ingredients	Processed foods	Ultra-processed foods
Foods which did not undergo processing or underwent minimal processing techniques, such as fractioning, grinding, pasteurization and others.  Legumes, vegetables, fruits, starchy roots and tubers, grains, nuts, beef, eggs, chicken, milk	These are obtained from minimally processed foods and used to season, cook and create culinary dishes.  Salt, sugar, vegetable oils, butter and other fats.	These are unprocessed or minimally processed foods or culinary dishes which have been added processed culinary ingredients. They are necessarily industrialized.  Bottled vegetables or meat in salt solution, fruits in syrup or candied, bread, cheeses, purees or pastes.	These are food products derived from foods or parts of foods, being added cosmetic food additives not used in culinary.  Breast milk substitutes, infant formulas, cookies, ice cream, shakes, ready-to-eat meals, soft drinks and other sugary drinks, hamburgers, nuggets.

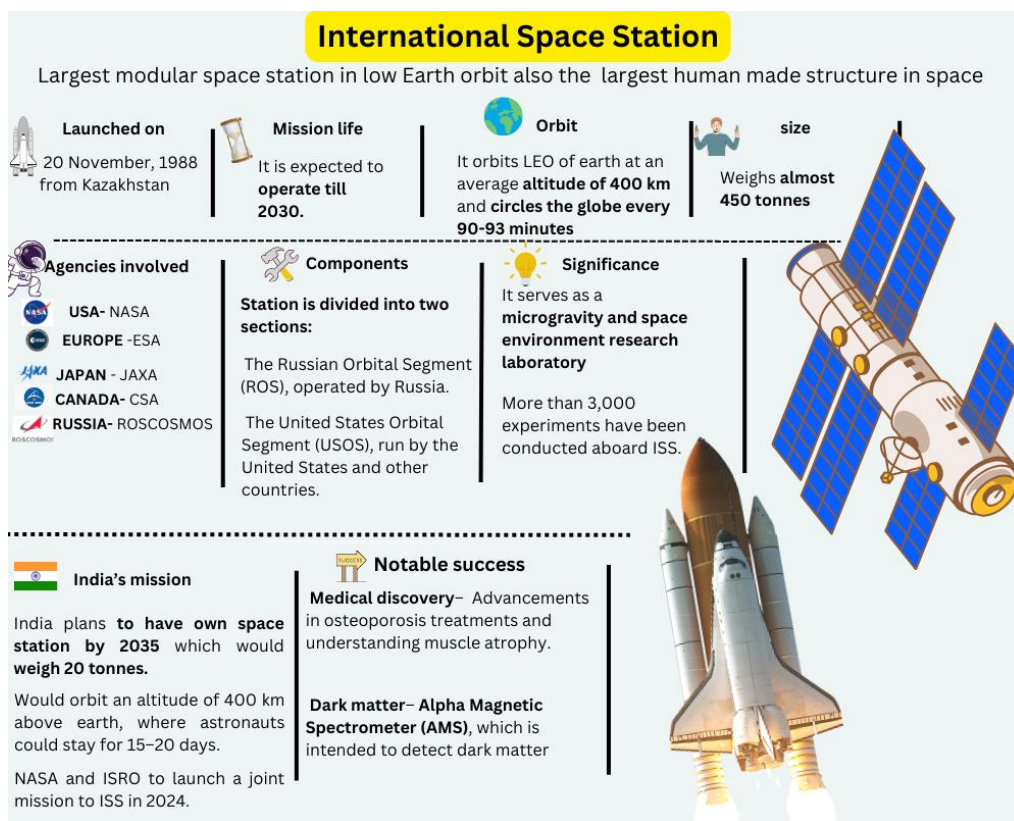
8. 25 YEARS OF THE INTERNATIONAL SPACE STATION

Context:

- The International Space Station (ISS) turned 25 years old on November 20, 2023. The first module of the ISS launched into orbit in 1998.

What is International Space Station (ISS)?

- ISS is a large spacecraft in low Earth orbit.
- It is habitable spacecraft that orbits Earth at an average altitude of approximately 420 kilometers (260 miles).
- It serves as a unique and collaborative space laboratory, research facility, and living space for astronauts and cosmonauts from various countries.



What are the features of ISS?

Construction and Ownership

- The major partners include NASA (United States), Roscosmos (Russia), ESA (European Space Agency), JAXA (Japan Aerospace Exploration Agency), and CSA (Canadian Space Agency).
- In 2022, Russia announced that it will pull out of ISS after 2024 and focus on building its own orbiting outpost.
- These agencies have contributed modules, components, and resources to construct and maintain the station.
- Size and Structure
- The ISS is quite large, with a mass of around 460 tons and a habitable volume roughly equivalent to the interior of a Boeing 747 aircraft.
- It consists of various interconnected modules and components, including laboratories, living quarters, and docking ports.

Orbit and Duration

- It travels at 8 kilometers (5 miles) per second. This means it orbits Earth every 90 minutes.
- It passes over our heads 16 times every 24 hours — travelling through 16 sunrises and sunsets.
- Missions typically last six months, although some crew members may stay for shorter or longer durations.

International Crew

- The ISS is continuously inhabited by a rotating crew of astronauts and cosmonauts from different nations.
- These crew members live and work on the station for several months at a time, conducting experiments, maintaining systems, and performing various tasks necessary to keep the station operational.

Why Is the Space Station Important?

- One of the primary purposes of the ISS is to conduct scientific research and experiments in the unique microgravity environment of space.
- Microgravity is often referred to as near zero gravity or weightlessness.
- Researchers from around the world use the station to study a wide range of fields, including biology, physics, astronomy, and Earth sciences.
- The ISS has contributed to our understanding of topics such as human health in space, materials science, and climate change.
- Human beings have been living in space every day since the first crew arrived.

India's space station plan

- As per ISRO's chairman, India's proposed space station is envisaged to weigh 20 tonnes and serve as a facility where astronauts can stay for 15-20 days, and would be placed in an orbit 400 km above earth.
- Prime Minister of India directed that India should now aim for setting up 'Bharatiya Antariksha Station' (Indian Space Station) by 2035.

9. NASA'S ATMOSPHERIC WAVES EXPERIMENT

Context:

- NASA's unveiling of the Atmospheric Waves Experiment (AWE) emerges amidst escalating disruptions in satellite communication and GPS systems, spotlighting the critical need to comprehend space weather.
- With Earth's extreme weather events influencing space phenomena via Atmospheric Gravity Waves (AGWs), AWE's imminent launch promises groundbreaking insights into these interconnected dynamics.

What are Atmospheric Gravity Waves (AGWs)?

- Gravity Waves: In a stable atmosphere, gravity waves are created when temperature contrasts between rising air and the surrounding atmosphere generate a force that pushes the air back to its initial location.
- Atmospheric Gravity Waves: AGWs are waves that travel within a stable atmospheric layer, particularly thriving in regions where air is moving upward, facilitating the creation of distinctive cloud formations.
- Remarkably, these AGWs extend into space, playing a role in shaping space weather.
- They are mostly generated by extreme weather events or disturbances causing vertical displacement of stable air.
- Thunderstorms, hurricanes, and regional topography contribute to the generation of AGWs in the lower atmosphere.



10. X-RAY POLARIMETER SATELLITE

Context:

- Recently, the Indian Space Research Organisation (ISRO) has launched its first X-ray Polarimeter Satellite (XpoSat) to study X-ray polarisation and its cosmic sources, like Black holes, Neutron stars, and Magnetars.
- The mission is propelled by the PSLV-C58 rocket in Low Earth Orbit.

What is an X-ray Polarimeter Satellite (XpoSat)?

X-ray Polarimeter SATellite (XPOSAT)

First mission devoted to X-ray polarisation studies since X-ray polarization studies of celestial objects has been minimal.

Polarimeter Instrument in X-rays (POLIX) payload being developed by Raman Research Institute (RRI).

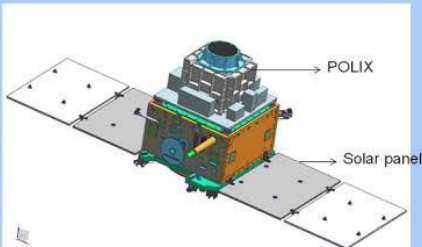
POLIX will study the degree and angle of polarization of bright X-ray sources (5-30 keV).

Modified IMS-2 bus

Pointing accuracy : 0.1 degree

Slow rotation : 0.2 to 0.5 rpm

Low altitude orbit (~600 km) with a low inclination (< 30 degree)



Purpose:

- XPoSat is designed to study X-ray polarization in the medium X-ray band, offering insights into celestial sources' radiation mechanisms and geometry.
- This study is crucial for understanding the physics behind these celestial bodies.

Payloads:

- The satellite carries two main payloads, POLIX (Polarimeter Instrument in X-rays) and XSPECT (X-ray Spectroscopy and Timing).

- POLIX will observe about 40 bright astronomical sources, while XSPECT will study the electromagnetic spectrum generated by different matter.

Development:

- Entirely built by two Bengaluru-based institutes—ISRO's UR Rao Satellite Centre and Raman Research Institute—XPoSat's development began in 2008, with a formal agreement signed with ISRO in 2015.

Global Context:

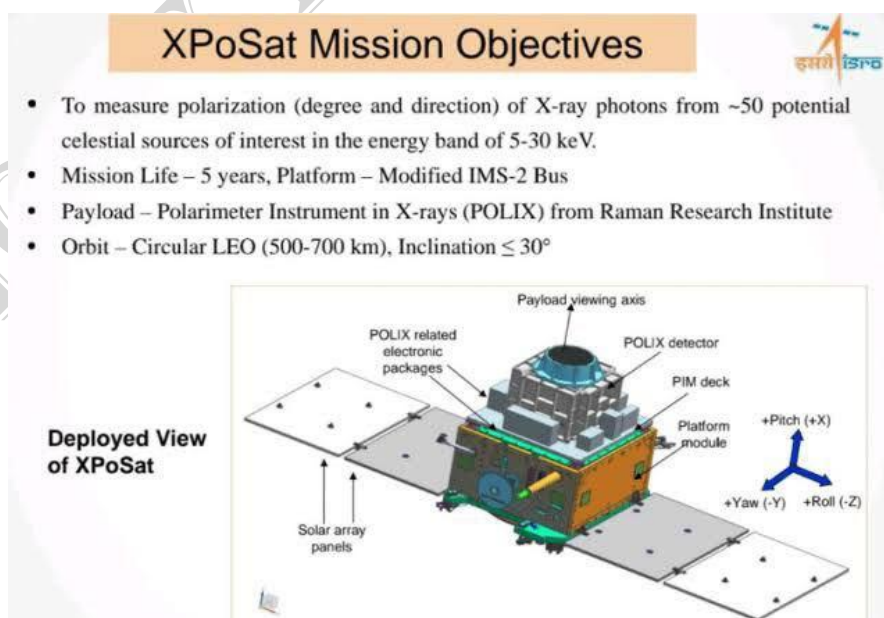
- XPoSat is only the world's second mission dedicated to X-ray polarization in the medium X-ray band. NASA's Imaging X-ray Polarimetry Explorer (IXPE), launched in 2021, was the first such mission by a space agency.

National Contribution:

- XPoSat will be India's third space-based observatory, following the recently launched solar mission Aditya-L1 and AstroSat, which was launched in 2015. Its launch is seen as a significant stride for Indian astronomy and space research.

What is X Ray and How will it Study the Celestial Objects?

- X-rays are electromagnetic radiation whose wavelength is 0.01-10 nanometres.
- Electromagnetic radiation is characterised by an electric field and a magnetic field vibrating perpendicular to each other.
- The polarisation of electromagnetic radiation refers to the orientation of these two fields as the radiation moves through space.
- X-rays can be polarised when they get scattered. Polarised X-rays are also produced when the path of a fast-moving charged particle is bent by a magnetic field.
- Measuring the polarization of X-rays using instruments like POLIX enables astronomers to understand the orientation and strength of magnetic fields in celestial objects. This, in turn, provides crucial insights into the nature and behavior of pulsars, regions around black holes, and other cosmic phenomena emitting X-rays.



Plasma waves

- Around planets that have a magnetosphere, something magical happens. If you listen with the right instruments, you can hear chirping and whistling, almost like the singing of birds at dawn and dusk. These so-called chorus waves have been recorded at Earth, and Jupiter, and Saturn; and observed at Uranus and Neptune.

About Discovery

- This is the first time that 'whistling' sound waves were found emitting from Mercury's magnetic field. Chorus waves have been recorded on Earth, Jupiter, and Saturn, and observed at Uranus and Neptune. Other planets where such musical waves were found have thick atmospheres and radiation belts wherein solar particles become trapped.
- Mercury lacks thick atmosphere that could contain oxygen or a radiation belt where solar particles get trapped by the planet's magnetic field.
- Mercury, which was once believed to have a weak magnetic field, is now believed to have a strong one, as indicated by these "whistling" sounds.

Mercury's Characteristics

- Structure and Surface: It is the smallest and terrestrial planet in our solar system and doesn't really have an atmosphere.
- Mercury's Neighbours: does not have any moons. It is the closest planet to the sun. Venus is Mercury's neighbouring planet.
- Mercury has been known since ancient times because it can be seen without advanced telescopes.

11. NITROGEN-9 NUCLEUS

Context:

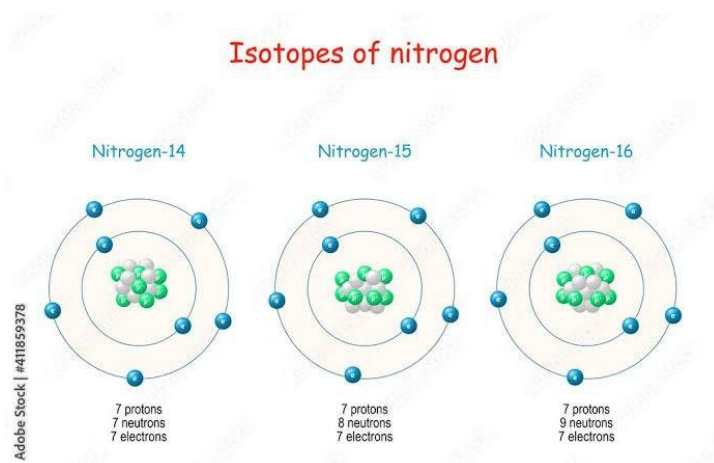
- Scientists discovered hints of the new isotope, called nitrogen-9, by smashing beams of oxygen isotopes into beryllium atoms in the U.S. National Superconducting Cyclotron Laboratory.

About Nitrogen-9 nucleus:

- It is characterised by seven protons and two neutrons – which is an unusually high proton-to-neutron ratio.
- This disparity has a critical effect on the isotope's stability, influencing its decay processes as well as overall behaviour.
- For one, the high proton content places nitrogen-9 atoms beyond the conventional stability thresholds.
- Most nitrogen comes as the isotope nitrogen-14, with seven protons and seven neutrons. But physicists say they have glimpsed a far more elusive variant with just two neutrons.

What are Isotopes?

- These are atoms of a given element that vary only in the number of neutrons. This difference sets apart one isotope from another.
- Many isotopes are also unstable, especially those whose atoms have too few neutrons for the number of protons.
- Unstable isotopes are short-lived, and often decay by releasing some energy to achieve a more stable configuration.



What are nuclides?

- It is an analogous table for atomic nuclei characterised by a unique combination of protons and neutrons.
- A table or chart of nuclides is a two-dimensional graph of isotopes of the elements.
- One axis shows the number of neutrons (N) and the other shows the number of protons (Z) in each atomic nucleus.
- Each point on the graph denotes a nuclide.

12. WHAT IS THE E PRIME LAYER?

Context:

- Recently, a study by an international team of researchers revealed the formation of a new enigmatic layer – E prime layer at the outermost part of Earth's core.

About E prime layer:

- It was believed that a material exchange between the core and mantle is small.
- But the experiments revealed that when water reaches the core-mantle boundary, it reacts with silicon in the core, forming silica.

How did this layer develop?

- This latest research suggests that tectonic plates carrying surface water have transported it deep into the Earth over billions of years.
- Upon reaching the core-mantle boundary about 1,800 miles below the surface, this water initiates significant chemical changes, influencing the core's structure.
- Scientists have observed that subducted water reacts chemically with core materials under high pressure.
- This reaction leads to the formation of a hydrogen-rich, silicon-depleted layer at the outer core, resembling a film-like structure.
- Silica crystals generated by this process ascend and blend into the mantle, impacting the overall composition.
- These modifications in the liquid metallic layer could potentially result in reduced density and altered seismic characteristics, aligning with anomalies detected by seismologists.

Significance

- This discovery enhances researchers' comprehension of Earth's internal mechanisms, indicating a broader and more intricate global water cycle than previously acknowledged.

- The transformed layer in the core holds significant implications for the interconnected geochemical processes linking surface water cycles with the deep metallic core.

Earth Interior



13. AMYLOIDOSIS

Context:

- Scientists from the Institute of Advanced Studies in Science and Technology have successfully fabricated a 2D protein monolayer using lysozyme molecules, a model protein for studying diseases like Amyloidosis.

About Amyloidosis :

- It is a rare condition where the accumulation of amyloid protein in organs leads to dysfunction in vital organs such as the heart, kidneys, liver, spleen, nervous system, and digestive tract.
- The study investigated the physical properties of lysozyme molecules at the air-water interface under varying surface pressure and subphase pH conditions.
- The compressible behaviour of lysozyme monolayers was correlated with the formation of stripe-like domains with increasing surface pressure.



Note:

- Lysozyme is a naturally occurring enzyme that protects against bacteria, viruses, and fungi. It's found in many bodily secretions, including:
- Tears, Saliva, Milk, Sweat, Mucus, Egg white, Nasal mucus, Gastric secretions.

14. EJECTA HALO

- Recently, the Indian Space Research Organisation (ISRO) revealed that the "Chandrayaan-3 Lander Module generated a spectacular 'ejecta halo' of lunar material.

About Ejecta Halo:

- The Vikram lander of the Chandrayaan-3 mission landed near the south pole of the moon.
- During the action of descent stage thrusters and the consequent landing, a significant amount of lunar surficial epi regolith material got ejected, resulting in a reflectance anomaly or ejecta halo”,
- Scientists from Indian Space Research Organisation estimate that about 2.06 tonnes of lunar epi regolith were ejected and displaced over an area of 108.4 m² around the landing site
- Ejecta halo is an irregular, bright patch surrounding the lander.



Significance:

- This discovery sheds light on the behaviour of lunar materials during such events.
- It opens up new avenues for research and understanding lunar geology.

What is Regolith?

- It is a blanket of unconsolidated, loose, heterogeneous superficial deposits covering solid rock.
- Epiregolith is lunar rocks and soil, or regolith, or Moon dust.

SOCIAL ISSUES

1. LONELINESS: A PUBLIC HEALTH CONCERN

Context:

- Recently, World Health Organisation (WHO) declared a pressing, albeit underappreciated, global health threat ‘loneliness’ in its report.

What is loneliness?

- Definition – It is largely understood to be “the unpleasant experience that occurs when a person’s network of social relations is deficient in some important way, either quantitatively or qualitatively,” and is computed as an experience other than ‘social isolation.

Vulnerable population

- World Health Organisation (WHO) – At least 10% of adolescents, and 25% of older people are lonely.
- The Global State of Social Connections– At least 25% of 4.5 billion people felt ‘lonely’ or ‘very lonely’ in 2023.
- Spread – WHO clarified in 2023 that loneliness impact the health and well-being of all age groups across the world.
- Reason for higher levels – Wars, climate change and social inequality have only accelerated this ‘silent’ threat.
- Impact of Covid pandemic – It have calcified loneliness as a feature of daily life, with implications on people’s long-term mental and physical health, longevity and well-being.
- Measure - The WHO has established a Commission on Social Connection (2024–2026) with the intent of addressing loneliness from a public health lens.
- It will propose a global agenda on social connection and work to develop solutions targeting loneliness as a medical and social condition.

What is India’s status in Loneliness?

Loneliness in India

- 2004 NSSO study – About 49.1 lakh people (12.3 lakh men and 36.8 lakh women) were living alone and suffered from loneliness.

- In 2012, self-reported loneliness was found to be 17.3% and 9.5% in urban and rural adolescents, respectively.
- Loneliness among younger people – The Centre for the Study of Developing Societies (CSDS) in 2017 studied 6,000 people aged 15-34 years across 19 States.
- 12% of India's youth reported feeling depressed often, and about 8% frequently felt lonely.
- Loneliness among the elderly – The Longitudinal Ageing Study in India (LASI) in 2017-18 surveyed 72,000 people from 35 States and Union Territories.
- 20.5% of adults aged 45 years and above reported moderate loneliness, and 13.3% were severely lonely.
- Gender vulnerability – The odds of loneliness were higher among females as compared to males.
- A taboo in our society – There is lack of acknowledgment of mental health issues as people see poor mental health as a “collective problem” that reflects badly on the family, even impairing one's marriage eligibility.
- Why loneliness as a public health concern in India?
- A fertiliser of other diseases – It can thus inflame India's rising communicable and non-communicable disease burden.
- The 2017 LASI found that loneliness also increased the odds of major depressive disorder and insomnia symptoms.
- Emerging dementia epidemic - Mental health disorders like depression, anxiety disorders, bipolar disorder have risen steadily over the last few years.

What are the reasons for India's loneliness epidemic?

- Social inequity – People belonging to marginalised communities go through loneliness intensely.
- Socioeconomic challenges – High poverty, income inequality, low education, high dependency ratio is making people depressed.
- Higher dependence on monsoon – There is rising farmer suicides due to the burden of seasonal droughts.
- Rapid urbanisation and changing family structure – The suicides of daily wage or migrant workers is more due to their disintegration at their village home as well as the lack of any family structure in the urban setting.
- Reduced social cohesion and support – Changing lifestyles erode kinship ties and interpersonal relationships.
- Slum rehabilitation issues - The 2022 study in Mumbai reported that slum rehabilitation dwellers loneliness was partly due to random allocation of flats.
- It hampered their collective identity, weakened their social support network, and significantly led to loneliness.
- Attachment to Social media – Social media has uniformly been linked to rising loneliness.
- Impact of COVID-19 pandemic – Loneliness among young people is on the rise.
- Chronic illnesses – It exacerbate loneliness among people.
- Institutional deficiencies – According to a 2023 report by a Standing Committee on Health and Family Welfare, India lags with inadequate staff, medical infrastructure and budgetary allocation.

What has to be done?

- Change perspectives – Treat loneliness as a condition itself rather than considering as a symptom or state of mind.
- Tailored treatments – Treat loneliness as a distinct social and medical condition to develop targeted interventions specific to people's cultural context.
- Capacity building – Investing in mental healthcare facilities, training doctors and setting up health provisions in AIIMS.
- India has launched suicide and mental health help lines.
- Scale up digital infrastructure – Develop and improve digital mental health programming infrastructure.
- Efficient diagnosis and treatment – Find the root cause of loneliness and suggest physical exercise and spending time socially.
- Develop healthcare dedicated to addressing loneliness.
- Promote community intervention – Address deficits in communities by building safe spaces like community facilities, effecting anti-discrimination and equality laws, and tackling the causes and consequences of poverty.
- Conduct national-level survey – It should be conducted in local languages, and questions modified to match people's cultural context as almost 60% of India which lives offline remains beyond the purview of research paradigms.

2. PM JANMAN SCHEME

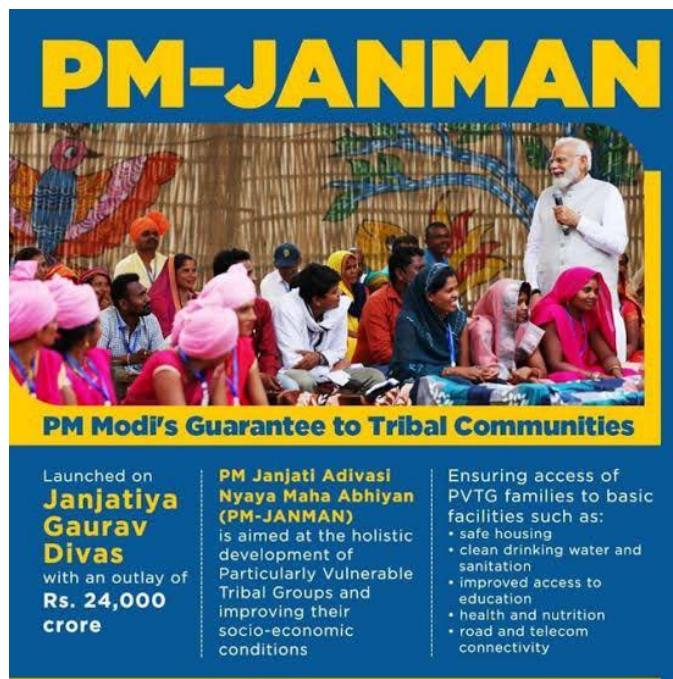
Context:

- Recently, India has launched the PM Janjati Adivasi Nyaya Maha Abhiyan a campaign for the tribals.

What is PM-JANMAM scheme?

- Launch- On Janjatiya Gaurav Diwas (Birth anniversary of Birsa Munda) in Jharkhand.
- Objective- To provide essential amenities such as road and telecom connectivity, electricity, secure housing, clean drinking water, sanitation, and improved access to education, health, nutrition, and sustainable livelihood opportunities.
- Awareness generation- The government will showcase and spread awareness of various government schemes made for the tribals.
- Coordinating role- The scheme will be implemented by 9 ministries with Ministry of Tribal Affairs playing the key role.
- Beneficiary- Government has identified 75 tribal communities and primitive tribes with a population of lakhs who reside in more than 22 thousand villages in the country.
- Focus- 11 critical interventions for Particularly Vulnerable Tribal Groups (PVTG).
- Ayush Wellness Centres- It will be set up by the Ministry of AYUSH and AYUSH facilities will be extended to PVTG habitations through mobile medical units.

- Skill enhancement- Ministry of Skill Development and Entrepreneurship will facilitate skill and vocational training in PVTG habitations, multipurpose centres and hostels according to suitable skills of these communities.



What are the challenges in implementation of the scheme?

- **Data inaccuracy**-There is lack of current data on PVTGs, as no census since 1951 has accounted for them separately.
- **Lack of transparency**- The current project is going ahead with the baseline surveys but the results are not made public.
- **Lack of accountability**- The scheme involves multiple ministries, this may lead to issue of overlapping or conflicting mandate, gaps in service delivery etc.,
- **Loss of ecological diversity**- Some of the interventions such as road construction may affect the availability and quality of natural resources.
- **Loss of cultural heritage**- The scheme provides education, health, skill development etc., this may result in loss of their intellectual and cultural heritage, and reduce their resilience and adaptability.
- **Lack of autonomy**- Mobile connectivity, Anganwadi centres and Bandhan Vikas Kendra may bring the PVTGs under the purview of state and market forces and compromise their sovereignty and rights.

What lies ahead?

- National Advisory Council (NAC) 2013 report on the state of PVTGs had recommended that the Ministry of Tribal Affairs should design and conduct a Census specifically for the PVTG communities.
- The Census should not just enumerate but also find out the status of education, health, and housing.

About PVTG

Particularly Vulnerable Tribal Groups (PVTGs)

- There are 75 PVTGs out of 705 STs, spread over 18 states and 1 Union Territory (A&N Islands) with around 27.6 lakh as per 2011 Census.

Pre-agricultural level of technology

Low level of literacy

Economic backwardness

Declining or stagnant population

Characteristics of PVTGs

- Dhebar commission**- In 1973, it created Primitive Tribal Groups (PTGs) as a separate category, who are less developed among the tribal groups.
- PVTGs**- In 2006, the Government of India renamed the PTGs as Particularly Vulnerable Tribal Groups (PVTGs).
- Features**- They are mostly homogenous, with a small population, relatively physically isolated, social institutes cast in a simple mould, absence of written language, relatively simple technology and a slower rate of change etc.,
- Statistics**- Highest PVTGs is present in Odisha (13) followed by Andhra Pradesh (12).
- Chhattisgarh**- It has 7 PVTGs namely Kamar, Baiga, Pahadi Korba, Abujmadiya, Birhor, Pando and Bhujia.
- Scheme for Development of PVTGs**- It was established in 2008 to adopt a holistic approach to the socio-economic development of PVTGs.
- Pradhan Mantri PVTGs Development Mission**- It was introduced in the Union Budget 2023-24 to improve the socio-economic status of PVTGs and bridging gaps in health, education, livelihoods, and basic infrastructure.

Provisions	About
Housing	To provide 4.90 lakh pucca homes
Connectivity	- Construct 8,000 kilometers of roads at a cost of Rs 1 crore per kilometre. - Installation of mobile towers.
Drinking water supply	Piped water supply for all Particularly Vulnerable Tribal Group (PVTG) habitations.
Community water supply	It will be provided in 2,500 villages/habitations with a population of less than 20 households.
Bandhan Vikas Kendra	- It is a unit of 15 to 20 tribal self-help groups (SHGs) that collect and process minor forest produce (MFP) such as honey, tamarind, gum, etc. - The SHGs are trained and provided with equipment, working capital, and marketing support to add value to the products and sell them at higher prices.
Hostel facility	To provide 500 hostels
Health infrastructure	To provide 1000 mobile medical units for 10 districts.
Education and training	To provide vocational education and skilling centres in 60 Aspirational PVTG block.
Infrastructure	- Multipurpose centres. - Construction of Anganwadi centres.
Renewable energy	To provide solar off-grid system and solar lighting in streets.
Electricity	Last mile electricity connection for 57,000 households.

3. SURROGACY LAW

Context:

- Recently, the Delhi High Court has questioned the association of marital status with eligibility for surrogacy under the Surrogacy (Regulation) Act 2021.
- The petitioner challenged Section 2(1)(s) of the Surrogacy Act, which limits the right to avail surrogacy to Indian widows or female divorcees between the ages of 35 and 45.
- The petitioner's plea also challenges the regulation that compels a single woman (widow or divorcee) to utilize her own eggs for surrogacy. Due to her age, using her own gametes is medically inadvisable, and she seeks a donor for female gametes.

What is Surrogacy?

About:

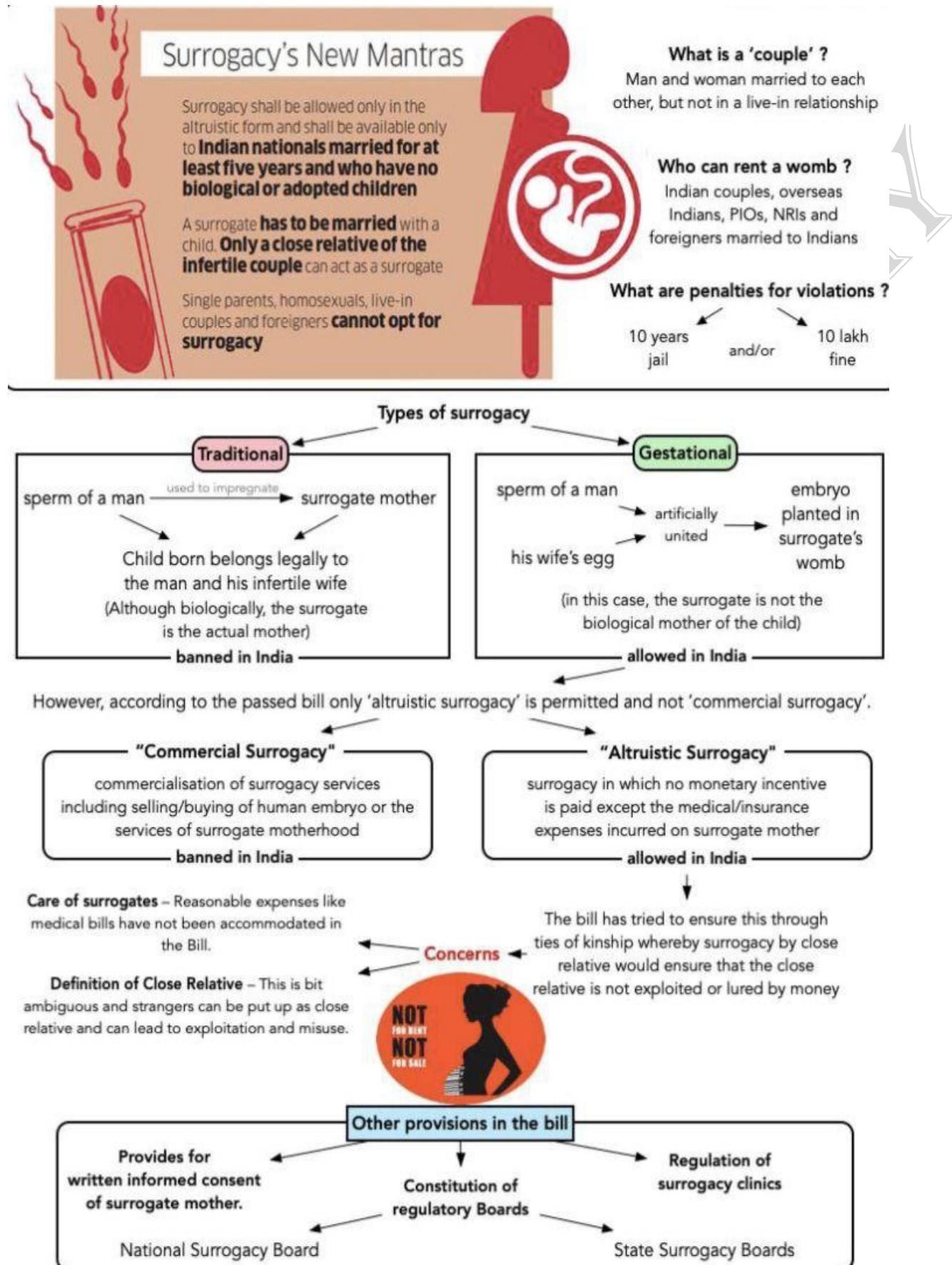
- Surrogacy is an arrangement in which a woman (the surrogate) agrees to carry and give birth to a child on behalf of another person or couple (the intended parent/s).
- A surrogate, sometimes also called a gestational carrier, is a woman who conceives, carries and gives birth to a child for another person or couple (intended parent/s).

Altruistic Surrogacy:

- It involves no monetary compensation to the surrogate mother other than the medical expenses and insurance coverage during the pregnancy.

Commercial Surrogacy:

- It includes surrogacy or its related procedures undertaken for a monetary benefit or reward (in cash or kind) exceeding the basic medical expenses and insurance coverage.



What is the Surrogacy (Regulation) Act, 2021?**Provisions:**

- Under the Surrogacy (Regulation) Act, 2021, a woman who is a widow or a divorcee between the age of 35 to 45 years or a couple, defined as a legally married woman and man, can avail of surrogacy if they have a medical condition necessitating this option.
- The intended couple shall be a legally married Indian man and woman, the man shall be between the ages of 26-55 years and the woman shall be between the ages of 25-50 years, and shall not have any previous biological, adopted, or surrogate child.
- It also bans commercial surrogacy, which is punishable with a jail term of 10 years and a fine of up to Rs 10 lakhs.
- The law allows only altruistic surrogacy where no money exchanges hands and where a surrogate mother is genetically related to those seeking a child.

Challenges:

- **Exploitation of the Surrogate and the Child:** The banning of commercial surrogacy moves from the rights-based approach to a needs-based approach, thus removing the women's autonomy to make their own reproductive decisions and right to parenthood. One could argue that the state must stop the exploitation of poor women under surrogacy and protect the child's right to be born. However, the current Act fails to balance these two interests.
- **Reinforces Patriarchal Norms:** The Act reinforces traditional patriarchal norms of our society that attributes no economic value to women's work and, directly affecting the fundamental rights of the women to reproduce under Article 21 of the constitution.
- **Emotional Complications:** In altruistic surrogacy, a friend or relative as a surrogate mother may lead to emotional complications not only for the intending parents but also for the surrogate child as there is great deal of risking the relationship in the course of surrogacy period and post birth.
- **Altruistic surrogacy also limits the option of the intending couple in choosing a surrogate mother as very limited relatives will be ready to undergo the process.**
- **No Third-Party Involvement:** In an altruistic surrogacy, there is no third-party involvement. A third-party involvement ensures that the intended couple will bear and support the medical and other miscellaneous expenses during the surrogacy process.
- **Overall, a third party helps both the intended couple and the surrogate mother navigate through the complex process, which may not be possible in the case of altruistic surrogacy.**

Some Exclusion from Availing Surrogacy Services:

- There is exclusion of unmarried women, single men, live-in partners, and same-sex couples from availing surrogacy services.
- This amounts to discrimination based on marital status, gender, and sexual orientation, and denies them the right to form a family of their choice.

What are the Recent Changes Made by the Supreme Court?

- A government notification in March 2023 amended the law, banning the use of donor gametes.
- It said "intending couples" must use their own gametes for surrogacy.

- The petition was filed in the Supreme Court challenging the amendment as a violation of a woman's right to parenthood.
- The Court interpreted the requirement for the child to be "genetically related" as being related to the husband.
- The Court emphasized that the law permitting gestational surrogacy is "woman-centric," meaning that the decision to have a surrogate child is based on the woman's inability to become a mother due to her medical or congenital condition.
- The Court clarified that when Rule 14(a) of the Surrogacy Rules Applies, which lists medical or congenital conditions that allow a woman to opt for Gestational Surrogacy, the child must be related to the intended couple, especially the husband.
- Gestational surrogacy is a process where one person, who did not provide the egg used in conception, carries a fetus through pregnancy and gives birth to a baby for another person or couple.
- The Supreme Court stayed the operation of Rule 7 of the Surrogacy (Regulation) Act, 2021, to allow the woman suffering from the Mayer-Rokitansky-Küster-Hauser (MRKH) Syndrome —a rare congenital disorder that affects the female reproductive system — to undergo surrogacy using a donor egg.
- Rule 7 of the Surrogacy Act bans use of donor eggs for the procedure.

PRELIMS FACTS

1. CERVAVAC VACCINE

- A study in Lancet Oncology reveals that the **Cervavac vaccine** by the Serum Institute of India elicits a comparable immune response to **Merck's Gardasil vaccine**.
- Cervavac is India's **first indigenous quadrivalent HPV vaccine** for the prevention of cervical cancer and other HPV-associated cancers.
- HPV is a **major cause** of cervical cancer.
- **Cervical cancer** is the second most common cancer among women in India, accounting for about a fifth of the global burden of cervical cancer.

2. PICHWAI PAINTING

Context:

- **Chennai's Collage** is hosting an **art exhibition showcasing Pichwai paintings**, some of which **date back 350 years**.
- **Pichwai art originated in Nathdwara, near Udaipur, and is traditionally created on cloth, typically khadi.**

Features:

- The **paintings use stone pigments for gold and silver tones and vegetable dyes for vibrant colours like orange, red, chrome yellow, and kesari.**
- The **detailed work is meticulous and time-consuming**, taking several months to complete a single piece.
- The art form has evolved over time, **with modern themes and influences incorporated by artists.**

- In recent years, there has been a **resurgence in Pichwai art, attracting younger buyers and encouraging artists to return to their hometowns in Rajasthan** to learn and continue the traditional techniques.

3. KOLKALI

Context:

- Kolkali, performed by the mothers' grouping of the Thrissur Archdiocese in remembrance of St. Thomas' arrival in India

About	Description
Origin	Kolkali is a traditional folk art form performed in the Malabar region of Kerala. Also, Known as Thattinmelkali when performed on wooden stages.
Performance Style	The dance involves moving in a circle, striking small sticks, and maintaining rhythm with special steps. The circle expands and contracts as the dance progresses
Cultural Significance	Popular in the Kerala School Kalolsavam, considered the biggest cultural event in Asia.
Styles	Two styles: Actual Kolkali and Thekkan Koladi. Actual Kolkali includes Thacholikali, Rajasooyam, etc. Actual Kolkali is nearly on the verge of extinction.
Occasions for Performance	Celebrations of joy, spreading happiness, and during the paddy harvest season.
Community Participation	Villagers, regardless of caste and creed, actively participate
Inclusivity	Performed by troupes from Muslim, Christian, and Harijan communities
About St. Thomas	St. Thomas, one of the twelve apostles of Jesus Christ, is believed to have arrived in India in the 1st century AD. According to tradition, he landed in the southwestern state of Kerala. St. Thomas is credited with spreading Christianity in India, particularly in the Malabar Coast region

4. PARTHENON SCULPTURES

Context:

- A diplomatic dispute between **Greece and the UK** has arisen over **the Parthenon Sculptures** housed at the British Museum.
- **Greece has consistently sought the permanent return** of the sculptures, also known as the **Elgin Marbles**, which are **over 2,000 years old** and originally adorned the **Parthenon temple in Athens**.
- The **sculptures were removed by Thomas Bruce, the 7th Earl of Elgin**, in the early 19th century and purchased by the **British Museum in 1816**.
- While Greece alleges theft, **Lord Elgin claimed permission from the Ottoman Empire**

The Parthenon Sculptures are a **collection of more than 30 ancient Greek stone sculptures**. They are over **2,000 years old** and were **originally part of the Parthenon temple in Athens**. The sculptures are currently **housed in the British Museum**



5. HOUTHI REBELS

Context:

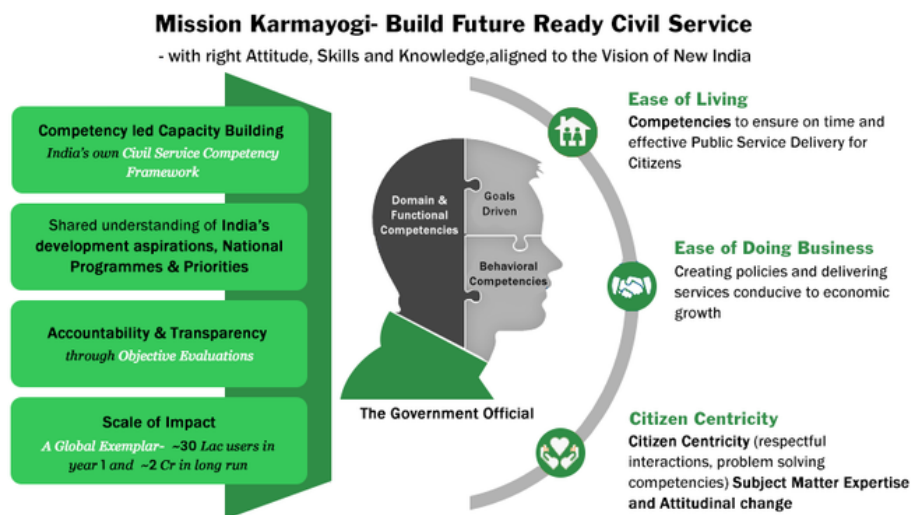
- The **Houthi rebels hijacked the India-bound cargo ship Galaxy Leader** in the **Red Sea**, claiming it was **Israeli**. However, the **Israeli government denied the claim**, stating the ship is owned by a **British company** and operated by a **Japanese firm**.
- The **incident marks an escalation in the Houthi threat against global maritime shipping**, following their earlier failed missile attacks targeting Israel.

Houthi rebels are a **Shiite Muslim insurgent group based in Yemen**. The Houthis take their name from their founding leader, **Hussein Badreddin al-Houthi**. They adhere to a branch of Shia Islam **known as Zaidism**

6. KARMAYOGI PRARAMBH

Context:

- **Karmayogi Bharat**, launched last year, celebrated the first anniversary of **Karmayogi Prarambh**, an **online orientation program on the iGOT Karmayogi Platform** for government **appointees recruited through Rozgar Melas**.
- The program, consisting of **eight curated courses**, aims to help new government employees **acclimatize to policies and transition smoothly into their roles**.
- The **iGOT Karmayogi platform** is a **comprehensive online learning portal for capacity-building** among government officials, with **over 26 lakh learners currently registered and access to 815+ courses**.
- The Karmayogi Prarambh courses cover topics such as **Code of Conduct for Government Employees**, **Prevention of Sexual Harassment of Women in the Workplace**, **Understanding Motivation**, **Self-Leadership**, **Stress Management**, **Effective Communication**, **MS Word for Beginners**, and **MS Excel for Beginners**.



7. ELECTORAL TRUSTS (ET) SCHEME

Context:

- Prior to the Electoral Bond Scheme, the Electoral Trusts (ET) Scheme, established by the UPA government in 2013, regulated corporate and individual donations to political parties, emphasizing transparency.

Electoral Trusts (ET) Scheme:

- Introduced in 2013.
- Open to companies **registered under Section 25 of the Companies Act, 1956**, and individuals or entities residing in India.
- Trusts must renew their registration **every three financial years**.
- Mandates that **95% of contributions** received in a financial year must be donated to political parties registered under the **Representation of the People Act, 1951**.
- Electoral Trusts **prioritize transparency** by mandating the reporting of contributors and beneficiaries to the **Election Commission of India**. This differs from the **Electoral Bonds (EB) Scheme**, which permits **anonymous political donations**.

8. ANNAPURNA CERTIFICATE PROGRAMME

Context:

- The Annapurna Certificate Programme, an initiative by the **Indian Council for Cultural Relations (ICCR)**, has recognized six Indian restaurants worldwide for promoting Indian culinary traditions. This annual program acknowledges restaurants contributing to **India's cultural cause** through cuisine on a global scale.
- About ICCR**
- The Indian Council for Cultural Relations (**founded 1950; HQ: New Delhi; founder: Maulana Azad**), is an **autonomous organisation** of the Government of India, involved in India's global cultural relations, through cultural exchange with other countries and their people.

9. NITI AAYOG: SATH-E PROJECT

Context:

NITI Aayog has released a **report on the Sustainable Action for Transforming Human Capital in Education (SATH-E)**

Sustainable Action for Transforming Human Capital in Education (SATH-E)

What is SATH-E Project?	
About	The SATH-E Project, launched by NITI Aayog in 2017 , aims to ensure quality school education and promote socially inclusive, regionally balanced, and sustainable education growth in collaboration with state governments.
Focus Areas	Education and Health
Target	It seeks to identify and build three future 'role model' states in the education sector (Jharkhand, Madhya Pradesh, and Odisha) and transform elementary and secondary school education
Key findings of recent report	India, with five times more schools than China despite similar enrolment, faces a challenge with over 50% of primary schools in many states having fewer than 60 students
Recommendations	There are 2-5 lakh untrained teachers at the primary and upper primary levels, not meeting Right to Education requirements
	Merge small, and low-enrolment schools with nearby ones, etc. E.g., Jharkhand's merger of 4,380 schools saved Rs 400 crore, optimizing resources by reducing teacher and infrastructure needs
	Consider the decentralization of powers to principals, district, and block officers , etc.
	Restructuring (Cadre restructuring) and recruitment of teachers to solve issue of teacher's shortage
	Competency-based assessment reforms
	Focus on Early Childhood Education and multilingual education
Benefits of School Mergers	Consolidation of resources, improvement of Pupil-Teacher Ratio , better infrastructure, enhanced academic environment with e-Learning and co-curricular facilities
Concerns with School Mergers	Violation of Right to Education (RTE) Act, 2009 ; potential increase in dropout rates, especially in tribal belts
State Government's Response	States provides daily allowance , one-time facilitation allowance, and travel allowance as per RTE norms for affected students due to school merger
	District collectors authorized to cancel merger if genuine concerns arise

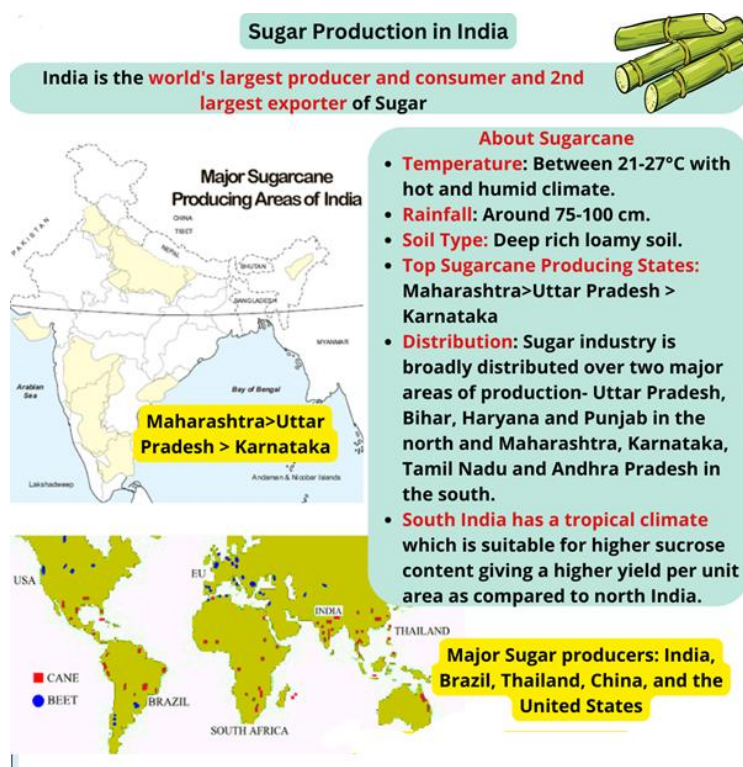
10. INTERNATIONAL SUGAR ORGANISATION (ISO)

Context:

- India has been designated as the **Chair of the International Sugar Organisation (ISO) for 2024**, following the announcement made during the 63rd council meeting held in London.

What is ISO?

- The International Sugar Organization (founded 1968; HQ: London) is an **intergovernmental organization**, which was established by the **International Sugar Agreement of 1968**, as the body responsible for administering the Agreement (aimed at establishing an "orderly relationship between the supply and demand for sugar in the world market."). It has 88 countries as its member (Saudi Arabia joined in 2022)



11. AMPLIFI 2.0 PORTAL

Context:

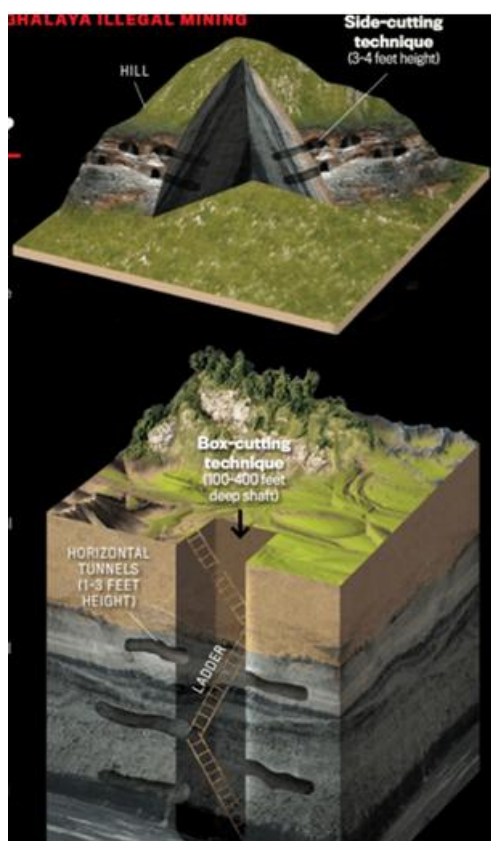
- The **Union Ministry of Housing and Urban Affairs** has launched the **Amplifi 2.0 portal** to **provide raw data from Indian cities on a single platform for academics, researchers, and stakeholders**, aiming to support **data-driven policymaking**.
- The **portal covers diverse information** such as **diesel consumption, water quality testing, healthcare expenditure, slum population, and road accident fatalities**.
- The initiative, **part of the Urban Outcomes Framework 2022**, aims to streamline data across 14 sectors and shift the focus from indices to comprehensive indicators for effective analysis.
- The initiative aims to harness **data for informed urban policy decisions and planning**.

12. RAT HOLE MINING

Context:

- In the rescue operations for the collapsed Silkyara tunnel in Uttarkashi, **rat miners played a crucial role in completing the drilling process**.
- **Rat-hole mining**, a method of **manual drilling common in Meghalaya**, involves skilled workers **digging narrow pits just wide enough for one person**.
- The term **“rat hole”** refers to these pits used to extract coal. This method is hazardous, illegal in many countries due to safety concerns, and **has faced criticism for its environmental impact**.
- Rat-hole mining has faced **criticism for its hazardous conditions**, environmental damage, and accidents leading to injuries and fatalities.
- The **National Green Tribunal (NGT) banned the practice in 2014** and retained the ban in 2015 due to safety concerns and environmental impact.

- Other methods, such as **vertical drilling and auger mining**, were also employed in the rescue operations, highlighting the **diverse techniques used to address complex situations**



13. SUBSURFACE WATER ICE MAPPING (SWIM) PROJECT

Context:

- The **Subsurface Water Ice Mapping Project (SWIM)** has created a map of Mars, indicating **regions where NASA missions** have detected **subsurface water ice**.
- This map is a **valuable resource for scientists to identify potential landing sites** for the first astronauts on Mars.
- **Water ice on Mars is crucial for drinking, rocket fuel, and other purposes**, as the planet's thin atmosphere cannot sustain liquid water.

The **Subsurface Water Ice Mapping (SWIM) project** is a **NASA-funded project** that aims to detect where there's **most likely water ice beneath Martian ground**. The project also aims to locate the **best places to access water ice buried under the Martian**.

The **SWIM project supports NASA's Mars Exploration Program** in identifying the location and nature of **potential water resources on Mars**. Scientists can use the map to decide where the **first astronauts to set foot**.

The **SWIM project uses the High-Resolution Imaging Science Experiment (HiRISE)** to study fresh impact craters. The **fourth comprehensive map of potential subsurface water ice locations on Mars was released**.

14. WHITE HYDROGEN

Context:

- Two scientists in northeastern France discovered a **substantial deposit of “white hydrogen,”** considered one of the largest concentrations of this clean energy source ever found.

What is White Hydrogen?

- White hydrogen is a **clean-burning energy source found naturally in the Earth’s crust.** It is Natural hydrogen and is found as **naturally occurring molecular hydrogen** on or on Earth. The name white hydrogen distinguishes it from **green hydrogen** (produced from renewable energy sources from the electrolysis of water), and from **grey, brown or black hydrogen,** (which is obtained from fossil sources)

Significance:

- White hydrogen is seen as a **potentially abundant and untapped source** of clean-burning energy.
- White hydrogen’s estimated cost is around \$1 per kilogram,** significantly lower than green hydrogen, which costs about **\$6 per kilogram,** making it a more affordable clean energy source.
- White hydrogen **deposits have been identified worldwide** including in the US, eastern Europe, Russia, Australia, Oman, France, and Mali.

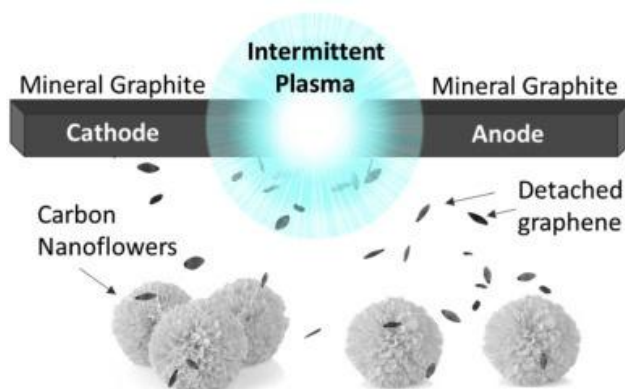
15. CARBON NANOFLORETS

Context:

- Researchers at the **Indian Institute of Technology (IIT) Bombay** have created **carbon nanoflorets** that can **efficiently convert sunlight into heat.**

What are Carbon nanoflorets?

- Carbon nanoflorets are a **unique nanostructure composed of carbon atoms arranged in a distinctive floret-like morphology.** They have a high surface area and various potential applications in fields such as materials science, electronics, and nanotechnology due to their exceptional properties and structure.
- These **nanoflorets can absorb light at multiple frequencies, including infrared, visible light, and ultra-violet, making them highly efficient at converting sunlight into thermal energy.**
- Additionally, their **unique shape ensures minimal light reflection and efficient heat retention.**
- A **1-square-meter coating of these nanoflorets can vaporize 5 litres of water in an hour,** surpassing commercial solar stills. \It can provide **ecologically sustainable heating and has potential uses in various sectors, including construction and healthcare.**



16. WILDLIFE SANCTUARIES IN NEWS

Wildlife Sanctuaries in News

A wildlife sanctuary safeguards animal habitats, prohibiting harm like capturing, killing, and poaching.

Name	Description
Rajaji Tiger Reserve Conservation Foundation	Establishment approved by the Uttarakhand government. Aims to promote ecological, economic, social, and cultural development in and around Rajaji Tiger Reserve. Objectives include protecting the natural environment, providing alternative livelihood opportunities for local communities, fostering eco-tourism, and addressing human-wildlife conflicts.
About Rajaji Tiger Reserve	Located in the Shivalik range of the Himalayas. Spans three districts: Haridwar, Dehradun, and Pauri Garhwal . - Named after the freedom fighter Rajagopalachari. Known for its elephant habitat. Unique location in a transition zone between temperate western Himalayas and central Himalayas, enhancing species diversity. Dominated by Sal trees (Shorea Robusta) .
Gundla Brahmeswaram Wildlife Sanctuary	Over 50 grass species were recently identified recently in the sanctuary. Located in the Kurnool district of Andhra Pradesh . Spreads over the Nallamallai hill range . Derived its name from the Gundla Brahmeshwaram plateau . The northern part forms a significant portion of the southern boundary of the Nagarjuna Sagar-Srisailem Tiger Reserve .
Mhadei Wildlife Sanctuary (MWS)	SC has directed the Goa government to notify a tiger reserve in Mhadei Wildlife Sanctuary and its contiguous areas, within three months. The tiger reserve was recommended by NTCA based on the presence of tigers and habitat potential. MWS is part of the Mhadei River basin and an International Bird Area . Sacred grove Nirankarachi is dominated by unique and endangered plant species Myristica malabarica .
Debrigarh Wildlife Sanctuary	Elusive wild dogs (Dholes) spotted in Odisha's Debrigarh Wildlife Sanctuary . Dholes play a crucial role as apex predators in forest ecosystems. Mainly found in India, Nepal, Bhutan, and Thailand. Endangered status according to IUCN. Protected under Schedule II of the Wildlife Protection Act 1972. Conservation initiatives include Dhole conservation breeding programs . The sanctuary is located between the Hirakud Dam and Reservoir in Odisha and is known for noted freedom fighter Veer Surendra Sai .

17. ENVIRONMENTAL DNA

Context:

- Researchers at the **Laboratory for the Conservation of Endangered Species (LaCONES)**, a part of the **CSIR-Centre for Cellular and Molecular Biology (CCMB)** have developed a novel method for detecting **all life forms** in an ecosystem using **environmental DNA (eDNA)**.
- This innovative approach **involves collecting water, soil, or air samples** and **then sequencing the DNA fragments** found in these samples to assess the total biodiversity of the ecosystem.
- It can identify a wide range of **organisms, including viruses, bacteria, archaea, fungi, plants, insects, birds, fish, and other animals**.
- This **non-invasive technique** is **cost-effective, fast,**
- **and scalable for monitoring and conserving biodiversity in both freshwater and marine ecosystems**.
- Traditional biodiversity assessment methods are limited in their ability to account for **all organisms and are expensive, labor-intensive, and time-consuming**.
- This approach offers a promising way to **comprehensively monitor and conserve ecosystems without the need for extensive taxonomic expertise and direct capture or species counting**.

18. PROJECT KUSHA

Context:

- India is **embarking on Project Kusha**, a mission **designed to enhance its air defence capabilities with a system rivalling the effectiveness of the renowned S-400**.
- It includes the **acquisition of three long-range Interceptor missiles with ranges of 150km, 250km, and 350km**, ensuring **comprehensive protection against aerial threats**.
- These missiles have a **high single-shot kill probability of at least 85%** and can **increase this to 98.5%** when two different missiles are launched sequentially with a short gap.

About S-400 Triumph:

The **S-400 Triumph** is a **mobile surface-to-air missile (SAM) system developed by Russia**.

The **S-400** is **capable of intercepting and destroying various aerial targets**, such as aircraft, drones, cruise missiles, and ballistic missiles.

It has an **operational range of up to 400 kilometres** and a **surveillance range of up to 600 kilometres**. It can engage targets up to an altitude of **30 kilometers** flying at a speed of **17,000 kilometers per hour or around 13 Mach – 13 times the speed of sound**.

The **S-400** is **considered one of the world's most advanced air defence systems** that can **simultaneously track and neutralize a range of incoming aerial threats**.

19. NATIONAL ORGAN AND TISSUE TRANSPLANT ORGANISATION (NOTTO)

Context:

- The National Organ and Tissue Transplant Organisation (NOTTO) data reveals that between 1995 and 2021, **four out of five organ recipients in India were men**, highlighting a significant gender disparity in healthcare-seeking behavior.

What does the Data Show?

- The data suggests a disproportionately **low number of women undergoing transplants**, raising concerns about awareness and access to treatment for women in need.
- While studies show **higher numbers of women donors**, gender bias persists in both recipients and donors.

About National Organ and Tissue Transplant Organisation:

- NOTTO operates under the **Directorate General of Health Services, Ministry of Health and Family Welfare**, in New Delhi. It **oversees organ procurement, allotment, distribution, and registry of organs and tissue donation and transplantation in India**.

About Organ Donation in India:

- Despite being the **world's second-largest in transplants in 2019**, India lags behind Western nations in donation rates due to factors like **low public awareness, religious beliefs, and strict laws**.
- The **Transplantation of Human Organs and Tissues Act, 1994** regulates organ donation in India, allowing **both deceased and living donors**. Brain death is recognized as a form of death. The government launched the **National Organ Transplant Programme in 2019** to promote deceased organ donation. Other law regulating transplantation in India is the **Transplantation of Human Organs Act (THOA), 1994**.

20. SEA BUCKTHORN

Context:

- **Ladakh has secured its fourth Geographical Indication (GI) tag**, this time for “**Ladakh Sea Buckthorn.**”
- **Sea Buckthorn is a highly profitable crop in Ladakh**, with 90% of its production coming from the region.

About Sea buckthorn:

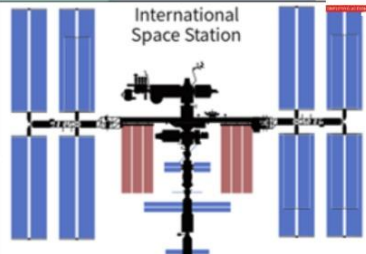
- A **shrub** which produces an **orange-yellow coloured edible berry**.
- In **India**, it is found **in the Himalayan region**, generally in dry areas such as the **cold deserts of Ladakh and Spiti**.
- The Sea Buckthorn Plantation has many **Ecological, Medicinal and Economical benefits**.



21. ISS MARKED ITS 25TH ANNIVERSARY

Context:

The Expedition 70 crew on the **International Space Station (ISS)** focused on space biology and Dragon spacecraft activities as the **ISS marked its 25th anniversary**

ISS marked its 25th anniversary		
What is the ISS? 	The ISS is a complex international scientific and engineering project, the largest human-made structure in space, serving as a laboratory for new technologies and an observation platform for various research.	
Orbit 	It orbits Earth at an average altitude of 400 kilometres and circles the globe every 90 minutes at a speed of 28,000 kph.	
Construction and Components	The ISS was constructed piece by piece in orbit (first module, Zarya, launched in 1998). It was built by five space agencies representing 15 countries, including NASA (USA), Roscosmos (Russia), JAXA (Japan), Canadian Space Agency, and the European Space Agency.	
Size	ISS weighs almost 400 tonnes and covers an area as big as a football pitch.	
Russia's Role in Maintaining ISS	Russia is responsible for making course corrections to the station's orbit, ensuring it avoids space debris, and facilitates the transport of astronauts to and from the ISS. Last year Russia withdrew its support from ISS, as US sanctioned Russian invasion on Ukraine	
Importance	ISS allow crew members to do research in critical fields such as fluids, combustion, Microgravity Research, life support systems and radiation environment, which is needed for future human space exploration	
Notable Success	Medical Discoveries: Research on the ISS has led to the advancements in osteoporosis treatments and understanding muscle atrophy Technological Advancements: The construction of the ISS have led to technological advancements in space exploration, robotics, and life support systems.	
Mission Life	ISS is expected to operate until 2030. NASA plans to decommission it in 2031	
China's mission	Tiangong space station is China's permanently crewed space station (launched in 2021) and operated by China Manned Space Agency in low Earth orbit between 340 and 450 km above the surface.	
India's Mission	India plans to have its own space station by 2035, weighing 20 tonnes and serving as a facility where astronauts can stay for 15-20 days, and would be placed in an orbit 400 km above earth	

22. MUSIC FROG

Context:

- Scientists have identified a **new species of 'music frog,'** named **Nidirana noadihing**, in **Arunachal Pradesh**.
- This unique discovery is marked by the **distinct feature that both male and female frogs are vocal**.
- The frogs **emit a distinctive call pattern** consisting of **two to three notes**, resembling the sounds of **wild duck species**.
- The male frogs, characterized by their robust bodies, **were observed calling loudly in various locations, including marshy areas**, the edges of a newly constructed pond, and along a nearby road.
- The frog is named after the Noa-Dihing River** where it was found.
- The findings confirm the presence of the **Nidirana genus** in India for the first time, **with previous known occurrences in Japan, Taiwan, China, Vietnam, Laos, and Thailand**.



23. NASA'S PSYCHE SPACECRAFT

Context:

- NASA's Psyche spacecraft, en route to a **metal-rich asteroid**, is pioneering **Deep Space Optical Communications (DSOC)** using **near-infrared laser signals** for high-bandwidth communication.

What is Deep Space Optical Communication (DSOC) and how it is different from traditional radio wave communication?

- Deep Space Optical Communication (DSOC) is a pioneering technology used in space communication that **utilizes near-infrared laser signals** instead of **traditional radio waves**. Unlike radio waves, DSOC enables **higher bandwidths**, allowing for data rates at least **10 times higher than current radio systems**.

Working?

- DSOC encodes **data in photons at near-infrared wavelengths** (rather than radio waves) to communicate between a probe in deep space and Earth. **Using light instead of radio** allows the spacecraft to communicate more data in a given amount of time.
- DSOC achieves **precise pointing through the use of near-infrared lasers**, isolation from spacecraft vibrations, and adaptive systems to compensate for changing positions, making it a revolutionary approach for deep space missions.

Significance:

- This DSOC advancement is crucial for communicating with spacecraft over long distances (like human exploration of Mars), offering **benefits such as higher resolution images**, increased data transfer rates, and the potential for streaming video.

24. BLETCHLEY DECLARATION

Context:

- Bletchley Park**, the historic site known for its **crucial role in World War II**, is hosting the **world's first global summit on artificial intelligence (AI) safety in 2023**.
- Britain, along with 28 other countries** and the **European Union**, published the **"Bletchley Declaration"** at Bletchley Park, England.

The focus of the Bletchley Declaration:

- This declaration aims to **enhance global collaboration on artificial intelligence (AI) safety**. It has a **two-fold focus**: identifying shared AI-related risks and enhancing scientific understanding of these risks, as well as creating cross-country policies to address them.

About Bletchley Declaration

Aspect	Details
Recognition of AI Potential	Acknowledges AI's potential to enhance human well-being.
Risks Associated with AI	Recognizes the risks posed by AI, including Frontier AI (highly capable foundation generative AI models)

Nature of Risks	Highlights that substantial risks may arise from potential intentional misuse or unintended control issues related to alignment with human intent. The complexity of these capabilities makes prediction difficult.
International Cooperation	Emphasizes the need for international cooperation to address AI-related risks, as they are inherently global.
Collaborative Approach	States that all actors, including companies, civil society, and academia, must collaborate to address these risks.
Mitigation Agenda	Outlines the agenda for risk mitigation , which will focus on building a shared scientific understanding and developing risk-based policies that span across countries

Historical Importance of Bletchley Park:

- During the war, **Bletchley Park played a pivotal role in breaking the ‘unbreakable’ Enigma code, which was used by the Nazis.**
- The site is also known for **creating the Turing Bombe, a device that expedited code-breaking efforts.**
- **Bletchley Park contributed to the development of the Colossus, often considered the world’s first programmable electronic computer**

25. GREEN ALGA PICOCYSTIS SALINARUM

Context:

- A young researcher in Rajasthan has unravelled the **molecular mechanisms behind the resilience of the green alga Picocystis Salinarum** in extreme conditions of saline-alkaline soda lakes.

What is Alga?

- Alga is a **simple, photosynthetic organism, often aquatic**, ranging from microscopic to large seaweeds.

What is Picocystis Salinarum?

- Picocystis salinarum is a globally widespread **extremophile** (able to withstand extreme conditions), picoplanktonic green algae that inhabits **saline lakes**. It’s one of the **smallest green algae** and has been recorded on four continents. It was spotted for the **first time in India only in the Sambhar Lake**.

Significance:

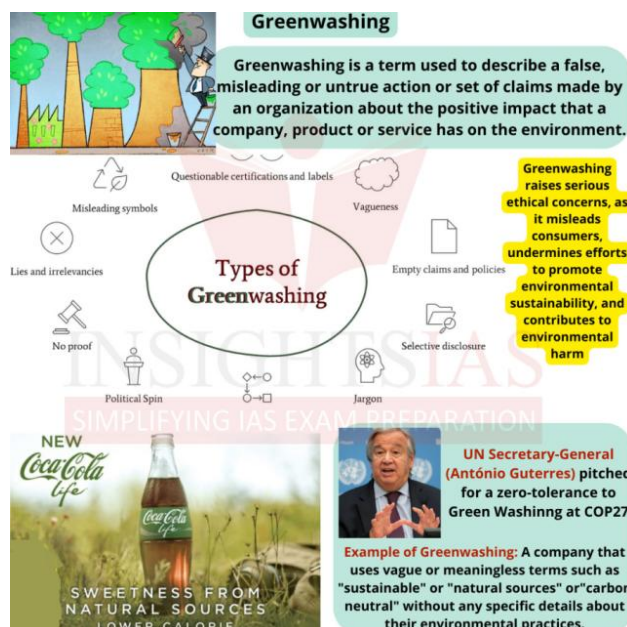
- This discovery positions P. salinarum as a potential candidate for biotechnological applications, including **carbon capture and biomass production**. The research also helps us in our **understanding of molecular adaptations in extremophiles** for sustainable biotechnological processes

26. GREENWASHING

Context:

- The **Advertising Standards Council of India (ASCI)**, the advertising industry’s self-regulatory body, has introduced a **9-point draft of guidelines to combat “green washing”** by companies.

What is Green washing?



About the Guidelines:

1. Environmental claims like “environment-friendly,” “eco-friendly,” “sustainable,” and “planet-friendly” must have **strong evidence** to support them.
2. Such claims should **consider the full life cycle of the product or service**.
3. **Certifications and Seals of Approval** should specify the evaluated attributes.
4. Assertions about a product being **compostable, biodegradable, recyclable, non-toxic, or free of certain elements** should be grounded in reliable scientific evidence.

Aim of the Guidelines:

- The proposed guidelines aim to **promote transparency and authenticity in advertising** to help consumers make informed decisions. The public consultation on these guidelines is open until December 31.

Initiatives to check Green washing:

1. **International Sustainability Standards Board (ISSB)**, will set uniform sustainability and climate standards for companies to follow worldwide from 2024.
2. SEBI’s Business Responsibility and Sustainability Reporting (BRSR) norms
3. SEBI issued dos and don’ts relating to green bonds.
4. RBI announced to join **Global Financial Innovation Network (GFIN)**’s Green washing Techs print.

About ASCI:

The Advertising Standards Council of India (est. 1985; HQ: Mumbai) is a **voluntary self-regulatory organization** of the advertising industry in India. ASCI is registered as a non-profit company under section 25 of the Company Act.

27. FIBRE OPTIC CABLES

Context:

- The **importance of fibre optics** has been increasing in recent times, especially **during the COVID-19 pandemic when internet connections facilitated virtual communication**.

- **Optical fibres**, made of **thin glass strands**, can transmit various **forms of digital information**, such as **text, images, voices, and videos**, across long distances at **nearly the speed of light**.
- The development of **fibre optic communication** can be traced back to **physicist Charles Kao**, who **proposed glass fibres as a superior medium for telecommunication over 60 years ago**.

Working principle of optical fibres:

- It relies on **total internal reflection to guide light through the glass strands**, allowing signals to travel across significant distances with **minimal loss of optical power**.
- The **historical evolution of fibre optic cables** is outlined, starting from early experiments with **light guiding in the 19th century** to the **breakthroughs in the mid-20th century** that led to the **development of long-distance transmission**.
- The current state of fibre optic technology is highlighted, with **optical fibres playing crucial roles in telecommunication, medical science, laser technology, and sensing**.

28. INDIAN OCEAN TUNA COMMISSION

Context:

- The Working Party on Data Collection and Statistics (**WPDCS19**) of the **Indian Ocean Tuna Commission (IOTC)** has commenced in Mumbai, organized by the **Department of Fisheries, Ministry of Fisheries, Animal Husbandry & Dairying, Government of India**.
- **Tunas and other large pelagic species**, such as **billfishes, sharks, and rays**, have significant economic importance, with tunas alone contributing an estimated **annual trade value of US\$41 billion in 2018**.

About Tuna

- Tuna refers to a **group of saltwater fish** belonging to the **Thunnini tribe**. These fish are known for **their streamlined bodies, powerful swimming ability, and wide distribution in warm seas**.
- Tuna is highly valued in the global fishing industry for its meat, which is commonly used in various cuisines, especially in the **form of sushi and sashimi**. Some well-known species of tuna include the **Atlantic bluefin tuna, yellowfin tuna, and skipjack tuna**.

29. WALKING PNEUMONIA

Context:

- **China is facing an unusual surge in pneumonia cases**, particularly among children, raising global concerns.
- The surge is attributed to factors like the lifting of COVID-19 restrictions and the circulation of known pathogens like **influenza, mycoplasma pneumonia, respiratory syncytial virus (RSV), and SARS-CoV-2**.

About Pneumonia:

- The pneumonia caused by **mycoplasma pneumoniae**, often termed “**walking pneumonia**,” is a **mild form of the infection**. It is characterized by mild **respiratory symptoms**, and the bacteria can cause more **serious lung infections in some cases**.

How it spreads?

- *Mycoplasma pneumoniae* **spreads through respiratory droplets** when an infected person coughs or sneezes. Common symptoms include **sneezing, a runny or stuffy nose, sore throat, watery eyes, wheezing, vomiting, and diarrhoea.**
- Groups at higher risk of severe infection **include children, the elderly, and those with weakened lungs.**
- Preventive measures recommended by WHO include **vaccination, maintaining distance from ill individuals, staying home when unwell, testing and seeking medical care, wearing masks as appropriate, ensuring good ventilation, and practicing regular hand-washing.**

30. BEN GURION CANAL PROJECT

Context:

- The current Israel-Palestine crisis in the Middle East has refocused attention on the **ambitious Ben Gurion Canal Project.**

What Ben Gurion Canal Project?

- The Ben Gurion Canal Project is a **theoretical proposal to cut a canal through Israel's Negev Desert,** creating an **alternative route to the Suez Canal.** Envisioned in the 1960s, it aimed to **challenge Egypt's monopoly** on the shortest trade route between Europe and Asia.
- However, the project faces immense challenges, including **logistical complexities, high costs, a longer route, and security concerns** in a region marked by ongoing military threats.

What is the Suez Canal?

- It is an **artificial sea-level waterway** in Egypt (completed in 1859), connecting the Mediterranean Sea to the Red Sea through the **Isthmus of Suez** and dividing Africa and Asia. The 193 km long canal is a key trade route between Europe and Asia.



Who was Ben Gurion?

David Ben-Gurion (1886–1973) was Israel's **founding father** and its first Prime Minister. He played a pivotal role in establishing the state of Israel in 1948

31. MOUNT ETNA

Context:

- Mount Etna, **Europe's most active volcano**, has been erupting for over a year, causing disruptions such as flight cancellations and vehicle bans due to ash accumulation.

About Mount Etna

- It is an **active stratovolcano** on the east coast of Sicily, Italy, in the Metropolitan City of Catania and the **highest Mediterranean island mountain**. It is located above the **convergent plate margin between the African Plate and the Eurasian Plate**. Mount Etna, with a recorded history of volcanic activity **dating back to 1500 B.C.**, has erupted over 200 times.



List of some of the most active volcanoes on Earth:

Volcano	Location	Notable Characteristics
Mount Etna	Italy	Highest Mediterranean Island Mountain, continuous eruptions
Kilauea	Hawaii, USA	Long-term eruptions, ongoing since 1983
Mauna Loa	Hawaii, USA	One of the largest shield volcanoes, last erupted in 1984
Merapi	Indonesia	Frequent and highly explosive eruptions
Eyjafjallajökull	Iceland	Disrupted air travel in 2010 with ash clouds
Fagradalsfjall	Iceland	Ongoing eruptions attracted attention with recent activity
Dukono	Indonesia	Long-term eruption since August 1933
Santa Maria	Guatemala	Erupting since June 1922, one of the most active in Central America
Yasur	Vanuatu	Erupting since about 1270 ($\pm$ 110 years), ongoing