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CURRENT AFFAIRS

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AMRIT UDYAN

In News:

The iconic Mughal Gardens at the Rashtrapati Bhavan (President's House) in Delhi have been renamed. The collective identity of all the gardens at Rashtrapati Bhavan will be 'Amrit Udyan'. Earlier there were descriptive identities, now a new identity has been given to the gardens.

Analysis of Background:

History of Mughal Gardens:

- The Mughals were known to appreciate gardens.
- In *Babur Nama*, Babur says that his favourite kind of garden is the Persian *charbagh* style (literally, four gardens). The *charbagh* structure was intended to create a representation of an earthly utopia – jannat – in which humans co-exist in perfect harmony with all elements of nature.
- Defined by its rectilinear layouts, divided in four equal sections, these gardens can be found across lands previously ruled by the Mughals. From the gardens surrounding Humanyun's Tombin Delhi to the Nishat Bagh in Srinagar, all are built in this style – giving them the moniker of Mughal Gardens.
- A defining feature of these gardens is the use of waterways, often to demarcate the various quadrants of the garden. These were not only crucial to maintain the flora of the garden, they also were an important part of its aesthetic. Fountains were often built, symbolising the "cycle of life."
- In 1911, the British decided to shift the Indian capital from Calcutta to Delh This would be a mammoth exercise, involving construction of a whole new city – New Delhi – that would be built as the British Crown's seat of power in its most valuable colony.
- About 4,000 acres of land was acquired to construct the Viceroy's House with Sir Edwin Lutyens being given the task of designing the building on Raisina Hill. Lutyens' designs combined elements of classical European architecture with Indian styles, producing a unique aesthetic that defines Lutyens' Delhi till date.
- While initial plans involved creating a garden with traditional British sensibilities in mind, Lady Hardinge, the wife of the then Viceroy, urged planners to create a Mughal-style garden.
- It is said that she was inspired by the book Gardens of the Great Mughals (1913) by Constance Villiers-Stuart as well as her visits to Mughal gardens in Lahore and Srinagar.

RAJAMATA JIJAU

In News:

The Prime Minister, Shri Narendra Modi has paid tributes to Rajmata Jijau on her Jayanti and said that her name will always be a part of our history for mentoring a great person like Chhatrapati Shivaji Maharaj.

Analysis of Background:

- Jijabai Bhonsle, referred to as Rajmata, Rastramata, Jijabai or Jijau, was the mother of Shivaji, the founder of the Maratha Empire.
- She was the daughter of Lakhujirao Jadhav of Sindkhed Raja.
- About Shivaji Maharaj:
- Shivaji Bhonsale I, also referred to as Chhatrapati Shivaji, was an Indian ruler and a member of the Bhonsle Maratha clan.
- Shivaji carved out an enclave from the declining Adilshahi sultanate of Bijapur that formed the genesis of the Maratha Empire.
- In 1674, he was formally crowned the Chhatrapati of his realm at Raigad Fort.
- He established a competent and progressive civil rule with well-structured administrative organizations.
- He revived ancient Hindu political traditions, and court conventions and promoted the usage of the Marathi and Sanskrit languages, replacing Persian in court and administration.
- The Council of Eight Ministers, or Ashta Pradhan Mandal, was an administrative and advisory council set up by Shivaji.

SWAMI VIVEKANANDA

In News:

January 12 this year marks the 161st birth anniversary of Swami Vivekananda, observed as National Youth Day.

Analysis of Background:

- Disciple of: Ramakrishna Paramhansa
- Founder of: Ramakrishna Mission (1897), Ramakrishna Math, Vedanta Society of New York
- Philosophy: Advaita Vedanta
- Literary works: Raja Yoga (1896), Karma Yoga (1896), Bhakti Yoga (1896), Jnana Yoga, My Master (1901), Lectures from Colombo to Almora (1897)

- He was responsible for the revival of Hindu spiritualism and established Hinduism as a revered religion on world stage.
- His message of universal brotherhood and self-awakening remains relevant especially in the current backdrop of widespread political turmoil around the world.
- The Ramakrishna Mission undertook various forms of social service like establishing and running schools, collages and hospitals, propagation of practical tenets of Vedanta through conferences, seminars and workshops, and initiating relief and rehabilitation work across the country.
- He introduced Hinduism at the Parliament of the World's Religions in Chicago in 1893.
- He harmonized the East and the West, religion and science, past and present.
- He believed that working for social change requires energy and spirit.
- Hence, he asked the youth to work on both - mental energy and physical fitness.
- What Vivekananda wanted from the youth was 'muscles of iron' and 'nerves of steel'. He advised the youth to 'Serve God in man'.
- Swami Vivekananda suggested to rebuild the Indian society, education was the primary means for empowering the people.
- Vivekananda called for a nationwide renovation with the ideals of 'tyaga' or sacrifice and 'seva' or selfless service, the most imperative aspects of shaping the life of young people.
- Swami made the point that this way of life is what can be called a 'spiritual pursuit'.
- His vision of India was that of a transformed society inspired by dignity, freedom and individuality and rooted in strength, love and service.

- Vedantic Humanism: Swami Vivekananda believed that there is only one Self in the universe. There is only one Existence. He saw the entire universe as a manifestation of the absolute One. He did not propagate a world-negating concept of spirituality, rather he said that each and every chore of your life should be done with divinity.
- Divinity within ourselves:“Infinite power is in the soul of man, whether he knows it or not. Its manifestation is only a question of being conscious of it. With the full consciousness of his infinite power and wisdom, the giant will rise to his feet.”

Karma Yoga, Bhakti Yoga, Raja Yoga:

Swami Vivekananda talked about the four pathways of attaining moksha from worldly pleasure and attachment in his books.

- *Karma Yoga:* Swami Vivekananda, emphasizing the importance of work, said that God can be attained through work.

- *Bhakti Yoga:* Bhakti Yoga teaches that love is a vital element of all human beings. It teaches how to love bereft of any ulterior motives.
- *Raja Yoga:* Raja Yoga opens up the psychological way to union with God. This Yoga teaches that in order to acquire knowledge, we'd have to use a method called concentration.
- *Faith in oneself:* He emphasizes that the ideal of faith in ourselves is of the greatest help to us as whatever "you think, that you will be. If you think yourselves weak, weak you will be; if you think yourselves strong, strong you will be."

RANI VELU NACHIYAR

In News:

Prime Minister, Shri Narendra Modi has paid tributes to Rani Velu Nachiyar on her birth anniversary.

Analysis of Background:

- Rani Velu Nachiyar was a queen of Sivaganga estatefrom c. 1780–1790.
- She was the first Indian queen to wage war with the East India Company in India.
- She is known by Tamils as Veeramangai ("brave woman").
- During this period, she formed an army and sought an alliance with Hyder Ali with the aim of launching a campaign against the East India Company in 1780.
    - Acquired Skills: She was trained in war match weapons usage, martial arts like Valari, Silambam (fighting using the stick), horse riding and archery.
    - She was a scholar in many languages and she had proficiency with languages like French, English and Urdu.
    - War against the British: In collaboration with Hyder Ali and Gopala Nayaker, she waged a war against the British and emerged victoriously.

TOPIC: HISTORY

SAVITRIBAI PHULE

In News:

Recently, The Prime Minister has paid homage to Savitribai Phule on her birth anniversary.

Analysis of Background:

- Savitribai Phule, the social reformer who is considered to be one of India's first modern feminists, was born on January 3, 1831.
- Phule was born in Naigaon, Maharashtra in 1831 and married activist and social-reformer Jyotirao Phule when she was nine years old.
- After marriage, with her husband's support, Phule learned to read and write and both of them eventually went on to found India's first school for girls called Bhide Wada in Pune in 1948.
- Before this, she started a school with Jyotirao's cousin Saganbai in Maharwada in 1847.
- Both Jyotirao and Savitribai Phule recognised that education was one of the central planks through which women and the depressed classes could become empowered and hope to stand on an equal footing with the rest of the society.
- By 1851, Phule had set up three schools and was the teacher of 150 students. She would go on to established 17 schools in the country and although most of them were for upper-caste women, she and her husband set up schools for Dalit and lower-caste women as well. Phule encouraged women to attend school by offering them stipends.
- Women's education was not the only thing Phule wanted Indians to take up.
- She also fought against social injustices of the time like Sati, child marriage and the still prevalent caste system and was also one of the first advocates for women's rights in the country.
- She opened a well for 'untouchables' at her residence in a defiant act against the caste system and also started a care centre for pregnant rape victims called 'Balhatya Pratibandhak Griha'.
- Phule also set up a 'Mahila Seva Mandal' where women would gather and she would raise awareness about women's rights.
- Apart from being a pioneer of Indian feminism, Phule was a plague warrior. She helped several people when the bubonic plague hit the world, opening up a clinic with her son, Yashwant, in 1897 to help patients. The plague ended up being the reason of her demise as she passed away on March 10, 1897.

SC BOSE

In News:

The Prime Minister, Shri Narendra Modi has paid homage to Netaji Subhas Chandra Bose on Parakram Diwas.

Analysis of Background:

About Subhash Chandra Bose:

- Subhas Chandra Bose, who was born on 23 January 1897, was an Indian nationalist whose defiance of British authority in India made him an icon among millions of Indians.
- Born in Odisha's Cuttack district, he spent his childhood in a privileged large Bengali family, where he garnered his early education from an Anglocentric institution.
- Later, the "energetic child" took his higher education from Ravenshaw University, formerly known as Ravenshaw college.
- After completing higher education in India, his parents Prabhavati Dutt Bose and Janakinath Bose, allowed him to go to England to prepare for the Indian Civil Service examinations.

ICS Exam:

- Bose succeeded with distinction in his first attempt.
- However, he did not proceed with another round of examinations in order to campaign against the British Raj in India and returned to India.
- In 1921, he joined Indian National Congress and Mahatma Gandhi to lead the nationalist movement against British rule.
- During this, he had staunchly followed the principal leader of the Indian nationalist movement in the 1930s and 1940s, Jawaharlal Nehru.
- Later, at the age of 40, Bose became Congress president in 1938.

Conflict with Mahatama Gandhi:

- According to historians, the ideas of Mahatama Gandhi and Bose had never intersected with each other.
- Bose, who had the backing of several Congress leaders to snatch freedom in a violent way, Gandhi, on several occasions, asked him to negotiate with the Britishers using the path of non-violence.
- However, a large majority of the Congress Working Committee members resigned in protest. Also, this resulted in the resignation of Bose from the post of party president. Eventually, he was ousted from the party.

Bose charisma in Germany:

- Later, Bose was placed under house arrest by the British. However, in 1941, the ousted leader fled India and made his way to Germany.
- In Germany, Bose sought the sympathy of the Nazi party and their support in fighting the Britishers. He also got enormous support from Japan which was German's ally.
- He headed the Indian National Army (INA), which comprised Indian prisoners of war of the Indian Army who had been captured by the Japanese in the Battle of Singapore.
- His ideas and tactics led the INA forces to conquer the Britishers.
- Eventually, Bose was successful in establishing Free India Radio. In his radio shows, he used to connect to the people in order to motivate them to join the freedom struggle movement.
- His charm and charisma earned him followers who called him 'Netaji.

Netaji mysterious death:

- However, Bose passed away in an aeroplane crash in 1945 in Taiwan.
- Since then, a lot has been written and said about the unfortunate death of Netaji Bose. There have been myriad theories, debates, discussions, movies, and several documentaries about the cause of his death, yet there has so far been no confirmation to any of these theories.

Japanese government report:

- An investigative report by the Japanese government titled "Investigation on the cause of death and other matters of the late Subhas Chandra Bose" was declassified in 2016.
- It concluded that Bose died in a plane crash in Taiwan on 18 August 1945.
- Parakram Diwas-Netaji's indomitable spirit and selfless service:
- In 2021, the Government of India decided to celebrate the 125th Birth Anniversary year of Netaji Subhas Chandra Bose in a befitting manner at the national and international levels.

BHIMA KOREGAON BATTLE

In News:

The 205th anniversary of the Bhima-Koregaon battle passed without incident as lakhs of Ambedkarites from across Maharashtra and the country congregated near the Ranstambh (victory pillar) in Perne village in Pune district under heavy security cover.

Analysis of Background:

- Keeping an ever-vigilant eye to avoid any recrudescence of the violence during the bicentenary celebrations of the battle in 2018, the Pune Rural Police strictly monitored social media, deleting over 100 posts found to contain provocative content with the possible aim of rupturing peace
- The 'Jaystambh' is obelisk in Bhima-Koregaon village commemorates the British East India Company soldiers who fell in a battle on January 1, 1818, where the British, with just 834 infantrymen — about 500 of them from the Mahar community — and 12 officers defeated the 28,000-strong army of Peshwa Bajirao II.
- It was one of the last battles of the Third Anglo-Maratha War, which ended the Peshwa domination.
- While the outcome of the Koregaon-Bhima battle was inconclusive, Babasaheb Ambedkar's visit to the spot on January 1, 1927, revitalised its memory for the Dalit community, making it a rallying point and an assertion of pride.
- The victory was seen as a win against caste-based discrimination and oppression. Peshwas were notorious for their oppression and persecution of Mahar dalits. The victory in the battle over Peshwas gave dalits a moral victory a victory against caste-based discrimination and oppression and sense of identity.

TOPIC: GEOGRAPHY

DOOMSDAY CLOCK

In News:

Atomic scientists reset the "Doomsday Clock", moving its hands to 90 seconds to midnight - closer than ever before to the threat of annihilation.

Analysis of Background:

What is the Doomsday Clock?

- The Doomsday Clock is a symbolic timepiece showing how close the world is to ending. Midnight marks the theoretical point of annihilation.

How is the clock set?

- Atomic Scientists update the time annually based on information regarding catastrophic risks to the planet and humanity.
- A board of scientists and other experts in nuclear technology and climate science, including 13 Nobel Laureates, discuss world events and determine where to place the hands of the clock each year.
- The clock was created in 1947 by a group of atomic scientists, including Albert Einstein, who had worked on the Manhattan Project to develop the world's first nuclear weapons during World War Two.

Reasons behind the recent reset

- Apocalyptic threats could arise from political tensions, weapons, technology, climate change or pandemic illness.
- The hands of the clock are moved closer to or further away from midnight based on the scientists' reading of existential threats at a particular time.

What time is it now?

- At 90 seconds to midnight, the "Doomsday Clock" is now the closest it has ever been to midnight. It is the first time it has moved since it was set at 100 seconds to midnight in 2020.
- Its setting reflects a world in which Russia's invasion of Ukraine has revived fears of nuclear war. The war was largely but not exclusively the reason for the hands moving forward, the scientists said.

POLAR VORTEX

In News:

- Asia has had a really cold month. China's northernmost city, recorded a temperature of minus 53 deg C this week.
- South Asia is having a chilly winter, too. Several Indian states experienced "severe cold wave conditions" in mid-January. Asia's extreme cold is largely the result of the so-called polar vortex.

Analysis of Background:

Polar Vortex:

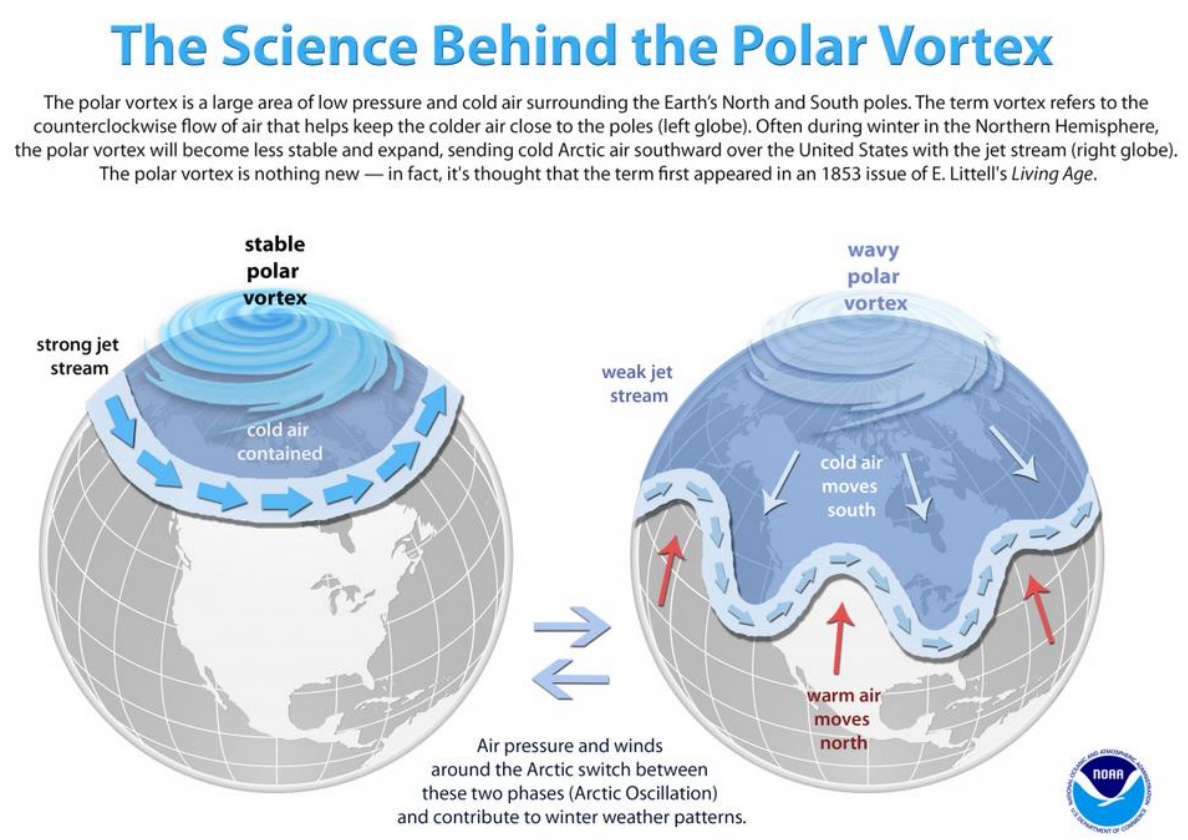
- Polar vortex, is a large region of cold, rotating air that encircles both of Earth's polar regions.
- Polar vortex ALWAYS exists near the poles, but weakens in summer and strengthens in winter.
- The term "vortex" refers to the counter-clockwise flow of air that helps keep the colder air near the Poles.
- Many times, during winter in the northern hemisphere, the polar vortex will expand, sending cold air southward with the jet stream.
- It rotates counter-clockwise at the North Pole and clockwise at the South Pole, i.e., both polar vortices rotate eastward around the poles. The vortices weaken and strengthen from year to year.
- As with other cyclones, their rotation is driven by the Coriolis effect.
- Ozone depletion occurs within the polar vortices – particularly over the Southern Hemisphere – reaching a maximum depletion in the spring.
- The term polar vortex can be used to describe two distinct phenomena; the stratospheric polar vortex, and the tropospheric polar vortex.
- The stratospheric and tropospheric polar vortices both rotate in the direction of the Earth's spin, but they are distinct phenomena that have different sizes, structures, seasonal cycles, and impacts on weather.

Stratospheric Polar Vortex

- The stratospheric polar vortex is an area of high-speed, cyclonicallyrotating winds around 15 km to 50 km high, poleward of 50°, and is strongest in winter.
- It forms in Autumn when Arctic or Antarctic temperatures cool rapidly as the polar night The increased temperature difference between the pole and the tropics causes strong winds and the Coriolis effectcauses the vortex to spin up.

Tropospheric Polar Vortex

- The tropospheric polar vortex is often defined as the area poleward of the tropospheric jet stream.
- The equatorward edge is around 40° to 50°, and it extends from the surface up to around 10 km to 15 km.
- Its yearly cycle differs from the stratospheric vortex because the tropospheric vortex exists all year, but is similar to the stratospheric vortex since it is also strongest in winter when the polar regions are coldest.



UN REPORT ON OZONE HOLE

In News:

The Earth's protective ozone layer is on track to recover within four decades, closing an ozone hole that was first noticed in the 1980s, a United Nations-backed panel of experts announced.

Analysis of Background:

Findings of the United Nations Report:

- Global emissions of the banned chemical chlorofluorocarbon-11, or CFC-11, which was used as a refrigerant and in insulating foams, have declined since 2018 after increasing unexpectedly for several years.

- The report also found that the ozone-depleting chemical chlorine declined 11.5% in the stratosphere since it peaked in 1993, while bromine declined 14.5% since it peaked in 1999.
- If current policies remain in place, the ozone layer is expected to recover to 1980 levels — before the appearance of the ozone hole — by 2040, and will return to normal in the Arctic by 2045. Additionally, Antarctica could experience normal levels by 2066.

BASMATI RICE

In News:

For the first time in the country, Food Safety and Standards Authority of India (FSSAI) has specified the identity standards for Basmati Rice vide Food Safety and Standards (Food Products Standards and Food Additives) First Amendment Regulations, 2023.

Analysis of Background:

Basmati Rice:

- Basmati rice is a premium variety of rice cultivated in the Himalayan foothills of the Indian sub-continent.
- It is universally known for its long grain size, fluffy texture and unique inherent aroma and flavour.
- Due to its unique quality attributes, Basmati is a widely consumed variety of rice both domestically and globally and India accounts for two-thirds of its global supply.

Need for standardization:

- Being a premium quality rice and fetching a price higher than the non-basmati varieties, Basmati rice is prone to various types of adulteration for economic gains which may include, among others, undeclared blending of other non-basmati varieties of rice.
- Therefore, in order to ensure supply of standardized genuine Basmati rice in domestic and export markets, FSSAI has notified regulatory standards for Basmati rice.
- These standards have been framed through extensive consultations with the concerned government departments/agencies and other stakeholders as well.

Standardization:

- The identified standards for Basmati Rice include Brown Basmati Rice, Milled Basmati Rice, Parboiled Brown Basmati Rice and Milled Parboiled Basmati Rice.

- As per these standards, Basmati rice shall possess natural fragrance characteristics of basmati rice and be free from artificial colouring, polishing agents and artificial fragrances.
- These standards also specify various identity and quality parameters for basmati rice such as:
    - average size of grains and their elongation ratio after cooking;
    - maximum limits of moisture,
    - amylose content,
    - uric acid,
    - defective/damaged grains and
    - incidental presence of other non-basmati rice etc.

Significance:

- The standards are aimed at establishing fair practices in the trade of Basmati rice and protect consumer interest, both domestically and globally. These standards will be enforced w.e.f 1st August, 2023.

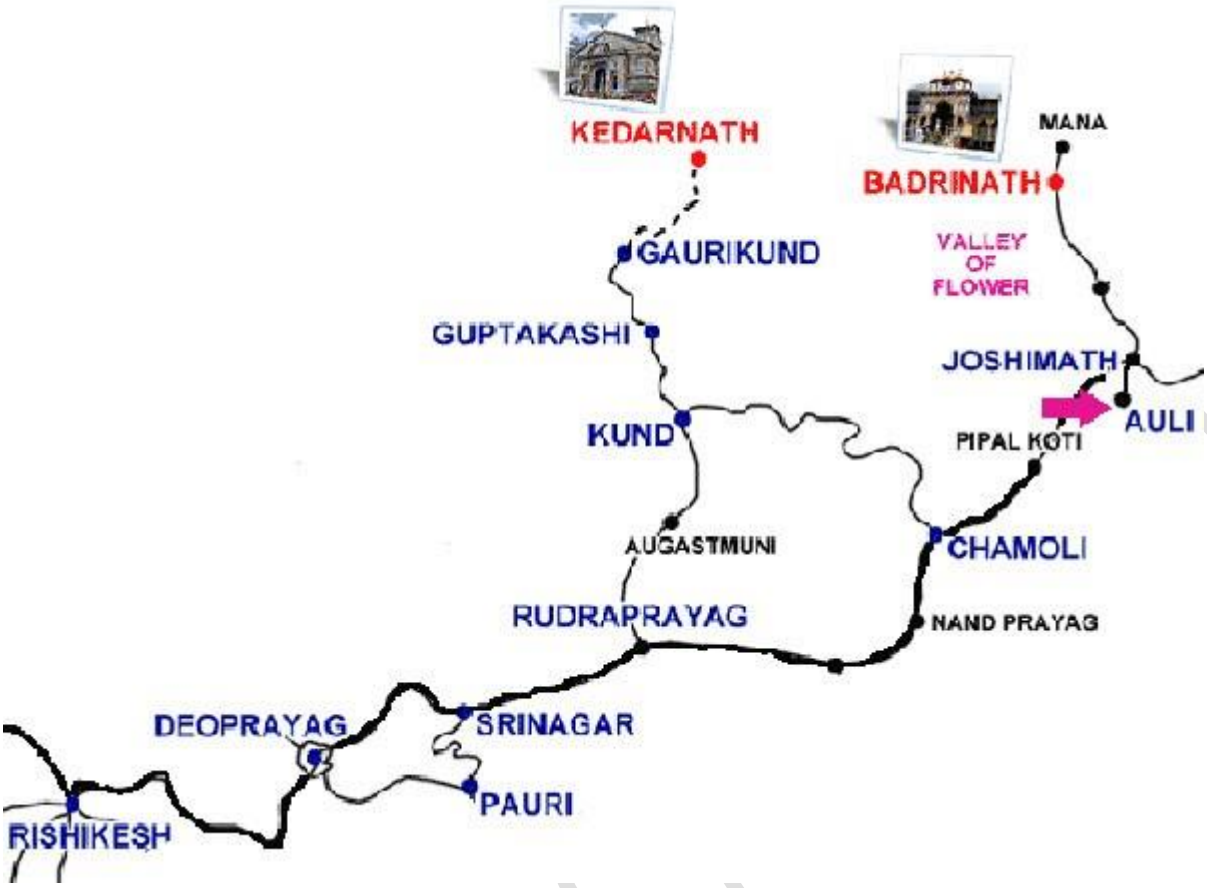
JOSHIMATH

In News

The gateway to Hemkund Sahib and Badrinath, Joshimath has been declared a landslide-subsidence zone. Several houses and more than 600 other buildings developed cracks. Vibrations caused by development work for National Thermal Power Corporation's Tapovan Vishnugad Hydro Power Project, which has been undergoing beneath the town, can

Analysis of Background:

- Joshimath is situated in the Chamoli district in Garhwal, Uttarakhand.
- Located at the height of 6150 feet (1875 m), it is a gateway to several Himalayan mountain climbing expeditions, trekking trails and pilgrim centers like Badrinath.
- It is home to one of the four cardinal *pītha*s established by Adi Shankara.
- Vishnuprayag which is located beneath Joshimath is the confluence of rivers Dhauliganga and Alaknanda.
- The ancient Basdeo temple at Joshimath is attributed to Vasu Dev. Vasu Dev was of Buddhist origin, but later followed the Brahminical practices of Katyuri kings. Between 7th and 11th centuries C.E., Katyuri kings ruled the area.



LIVING ROOT BRIDGES

In News:

A farmer takes forward the State's traditional practice of building root bridges and connects two areas across Umkar river in Cherrapunjee

Analysis of Background:

- Living Root Bridges, found in over 70 villages in Meghalaya highlighting the socio-cultural, social and botanical links among people and nature, have been included in the tentative list of World Heritage Sites of the UNESCO
- Villagers grow the living root bridges by training the 'ficus elastic tree on both sides of water bodies over a period of about 10 to 15 years where the roots form the bridge.
- At present, there are about 100 known living root bridges spread across 72 villages in the state.

About:

- The Living Root Bridges are incredible feats of engineering built by the indigenous people of Meghalaya, a state located in North East India.

- These bridges are built using the living roots of ficus trees (*Ficus elastica*) planted on both sides of a stream and then made to span the width of the river until they meet at the middle.
- These bridges are built by the Khasi and Jaintia tribes that live in the state and can be found mostly along the southern edges of Meghalaya including the villages of Nohwet (Riwai, Mawlynnong), Nongriat, Nongthymmai, Mawkyrnot, Nongblai, Khonglah, Padu, Kudeng Rim, Shnongpdeng and others.
- An interesting highlight about the people of Meghalaya is that they follow a matrilineal system. lineage is passed down through the mother.
- People rely on nature for their daily needs and because of this, the conservation of nature is crucial to them.

Need:

- The Khasi and Jaintia people who reside in the southern parts of the state along the international border with Bangladesh are called the "War" people. Their main occupation is agriculture.
- The War villages are nestled on the hillsides while their agricultural lands are located in the valleys below.
- Most of their villages are only accessible by traversing huge cliffs, valleys, waterfalls, streams and rivers.
- In the past, during monsoons, it was difficult for people to cross many waterways without bridges.
- Attempts to use bamboo or wooden bridges across these waterways proved futile as these bridges could not last long in the heavy rains and strong waters.
- Living root bridges are an innovative and indigenous solution to solve this age-old problem.

Construction:

- The bridges are constructed by planting ficus trees on both sides of the waterways.
- Hollowed out a betel nut (*Areca catechu*) trunk are used to propagate the aerial roots from one side of the river to the other.
- When they reach the other side, they're allowed to take root in the soil.
- The roots are woven and nurtured until they mature and are able to bear the weight of people walking on them.
- This entire process can take 15 to 25 years to complete and the bridges formed can last for hundreds of years.
- Some bridges are as long as 100 feet and can take loads of more than 50 people.

IMD'S COLOUR-CODED WARNINGS

In News:

- Orange alert issued as Delhi logs season's lowest at 4.4°C.

Analysis of Background:

IMD'S COLOUR-CODED WARNINGS:

- Colour codes are used in weather warnings. Indian Meteorological Department (IMD), issues them for bringing out the severity of the weather phenomena expected. The key idea is to forewarn relevant officials and the disaster management authority "about the impact of the weather expected so as to keep them ready for necessary action related to disaster risk reduction.
- The objective is to alert people ahead of severe or hazardous weather which has the potential to cause damage, widespread disruption or danger to life. Warnings are updated daily.

- The IMD uses 4 colour codes -:
  1. Green (All is well): No advisory is issued.
  2. Yellow (Be Aware): Yellow indicates severely bad weather spanning across several days. It also suggests that the weather could change for the worse, causing disruption in day-to-day activities.
  3. Orange/Amber (Be prepared): The orange alert is issued as a warning of extremely bad weather with the potential of disruption in commute with road and rail closures, and interruption of power supply.
  4. Red (Take Action): When extremely bad weather conditions are certainly going to disrupt travel and power and have significant risks to life, the red alert is issued.

- These alerts are universal in nature and are also issued during floods, depending on the amount of water rising above land/in a river as a result of torrential rainfall. For instance, when the water in a river is 'above normal' level, or between the 'warning' and 'danger' levels, a yellow alert is issued.
- While this is the general interpretation of these colours, for more specific weather events such as rainfall, thunderstorm, lightning, etc these colours point out more warning.

How is the colour decided?

- According to IMD, a special matrix is followed to decide the colour of weather situations.
- It is based on the "probability of occurrence of the event as well as its impact assessment".
- The decision of the colour also depends on the meteorological factors, hydrological factors, and geophysical factors that indicate the risk.

IMD:

- The India Meteorological Department (IMD) is an agency of the Ministry of Earth Sciences of the Government of India.
- It is the principal agency responsible for meteorological observations, weather forecasting and seismology.
- IMD is headquartered in Delhi and operates hundreds of observation stations across India and Antarctica.
- Regional offices are in Chennai, Mumbai, Kolkata, Nagpur, Guwahati and New Delhi.
- IMD operates a network of hundreds of surface and glacial observatories, Upper Air (high altitude) stations, ozone and radiation observatories and meteorological radar stations.
- Additional data is received from India's constellation of satellites, such as Kalpana-1, Megha-Tropiquesand instruments on board the IRS series and the INSAT series of satellites.

HEAT DOME

In News:

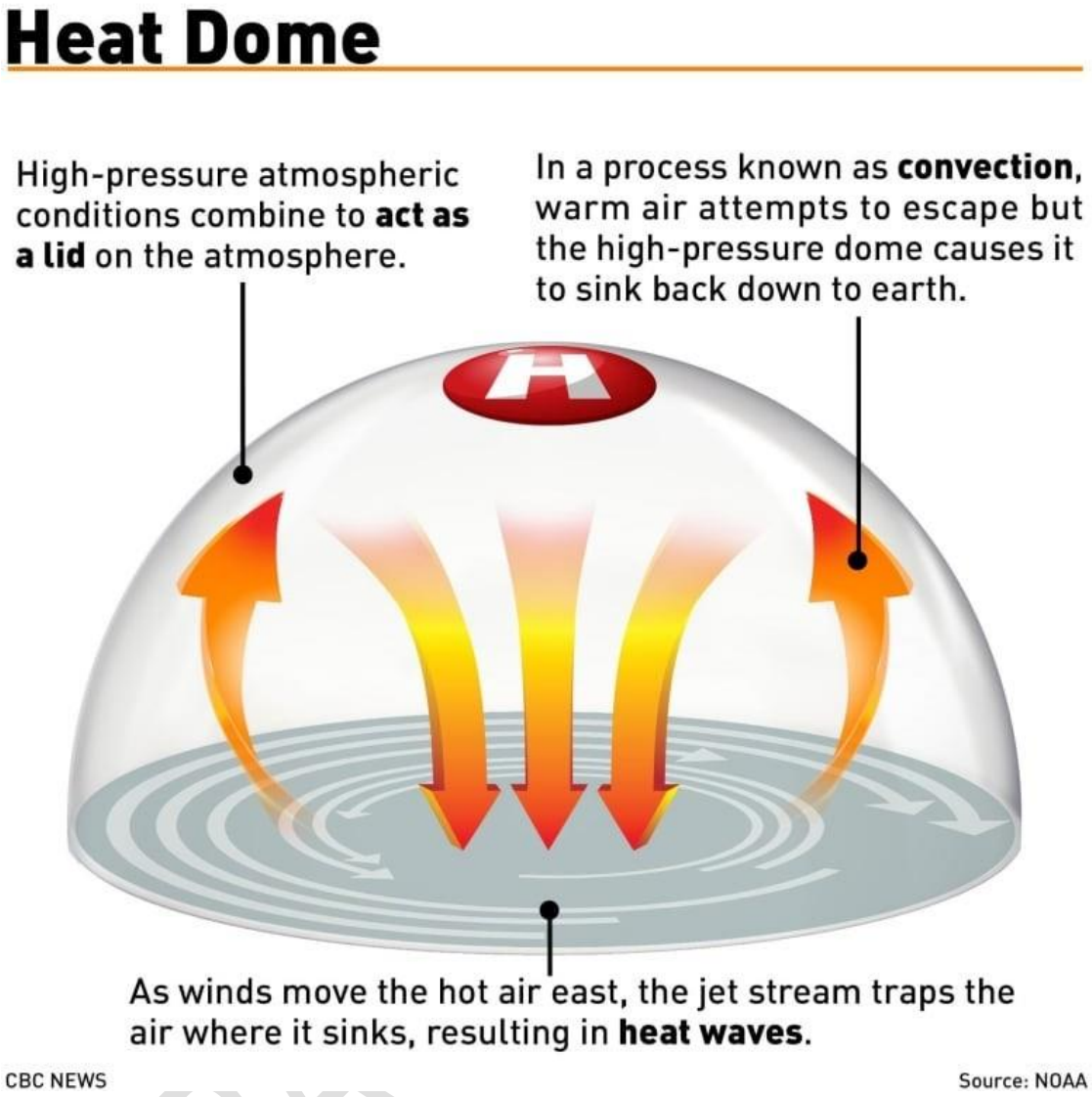
Several parts of Europe witnessed an unprecedented winter heat wave over New Year's weekend. Temperatures increased 10 to 20 degrees Celsius above normal. The continent is experiencing an extreme warm spell because of the formation of a heat dome over the region.

Analysis of background:

What is a heat dome?

- A heat dome occurs when an area of high-pressure traps warm air over a region, just like a lid on a pot, for an extended period of time.
- The longer that air remains trapped, the more the sun works to heat the air, producing warmer conditions with every passing day.

- Heat domes generally stay for a few days but sometimes they can extend up to weeks, which might cause deadly heat waves.



Relationship between Heat Domes and Jet Streams

- Typically, heat domes are tied to the behavior of the jet stream- — an area of fast-moving air high in the atmosphere, a band of fast winds high in the atmosphere that generally runs west to east.

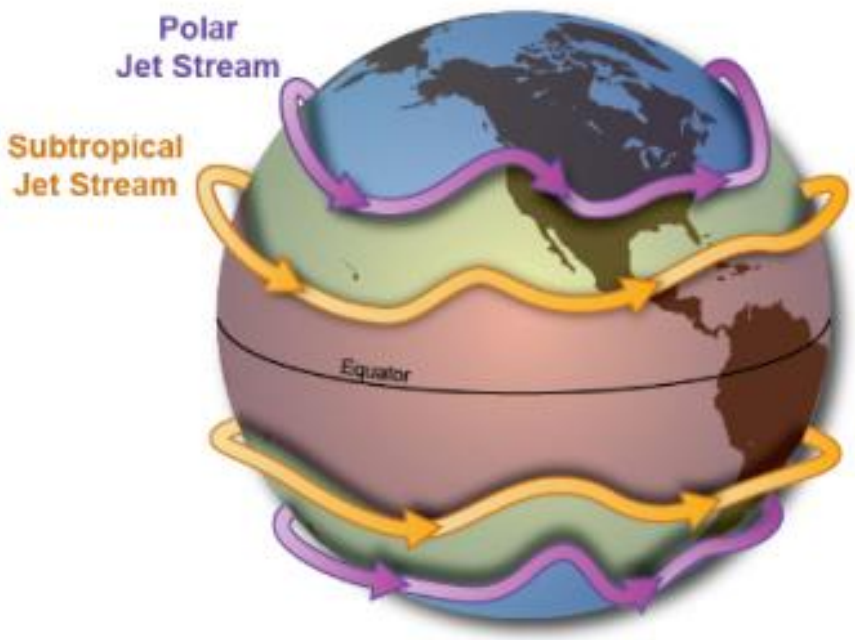
Jet Streams

- Jet streams are relatively narrow bands of strong wind in the upper levels of the atmosphere. The winds blow from west to east in jet streams but the flow often shifts to the north and south. Jet streams follow the boundaries between hot and cold air.

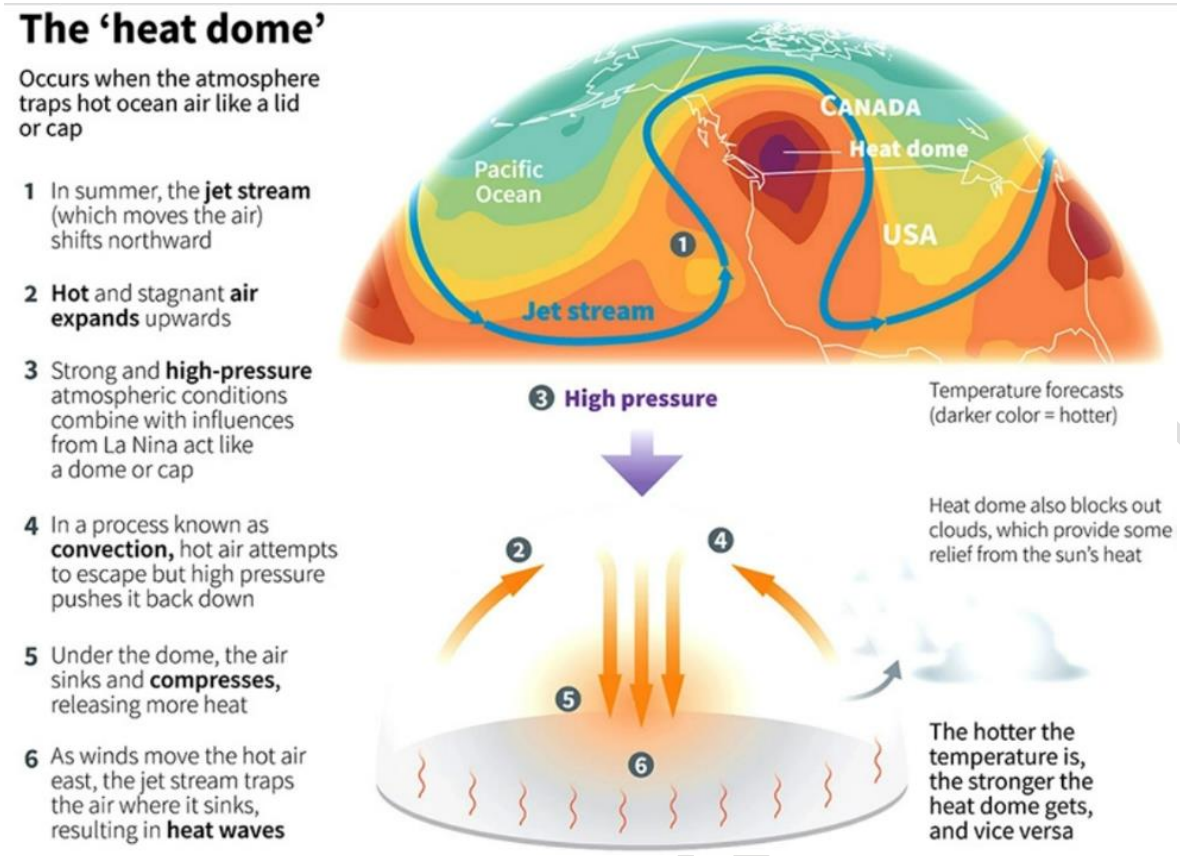
- Since these hot and cold air boundaries are most pronounced in winter, jet streams are the strongest for both the northern and southern hemisphere winters. Jet streams form when warm air masses meet cold air masses in the atmosphere.

Mechanism

- The Sun doesn't heat the whole Earth evenly. That's why areas near the equator are hot and areas near the poles are cold.
- So, when Earth's warmer air masses meet cooler air masses, the warmer air rises up higher in the atmosphere while cooler air sinks down to replace the warm air. This movement creates an air current, or wind. A jet stream is a type of air current that forms high in the atmosphere.



- The fast-moving air currents in a jet stream can transport weather systems across the Earth. Jet streams are located about five to nine miles above Earth's surface in the mid to upper troposphere — the layer of Earth's atmosphere where we live and breathe.
- Airplanes also fly in the mid to upper troposphere. So, if an airplane flies in a powerful jet stream and they are traveling in the same direction, the airplane can get a boost. That's why an airplane flying a route from west to east can generally make the trip faster than an airplane traveling the same route east to west.
- When the waves in a Jet Stream get bigger and elongated, they move slowly and sometimes can become stationary. This is when a high-pressure system gets stuck and leads to the occurrence of a heat dome



Climate Change and Heat Domes

- Researchers say that climate change may be making Heat Domes more intense and longer.
- They suggest with the rising temperatures, it is expected that the jet stream will become wavier and will have larger deviations, causing more frequent extreme heat events.
- Heat Domes and their impact on Human Beings
- A heat dome can have serious impacts on people, because the stagnant weather pattern that allows it to exist usually results in weak winds and an increase in humidity. Both factors make the heat feel worse – and become more dangerous – because the human body is not cooled as much by sweating.
- The heat index, a combination of heat and humidity, is often used to convey this danger by indicating what the temperature will feel like to most people. The high humidity also reduces the amount of cooling at night.
- All these, increases the risk of heat illnesses and deaths. With global warming, temperatures are already higher, too.
- One of the worst recent examples of the impacts from a heat dome with high temperatures and humidity in the U.S. occurred in the summer of 1995, when an estimated 739 people died in the Chicago area over five days.

- Closing Thoughts
- A 2022 study found that this heat dome was amplified by climate change and it could become a once-in-10-year event if global temperatures aren't kept under two degree Celsius above pre-industrialization levels.

MAHADAYI RIVER WATER DISPUTE

In News:

Karnataka's decision to go ahead with a water diversion project on river Mahadayi has escalated its long-standing dispute on the issue with neighbouring Goa.

Analysis of Background:

Mahadayi River

- The Mahadayi/Mandovi Riveris described as the lifeline of the Indian state of Goa. The Mandovi and the Zuari are the two primary rivers in the state of Goa. Mandovi joins with the Zuari at a common creek at Cabo Aguada, forming the Mormugao
- Panaji, the state capital and Old Goa, the former capital of Goa, are both situated on the left bank of the Mandovi.

River course

- The river has a total length of 81 kilometres (50 miles); 35 kilometres in Karnataka, 1 kilometre in Maharashtra and 45 kilometres in Goa.
- It originates from a cluster of 30 springs at Bhimgad in the Western Ghats in the Belagavi district of Karnataka.
- The river has total 2,032 km2 catchment area of which 1,580 km2, 375 km2 and 77 km2 catchment area are in Goa, Karnataka and Maharashtra respectively.
- The tributaries of Mandovi or Mhadei include Nerul River, St Inez Creek, Rio de Ourém, Mapusa River, Valvanti River, Udnai River, Dudhsagar River, Ragada River and Kotrachi Nadi.

The Dispute and its background:

- The dispute over Mahadayi river began in the 80s and grew stronger in the subsequent decades. The trigger was Karnataka's move to design a number of dams, canals and barrages to route the Mahadayi river water to the Malaprabha basin. The state claimed that channelling the river water into the basin of Malaprabha, a tributary of the Krishna, would meet the requirements of water-scarce districts of Bagalkot, Gadag, Dharwad and Belagavi.

- Goa, seeking redressal to the dispute in 2002, sought the constitution of a water disputes tribunal. The state also moved the apex court in 2006 with its demand. After sustained efforts by the Goan government, the Mahadayi Water Disputes Tribunal was set up on November 16, 2010.
- Goa contends that its population is dependent on the river's natural path and any move to divert it would affect its fragile ecosystem. It claimed that the ingress of saltwater in the river, which is dependent on monsoons, will ultimately end up killing the state's mangroves and green belt, disturb the relationship between the people and the land, as well as the ecological balance.
- The dispute is also around the amount of water that Goa receives. Karnataka claims that the surplus from Mahadayi drains into the sea and that it should be diverted into the deficit basin in Malaprabha to meet the state's drinking, irrigation, agriculture and power generation needs. Goa has, meanwhile, denied Karnataka's claims saying it is a water deficient state and limiting the water supply would adversely impact its agriculture production.

The Tribunals and SC's take on this

- In August 2018, Mahadayi Water Tribunal verdict permitted Goa to use 24 tmcft (excluding the 9.395 tmcft prevailing uses), Karnataka to use 5.4 tmcft (including 3.9 tmcft for export outside the basin) and Maharashtra to use 1.33 tmcft for consumptive purposes. The tribunal assessed the water generated in the river catchment area of Karnataka and Maharashtra as 32.11 tmcft and 7.21 tmcft respectively at 75% dependability.
- The tribunal has apportioned only 40.125 tmcft of Mandovi river water for consumptive uses among the three riparian states. Karnataka approached the Supreme Court alleging injustice is done in allocation of water to the state.
- Central government issued a gazette notification on 27 February 2020 permitting the Karnataka state to draw 13.42 tmcft of water from the Mahadayi river out of which 8 tmcft is for power generation.
- But Supreme Court stayed the construction of dams and canals by Karnataka on the Mahadayi because Goa, has expressed reservations claiming Karnataka may stock excess water in its reservoirs so that it can be used for irrigation in other parts of the state.

Recent Development

- On December 30, 2022, Karnataka said that the government had received clearance from the Centre for two Detailed Project Reports (DPRs) on the Kalasa-Banduri Nala on the Mahadayi.
- Goa immediately protested announcing on January 2 that it would take an all-party delegation to Prime Minister Narendra Modi and meet other Union ministers to block the project.
- Karnataka has announced that tenders for the project would be floated soon and work begin within a month.

About the Kalasa-Banduri Nala project:

- The Kalasa Banduri Nala project aims to divert water from Mahadayi to satisfy the drinking water needs of Belagavi, Dharwad, Bagalkot and Gadag districts.
- Though the project was first proposed in the early 1980s, it has remained on paper owing to a dispute between Karnataka, Goa and Maharashtra. As per plans, barrages are to be built against Kalasa and Banduri streams — tributaries of Mahadayi — and water diverted towards Karnataka's parched districts.

TOPIC: POLITY AND GOVERNANCE

PADMA AWARDS

In News:

President of India conferred Padma awards 2023 at a civil investiture ceremony at Rashtrapati Bhavan.

Analysis of Backgound:

- The Padma Awards, which were instituted in the year 1954, are one of the highest civilian honours of India, announced annually on the eve of Republic Day.
- The Awards are given in three categories:
  - 'Padma Vibhushan' is awarded for exceptional and distinguished service.
  - 'Padma Bhushan' for distinguished service of a high order.
  - 'Padma Shri' for distinguished service in any field.
- The award seeks to recognize achievements in all fields of activities or disciplines where an element of public service is involved.
- The Awards are given in various disciplines/ fields of activities; art, social work, public affairs, science and engineering, trade and industry, medicine, literature and education, sports, civil service, etc.

- The Padma Awards are conferred on the recommendations made by the Padma Awards Committee, which is constituted by the Prime Minister every year.
- The nomination process is open to the public. Even self-nomination can be made.
- All persons without distinction of race, occupation, position or sex are eligible for these awards. However, Government servants including those working with PSUs, except doctors and scientists, are not eligible for these Awards.
- The award is normally not conferred posthumously. However, in highly deserving cases, the Government could consider giving an award posthumously.
- The awards are presented by the President of India usually in the month of March/April every year where the awardees are presented a Sanad (certificate) signed by the President and a medallion.
- The recipients are also given a small replica of the medallion, which they can wear during any ceremonial/State functions etc. if the awardees so desire.
- The total number of awards to be given in a year (excluding posthumous awards and to NRI/foreigners/OCIs) should not be more than 120.
    - For the year 2023, the President has approved the conferment of 106 Padma. The list comprises 6 Padma Vibhushan, 9 Padma Bhushan and 91 Padma Shri Awards.
- The award does not amount to a title and cannot be used as a suffix or prefix to the awardees' name.

Important Personalities in the list of Padma Award 2023:

Padma Vibhushan

- Balkrishna Doshi (Posthumous) for Architecture.
- Zakir Hussain for Art.
- Mulayam Singh Yadav (Posthumous) for Public Affairs.

Padma Bhushan

- Shri Kumar Mangalam Birla for Trade & Industry.
- Sudha Murty for Social Work.

Padma Shri

- Rakesh Radheshyam Jhunjhunwala (Posthumous) for Trade & Industry.
- Raveena Ravi Tandon for Art.

PRADHAN MANTRI GARIB KALYAN ANNA YOJANA

In News:

The Union Cabinet has approved the extension for the Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY-Phase VII) for a further period of 3 months.

Analysis of Background:

- *Pradhan Mantri Garib Kalyan Anna Yojana*(PMGKAY) is a food security welfare scheme announced in 2020, during the COVID-19 pandemic in India.

Operation and Nodal Ministry:

- The program is operated by the Department of Food and Public Distribution under the Ministry of Consumer Affairs, Food and Public Distribution. But the nodal ministry is the Ministry of Finance.

Aim:

The scheme aims to feed the poorest citizens of India by providing grain through the Public Distribution System, to all the priority households (ration card holders and those identified by the Antyodaya Anna Yojana scheme).

Mandate:

- PMGKAY provides 5 kg of rice or wheat (according to regional dietary preferences) per person and 1 kg of dalto each family holding a ration card. The scale of this welfare scheme makes it the largest food security program in the world.

Evaluation:

- As per a study conducted by International Monetary Fund, extreme poverty (less than PPP USD 1.9 per person per day) in India is less than 1 percent in 2019 and it remained at that level even during the COVID-19 pandemic year 2020.
- Pradhan Mantri Garib Kalyan Anna Yojana has been critical in preventing any increase in extreme poverty levels in India during the COVID-19 pandemic.

CASTE CENSUS

In News:

- The Supreme Court of India accepted the petition challenging the Bihar caste census.
- The petitioner argued that caste survey came under the Union List of the Indian Constitution and that a State Government has no authority to do it.

- The first phase of the Bihar Caste Census began on 7th January 2023 and would continue till 21st January 21.
- The second phase will start in April.

Analysis of Background:

About Census in India:

- Census in India was started in 1872 under British Viceroy Lord Mayo, but the first complete census was taken in 1881 under Lord Ripon.
- Since 1881, the Census has been undertaken every 10 years; in 2011 the Census of India was conducted for the 15th time.
- The Census of India was conducted by the Registrar General and Census Commissioner of India under the Ministry of Home Affairs.
- All the censuses since 1951 were conducted under the 1948 Census of India Act. The last census was held in 2011.

About Caste Census:

- The Socio-Economic and Caste Census 2011 (SECC) was conducted for the 2011 Census of India.
- The SECC 2011 was conducted in all states and union territories of India.
- SECC 2011 was also the first paperless census in India conducted on hand-held electronic devices by the government in 640 districts.
- The Rural development ministry has used the SECC data in its programmes such as MGNREGA, National Food Security Act, and the Deen Dayal Upadhyaya Grameen Kaushalya Yojana. SECC 2011 data will also be used to identify beneficiaries.
- SECC 2011 was the first caste-based census since the 1931 Census of India.
- SECC 2011 was not conducted under the 1948 Census of India Act, which made information disclosure voluntary for citizens, and not a mandatory disclosure.
- SECC 2011 has three census components which were conducted by three separate authorities, but under the overall coordination of the Department of Rural Development in the Government of India:
    - Census in Rural Areas has been conducted by the Department of Rural Development.
    - Census in Urban areas is under the administrative jurisdiction of the Ministry of Housing and Urban Poverty Alleviation.
    - The caste Census is under the administrative control of the Ministry of Home Affairs: Registrar General and Census Commissioner of India.

Arguments in favour of Conducting Caste Census:

- Those at the lower levels of the Social System are not just disadvantaged socially but also economically, therefore it is important to identify them to ensure their welfare.
- Caste data will promote independent research into the question of who does and does not need affirmative action.
- The faith of our citizens cannot be restored until credible exercises of data collection are undertaken regarding caste.
- A caste census, which will generate exhaustive data will allow policymakers to develop better policies, and implementation strategies, and will also enable a more rational debate on sensitive issues.
- The Justice Rohini committee was appointed in 2017 to look into the sub-categorization of the OBC communities; however, in the absence of data, there can be no data bank or any proper sub-categorization.
- All commissions have had to depend on data from the last caste census conducted in 1931. Therefore, the data has to be updated.
- India needs to be bold and decisive in tackling caste questions through data and statistics in the way the US does to tackle race issues, by collecting data around race, class, language, and inter-race marriages, among other metrics.

Argument against conducting caste census:

- The data will suffer in respect of "completeness and accuracy", as Caste data collected in the Socio-Economic and Caste Census (SECC) of 2011 is "unusable" for official purposes as they are far from accurate and also misleading.
- Many people may not register themselves in the census to hide their caste identity.
- It is too late now to add caste to the Census 2021, as the Planning and preparations for the census exercise started almost four years earlier and the preparations for Census 2021 are almost done.
- This could further divide Indian society. The government had said that the total number of castes surveyed in 1931 was 4,147, while the SECC 2021 figures show that there are more than 46 lakh castes in India.
- Earlier attempts failed as the entire exercise was corrupted because the enumerators had used different spellings for the same castes. In many cases, the respondents refused to reveal their castes.

WORLD REPORT 2023 OF HUMAN RIGHTS WATCH

In News:

- The recently released World Report 2023 by Human Rights Watch mentioned that Indian authorities had "intensified and broadened" their crackdown on social activist groups and the media.
- The report reviews human rights practices in nearly 100 countries.
- The Human Rights Watch is an international non-governmental organization headquartered in New York City that conducts research and advocacy on human rights.

Key Points about India in the Report:

- Authorities arrested activists, journalists, and other critics of the government on malafide and "politically motivated" criminal charges, including that of terrorism.
- Authorities are promoting discrimination and many times violent actions against religious minorities.
- Many states have demolished religious minorities' homes and properties without legal authorization or due process of law.
- Authorities also "misused" laws in the name of forced religious conversions "to target Christians, especially from Dalit and Adivasi communities".
- The release of the 11 men convicted and sentenced to life in jail for the gang rape of Bilkis Bano and the murder of 14 members of her family, and the celebration of their release.
- The action highlighted the government's discriminatory view toward minority communities even in cases of violence against women.
- In Jammu and Kashmir even after 3 years of removal of Article 370, the government continued to restrict free expression, peaceful assembly, and other basic rights there.
- Human Rights groups, Social activists, and non-governmental organisations were harassed by authorities throughout the country through tax raids, the use of the Foreign Contributions Regulation Act, and other allegations of financial irregularities.
- The report appreciated the liberal steps taken by the Supreme Court of India, including the ruling to stop the use of the Sedition law, which was misused to arrest critics of the government and its policies.
    - The court's ruling on extending abortion rights to all women regardless of marital status.
    - The court banned the two-finger tests to protect survivors of sexual assault.

- The report also criticised the Supreme Court of India for its verdict on whether Muslim female students can wear a hijab, or a headscarf, in educational institutions in Karnataka.
- The Report summarised that it is the responsibility of every government to protect and promote Human Rights and apply a human rights framework in their policies and work continuously to protect and promote human rights.

National Human Rights Commission:

- The National Human Rights Commission is a statutory body established in 1993 under the Protection of Human Rights Act, 1993.
- It was amended in 2006.
- The commission works as the watchdog of human rights in the country.
- The commission is a multi-member body consisting of a chairman and four members.
- The chairman should be a retired chief justice of India, and members should be serving or retired judges of the Supreme Court, a serving or retired chief justice of a high court and two persons having knowledge or practical experience concerning human rights.
- In addition to these full-time members, the commission also has 4 ex-officio members;
    - The chairman of the National Commission for Minorities.
    - The National Commission for SCs.
    - The National Commission for STs.
    - The National Commission for Women.
- The chairman and members are appointed by the president on the recommendations of a 6-member committee consisting of;
    - The Prime Minister is the head.
    - The Speaker of the Lok Sabha.
    - The Deputy Chairman of the Rajya Sabha.
    - Leaders of the Opposition in both the Houses of Parliament.
    - The Central home minister.
- The chairman and members hold office for a term of five years or until they attain the age of 70 years, whichever is earlier.
- The salaries, allowances and other conditions of service of the chairman or a member are determined by the Central government. But, they cannot be varied to his disadvantage after his appointment.
    - After the tenure, the chairman and members are not eligible for further employment under the Central or state government.
- The President can also remove the chairman or any member on the ground of proven misbehaviour or incapacity.

- However, in these cases, the president has to refer the matter to the Supreme Court for an inquiry.
- If the Supreme Court, after the inquiry, upholds the cause of removal and advises so, then the president can remove the chairman or a member.

Functions of the Commission:

- Inquire into any violation of human rights or negligence in the prevention of such violation by a public servant, either suo motu or on a petition presented to it or on an order of a court.
- Intervene in any proceeding involving an allegation of violation of human rights pending before a court.
- Visit jails and detention places to study the living conditions of inmates and make recommendations.
- Review the constitutional and other legal safeguards for the protection of human rights and recommend measures for their effective implementation.
- Review the factors including acts of terrorism that inhibit the enjoyment of human rights and recommend remedial measures.
- Study treaties and other international instruments on human rights and make recommendations for their effective implementation.
- Undertake and promote research in the field of human rights.
- Spread human rights literacy among the people and promote awareness of the safeguards available for the protection of these rights.
- Encourage the efforts of non-governmental organisations (NGOs) working in the field of human rights.
- Undertake such other functions as it may consider necessary for the promotion of human rights.
- The Central government should inform the Commission of the action taken on the recommendations within three months.
- The commission submits its annual or special reports to the Central government and the state government concerned.
- These reports are laid before the respective legislatures, along with a memorandum of action taken on the recommendations of the commission and the reasons for non-acceptance of any of such recommendations.

Limitations of the Commission:

- The functions of the commission are mainly recommendatory.

- No power to punish the violators of human rights, or to award any relief including monetary relief to the victim.
- Recommendations are not binding on the concerned government or authority.
- The commission has a limited role, powers and jurisdiction concerning the violation of human rights by the members of the armed forces.

Human Rights (Amendment) Act, 2006:

- Reducing the number of members of State Human Rights Commissions (SHRCs) from five to three.
- Changing the eligibility condition for the appointment of a member of SHRCs.
- Strengthening the investigative machinery available with Human Rights Commissions.
- Empowering the Commissions to recommend the award of compensation, etc. even during the enquiry.
- Empowering the NHRC to undertake visits to jails even without intimation to the state governments.
- Strengthening the procedure for recording evidence of witnesses.
- Clarifying that the Chairpersons of NHRC and SHRCs are distinct from the Members of the respective Commission.
- Enabling the NHRC to transfer complaints received by it to the concerned SHRC.
- Enabling the Chairperson and members of the NHRC to address their resignations in writing to the President and the Chairperson and members of the SHRCs to the Governor of the state concerned.
- Clarifying that the absence of any member in the Selection Committee for selection of the Chairperson and member of the NHRC or the SHRCs will not vitiate the decisions taken by such Committees.
- Providing that the Chairperson of the National Commission for the Scheduled Castes and the Chairperson of the National Commission for the Scheduled Tribes shall be deemed to be members of the NHRC.

HORIZONTAL RESERVATION

In News:

The Governor of Uttarakhand has signed the Uttarakhand Public Services (Horizontal Reservation for Women) Bill, 2022 to allow 30% reservation to the native women of the State. The native women candidates will get the benefit of 30% reservation in public services and posts.

Analysis of Background:

- In 2006, the state government issued an order for 30% horizontal reservation for women of Uttarakhand in State government jobs.
- The order was challenged in Nainital High Court.
- In August 2022, the High Court stayed the reservation order.
    - According to petitioners, the State government does not have the power to provide reservations based on the residence of the State.
    - Indian Constitution only allows the Parliament to make reservations based on domicile.
    - Therefore the 2006 order of the State government violates Articles 14, 16, 19 and 21 of the Constitution.
- In November 2022, the Supreme Court of India stayed the order of the High Court.
- In the last week of November 2022, the government introduced the Bill in the House, which was passed on November 30.
- The Governor examined the bill with the suggestions of legal experts before approving it.

Vertical and Horizontal reservations:

- Reservation for Scheduled Castes, Scheduled Tribes, and Other Backward Classes is referred to as the Vertical reservation.
- It applies separately for each of the groups specified under the law.
- Horizontal reservation refers to the equal opportunity provided to other categories of beneficiaries such as women, veterans, the transgender community, and individuals with disabilities, cutting through the vertical categories.
- The horizontal quota is applied separately to each vertical category, and not across the board.
- For example, if women have a 50% horizontal quota, then half of the selected candidates will have to necessarily be women in each vertical quota category — i.e., half of all selected SC candidates will have to be women, half of the unreserved or general category will have to be women, and so on.

Reservation System in India:

- The Reservation system is an arrangement of affirmative action where a certain percentage of seats are reserved in Public employment and educational institutions.
- In India, the Scheduled Castes (SCs), Scheduled Tribes (STs), Other Backward Classes (OBCs) and socially and economically backward communities who were earlier poorly represented in the Public sector and educational institutions are now covered under the reservation facility.
- In India, about 60% of seats are reserved for various sections like ST, SC, OBC, and EWS in Government jobs and Higher Education Institutions.
    - 3% of seats are also reserved for differently-abled persons across all categories.
- The reservation policy is also enforced for the Scheduled Castes and Scheduled Tribes for representation in the Indian Parliament.
- The reservation issue has also remained a cause of conflict between the reserved and the non-reserved sections of society.

RIGHT TO ABORTION IN INDIA

In News

Despite the Supreme Court's judgment that married and unmarried women have the equal right to terminate their pregnancy until 24 weeks, the situation on the ground has not changed much.

Analysis of Background:

- Recently, the Supreme Court of India stated that differentiating between married and unmarried women for allowing termination of pregnancy on certain exceptional grounds is unconstitutional.
- According to many activists, the court’s judgment is progressive. However, the ground reality has not changed much; as the Court verdict lacked any clear indication or order for the government to amend the Medical Termination of Pregnancy Act to include unmarried women under the extended 24-week ambit.
- Unless the provisions under the Act are changed, women will find it difficult to seek abortion in health facilities. This will promote illegal and underground abortions, which will increase the health-related risk for women.

Equal rights

Abortion laws in India have come a long way but there is always room for change as recent developments show

- The MTP (Amendment) Act, 2021, introduced a key change in Section 3 by extending the upper limit for termination of pregnancy from 20 to 24 weeks for special categories
- The top court went a step further, ruling that marital status should not be a barrier for women to seek an abortion up to 24 weeks of pregnancy

Abortions law in India:

- In the 1960s, the Union government constituted Shantilal Shah Committee to prepare a draft for the legalization of abortion in India.
- In 1971, the Medical Termination of Pregnancy (MTP) Act was enacted to reduce maternal mortality due to unsafe abortions.
- It set an upper limit of the gestation period to which a woman can seek a medical abortion to 20 weeks.
- Abortion is to be performed only by doctors with specialization in gynecology or obstetrics.
- Under section 312 of the Indian Penal Code (IPC), a person who "voluntarily causes a woman with child to miscarry" will be jailed for up to 3 years or fined or both.
- The only exception from punishment is when it was done to save the life of the pregnant woman.
- The MTP Act was amended in 2003 to allow the use of the abortion medicine misoprostol, to medically terminate a pregnancy for up to 7 weeks.
- The MTP Act was again amended in 2021, it increased the upper limit of the gestation period to which a woman can seek a medical abortion to 24 weeks from the 20 weeks permitted in the 1971 Act. But the new upper limit can only be applied in specific cases.

- Abortion up to 20 weeks of gestational age can be done after the opinion of a single registered medical practitioner.
- From 20 weeks up to 24 weeks, the opinion of two registered medical practitioners is required.
- Under the 2021 amendment Act, medical termination of pregnancy is permitted if it is based on medical opinion and fulfill at least one of the following reasons;
  - If the pregnancy would involve a risk to the life of the pregnant woman.
  - If pregnancy results in any injury to the woman's physical or mental health.
  - If f unborn child suffers from a serious physical or mental abnormality.
- The pregnancy can be terminated up to 24 weeks of gestational age under any of these conditions;
  - If the woman is either a survivor of sexual assault or rape.
  - If she is a minor.
  - If her marital status has changed during the ongoing pregnancy (widowhood or divorce).
  - If she has major physical disabilities or is mentally ill.
  - If foetal malformation was incompatible with life or after birth, it would be seriously handicapped.
- If the pregnancy has to be terminated beyond the 24-week gestational age, it can only be done on the grounds of foetal abnormalities and only after clearance from a four-member Medical Board.
- In the K.S. Puttaswamy v. Union of India and other cases, the Supreme Court had held that the decision taken by a pregnant person related to pregnancy is part of her right to privacy under article 21.

THE ABORTION LAW

- The existing Medical Termination of Pregnancy (MTP) Act of 1971, sought to 'liberalise' the British-era 'very strict penal law', which was in existence for over a century
- Before the 1971 Act, abortion was a crime for which 'the mother as well as the abortionist could be punished except where it had to be induced in order to save the life of the mother'

- The government brought in the MTP Act as a 'health measure'
- It allowed abortion 'when there is danger to the life of or risk to physical or mental health of the woman', 'on humanitarian grounds – such as when pregnancy arises from a sex crime like rape or intercourse with a lunatic woman', and 'eugenic grounds – where there is substantial risk that the child, if born would suffer from deformities and diseases'

THE 20-WEEK BAR: Section 3(2) of the MTP Act bars termination of pregnancy beyond 20 weeks by any doctor

Up to 12 weeks it requires no reason. **Between 12 and 20 weeks** it requires two registered doctors to opine in good faith:

- That continuance of the pregnancy would involve a risk to the life of the pregnant woman or grave injury physical or mental health
- That there is a substantial risk that if the child were born, it would suffer from such physical or mental abnormalities as to be seriously handicapped
- Under section 5 of the MTP Act there is an exception to the 20-week bar if doctors certify serious risk to the pregnant woman's life in case it is continued

Concern

- According to the Lancet study, 6 million abortions were conducted every year in India.
- As the law does not permit abortion at will, it pushes women to adopt unsafe, illegal and dangerous ways of abortion.
- According to a study, every year more than 8, 00,000 unsafe and illegal abortions are performed in India and many of them result in maternal mortality.

UGC NORMS ON FOREIGN UNIVERSITIES

In News

- The University Grants Commission (UGC) has released draft guidelines for encouraging foreign universities and educational institutions to set up campuses in India.

Analysis of Background:

Key Points of the Draft:

- A foreign university with a rank among the top 500 global rankings or a foreign educational institution of repute in the home country can apply to the UGC to set up a campus in India.
- The National Education Policy (NEP), 2020 also allowed top universities in the world to operate in India.
- A legislative framework promoting such entry will be put in place.
- They will have special power regarding regulatory, governance, and content norms on par with other autonomous institutions of India.
- UGC will appoint a standing committee to decide on the application within 45 days after examining the institution's credibility, programs offered, potential to strengthen educational opportunities in India, and proposed academic infrastructure.
    - Within 45 days, the UGC may grant inprinciple approval to the foreign institution to set up campuses in India within two years.
    - The initial approval will be for 10 years, which can be extended.
- They can evolve their admission process and criteria to admit domestic and foreign students.
- They will have the autonomy to decide their fee structure and will face no caps that are imposed on Indian institutions.
- The only condition will be that the fee should be "reasonable and transparent".
- They will have the autonomy to recruit faculty and staff from India and abroad.
- The courses to be offered cannot be online and open and in distance learning mode.
- The qualifications awarded to the students on the Indian campus should have equivalence with those awarded by the institutions in their country of origin.

University Grants Commission (UGC) :

- University Grants Commission is a statutory body under the University Grants Commission Act, of 1956.

- UGC is charged with the task of coordinating and maintaining standards of higher education in India.
- It provides recognition to universities and also allocates funds to universities and colleges.
- UGC headquarters are in New Delhi, and it also has 6 regional centers.
- All grants to universities and higher learning institutions are handled by the UGC.
- In 2015-16, the Union government initiated a National Institutional Ranking Framework under UGC to rank all educational institutes.
- UGC also conducts the National Eligibility Test (NET) for the appointments of teachers in colleges and universities.
- M Jagadesh Kumar is the current chairman of the UGC.

VILLAGE DEFENCE COMMITTEES

In News:

Recently Lt Governor Manoj Sinha assured the Jammu and Kashmir people that they would get a Village Defence Committee (VDC). People in Jammu and Kashmir are demanding that in the background of increasing militant attacks, they must be provided weapons to take on attackers.

Village Defence Committee (VDC):

- The VDCs were first formed in the mid-1990s to defend people against militant attacks.
- The then Jammu and Kashmir administrations had decided to provide residents of remote hilly villages with weapons and give them arms training to defend their people and village.
- The VDCs have now been renamed as the 'Village Defence Guards (VDG)'.
- It is set up in vulnerable areas of J&K and was approved by the Union Ministry of Home Affairs.
- Like a VDC member, each VDG will be provided with a gun and 100 rounds of ammunition.
- It is a group of civilians provided with guns and ammunition to tackle militants in case of attack until the arrival of security forces.
- The persons leading the VDGs will be paid Rs 4,500 per month by the government, while others will get Rs 4,000 each.
- The VDGs will function under the direction of the SP/SSP of the district concerned.
- **Composition of VDCs:**
    - A minimum of 10-15 ex-servicemen, ex-policemen and able-bodied local youth were enrolled in each VDC voluntarily.

- The VDCs also faced allegations of human rights violations and other crimes, including murder, rape and extortion.

Key facts about Jammu and Kashmir :

- Jammu and Kashmir is home to several valleys such as the Kashmir Valley, Tawi Valley, Chenab Valley, Poonch Valley, Sind Valley and Lidder Valley.
- The Himalayas divide the Kashmir valley from the Tibetan plateau while the Pir Panjal range, which encloses the valley from the west and the south, separates it from the Punjab Plain of the Indo-Gangetic Plain.
- The Jhelum River is the major Himalayan river which flows through the Kashmir valley. The Tawi, Ravi and Chenab are the other important rivers flowing through the region.
- The union territory of Jammu and Kashmir is divided into 20 districts and consists of two divisions: the Jammu Division and the Kashmir Division.
- Important Tribes; Gujjar, Bakerwal, and Gaddi.
- The most widely spoken language in Jammu and Kashmir is Kashmiri, the mother tongue of 52.72% of the population according to the 2011 census. The second most spoken language is Dogri, spoken by 20% of the population.
- According to the 2011 census, the literacy rate in Jammu and Kashmir was 67.17%.

SYL Dispute

In News:

Recently the Chief Ministers of Haryana and Punjab discussed the Sutlej Yamuna Link (SYL) canal dispute in New Delhi in the Presence of the Union Jal Shakti Minister. The meeting remained inconclusive as no consensus was arrived at surrounding the construction of the SYL.

Analysis of Background:

Sutlej Yamuna Link (SYL) Canal:

- The canal will resolve the water dispute between the rivers Ravi and Beas between Punjab and Haryana.
- The water dispute emerged in 1966 at the time of the reorganization of Punjab and the formation of Haryana.
- The Punjab assembly has opposed the proposal of Water sharing of the two rivers with Haryana.
- In 1982, the Prime Minister initiated the construction of the SYL Canal, but the political parties in Punjab were against the construction of the canal.
- Incidence of Violence pressured the government to stop the construction of the Canal.

- Arguments of Punjab
    - Many areas in Punjab may go dry after 2029.
    - The groundwater level is declining.
    - Punjab needs water for irrigation purposes and for ensuring food security
    - As per the study, water in about 79% of the state's area is over-exploited.
- Arguments of Haryana
    - The Haryana government stated that providing water for irrigation is getting tough for the state.
    - Declining groundwater level.
    - The problem of drinking water.

Sutlej River :

- Sutlej River is the easternmost tributary of the Indus River.
- It rises in the Kailash Mountain near Mansarover Lake from Rakas lake in Tibet.
- The Bhakra Nangal Dam is built on the river Sutlej.
- It provides irrigation and other facilities to Punjab, Rajasthan and Haryana states.
- The Sutlej water is allocated to India under the Indus Waters Treaty between India and Pakistan.
- The drainage basin in India includes the states and union territories of Himachal Pradesh, Punjab, Ladakh and Haryana.

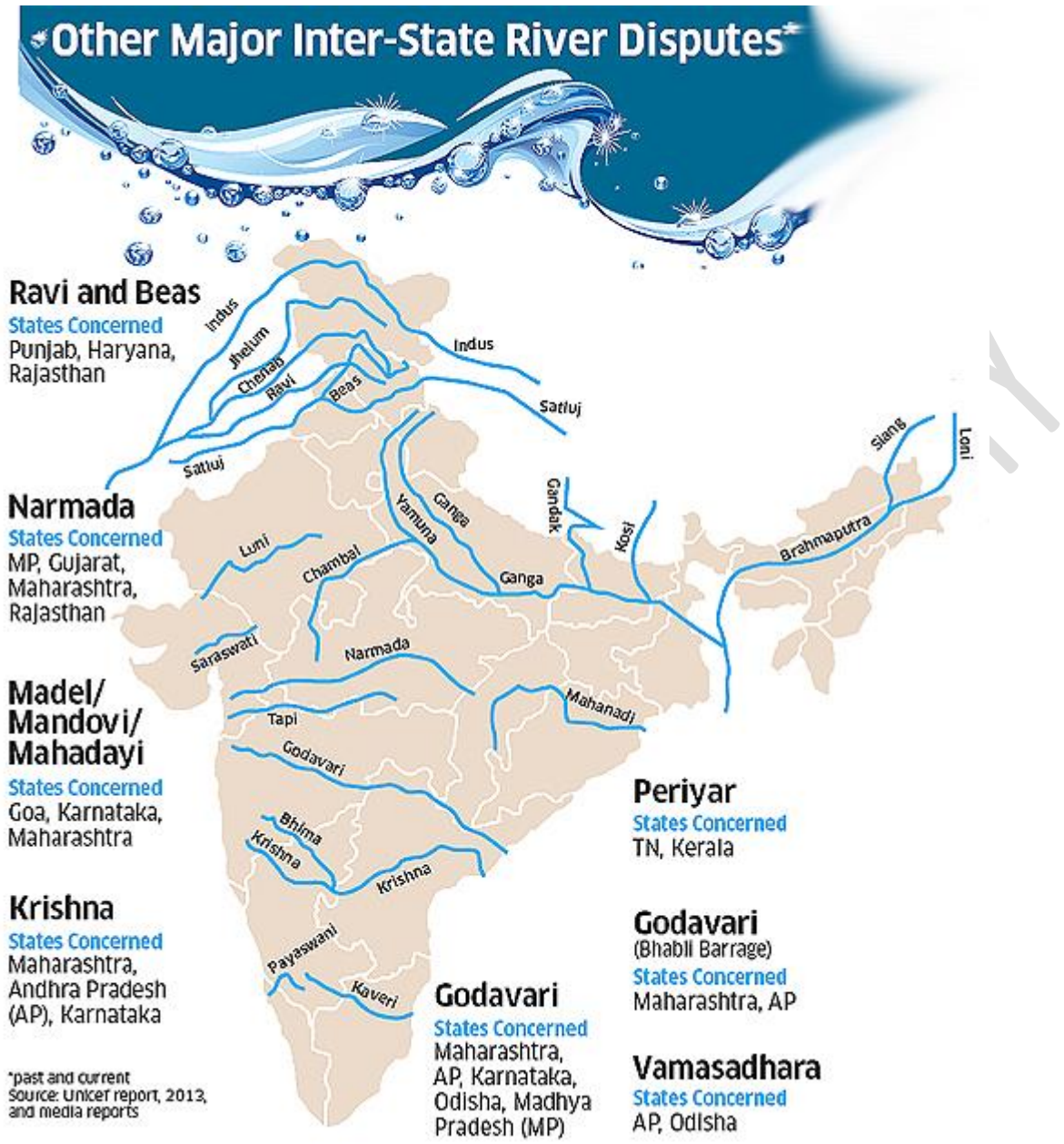
Yamuna River :

- The Yamuna is the 2nd-largest tributary river of the Ganges by discharge and the longest tributary in India.
- Yamuna river originates from the Yamunotri Glacier at the Bandarpunch peaks of the Lower Himalaya in Uttrakhand.
- It merges with the Ganges at Triveni Sangam, Prayagraj, which is also a site of the Kumbh Mela.
- It flows through several states: Haryana and Uttar Pradesh, passing by Uttarakhand and later Delhi.
- The important tributaries of the Yamuna River are Tons, Chambal, Hindon, Betwa and Ken.

Constitutional Provisions and Water :

- Entry 17 of the State List deals with water; water supply, irrigation, canal, drainage, dams, water storage and water power.

- Entry 56 of the Union List empowers the Union Government for the regulation and development of inter-state rivers and river valleys.
- Inter-State Water Dispute in India:
- Article 262 of the Indian Constitution provides for the adjudication of interstate water disputes.
    - Parliament may by law provide for the adjudication of any dispute concerning the use, distribution and control of waters of any inter-state river and river valley.
    - Parliament may also provide that neither the Supreme Court nor any other court is to exercise jurisdiction in respect of any inter-state water dispute.
- The Parliament has enacted two laws;
    - The River Boards Act (1956).
    - The Inter-State Water Disputes Act (1956).
- Under the River Boards Act, a river board is established by the Central government for the regulation and development of Inter-state Rivers and river valleys.
- The Inter-State Water Disputes Act of 1956 authorizes the Central government to set up an ad hoc tribunal for the adjudication of a dispute between two or more states about inter-state water disputes.
- The judgment of the tribunal would be final and binding on the parties to the dispute.



HIGH-POWERED LADAKH COMMITTEE

In News

The Ministry of Home Affairs (MHA) has formed a high-powered committee to "ensure the protection of land and employment" for the people of Ladakh.

Analysis of Background:

Ministry of Home Affairs (MHA) high-powered committee:

- The committee is chaired by the Minister of State for Home Affairs.
- The 17-member committee also includes Ladakh Lieutenant Governor.
- The committee will discuss measures;

- To protect the region's unique culture and language taking into consideration its geographical location and its strategic importance.
- To promote inclusive development in the region.
- To ensure employment generation in the region.
- To empower Ladakh Autonomous Hill District Councils of Leh and Kargil.

More on Details:

- On 5th August 2019, the former State of Jammu & Kashmir was bifurcated into two Union Territories; Jammu & Kashmir, and Ladakh, the latter without a Legislative Assembly.
- Since then several political groups have been demanding that land, employment, and the cultural identity of Ladakh, should be protected under the 6th Schedule.
- The 6th Schedule under Article 244 of the Indian Constitution protects tribal populations, providing autonomy through the creation of Autonomous Development Councils, which can frame laws on land, public health and agriculture.
- At present, 10 autonomous councils exist in Assam, Meghalaya, Tripura and Mizoram.
- According to the 2011 Census, the tribal population in the Union Territory of Ladakh is 79.61% of the total population.
- The Parliamentary Standing Committee on Home Affairs recommended granting special status to the Union Territory of Ladakh considering the developmental requirements of the tribal population.

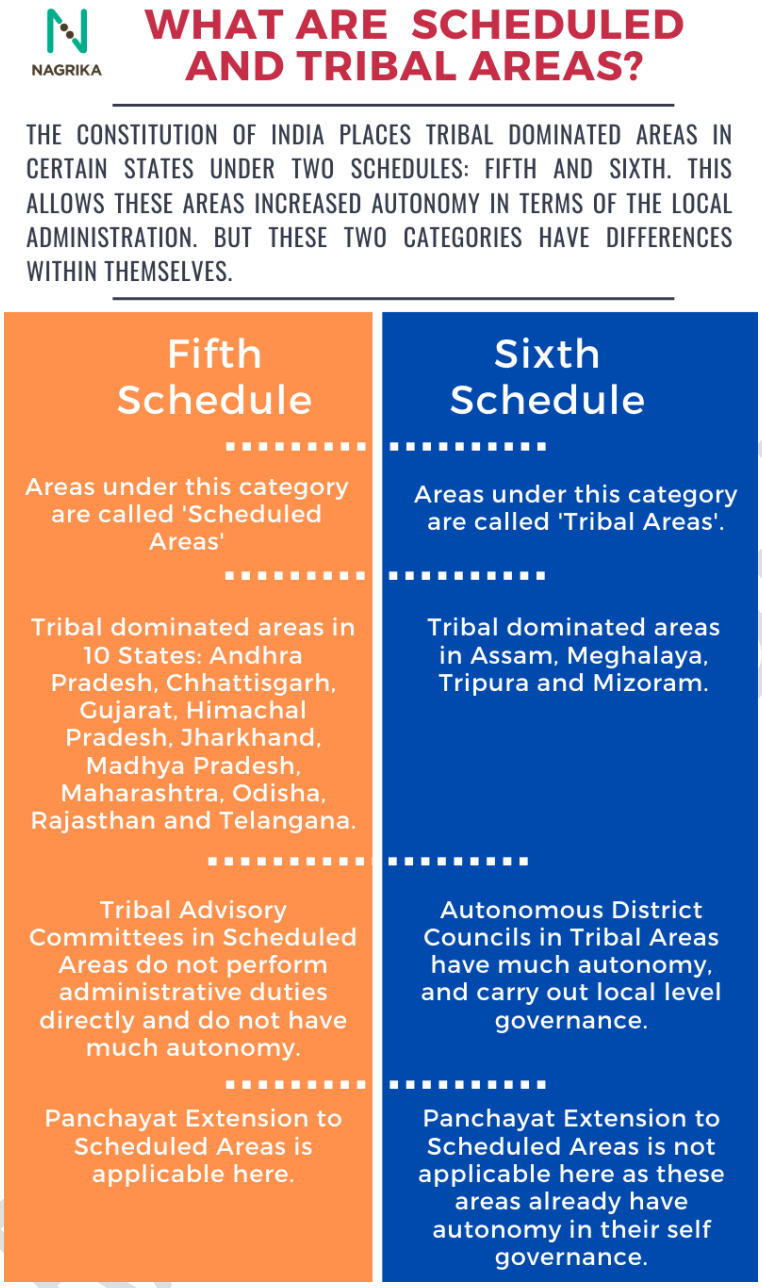
Autonomous District Councils:

- The 6th Schedule of the Indian Constitution deals with the administration of the tribal areas in the 4 northeastern states of Assam, Meghalaya, Tripura and Mizoram as per Article 244.
- The 6th Schedule of the Indian Constitution allows for the formation of autonomous administrative divisions which have been given autonomy within their respective states.
  - Each autonomous district has a district council consisting of 30 members, of whom 4 are nominated by the Governor and the remaining 26 are elected based on adult franchise.
  - There shall be a separate Regional Council for each area constituted as an autonomous region.
- The State Governor is authorized to increase or decrease the areas or change the names of the autonomous districts.

- Executive powers of the State extend to 6th Scheduled areas concerning their administration.
- The acts of the Parliament or the state legislature do not apply to these autonomous districts and autonomous regions or apply with specified modifications and exceptions.
- These Autonomous Councils have been granted wide civil and criminal judicial powers, such as establishing village courts etc.
- The jurisdiction of these councils is under the jurisdiction of the concerned High Court.

Tribal Area

- The Indian Constitution states two types of areas:
  - Scheduled Areas in terms of the 5th Schedule of the Constitution.
  - Tribal Areas in terms of the 6th Schedule.
- "The "Tribal Areas" are also mentioned under Article 244(2) of the Constitution.
- For the declaration of Scheduled Areas, the criteria followed are:
  - The predominance of the tribal population.
  - Closeness and reasonable size of the area.
  - Presence of a viable administrative unit such as a district, block or taluk.
  - Economic backwardness of the area as compared to neighbouring areas.



ATOMIC ENERGY REGULATORY BOARD

About Atomic Energy Regulatory Board:

- Former Executive Director of the Atomic Energy Regulatory Board (AERB) "Dinesh Kumar Shukla" assumed the charge as Chairman of AERB.
- He has been appointed for 3 years.
- Mr Shukla is an expert in the field of Nuclear Safety.
- He joined the Bhabha Atomic Energy Research Centre (BARC) in 1981.
- He has been associated with the commissioning of the high flux research reactor Dhruva and later held the position of Head, of the Reactor Operations Division (ROD), BARC.

- In 2015, he joined AERB where he served in various capacities viz. Member of the Board, Executive Director and Chairman, of the Safety Review Committee for Operating Plants (SARCOP).
- In February 2021, Mr Shukla superannuated from AERB and since then had been actively mentoring nuclear energy professionals on nuclear safety and regulations.

Atomic Energy Regulatory Board (AERB)

- The Atomic Energy Regulatory Board was established in 1983, by the President of India under the Atomic Energy Act, of 1962.
- The regulatory authority of AERB is derived under the Atomic Energy Act and the Environment (Protection) Act, of 1986.
- The Mission of the AERB is to ensure the use of ionizing radiation and nuclear energy in India does not cause undue risk to the health of people and the environment.
- Functions of the Atomic Energy Regulatory Board (AERB)
- Develop safety policies in nuclear, radiation and industrial safety areas for facilities under its purview.
- Develop Safety Codes, Guides and Standards for siting, design, construction, commissioning, operation and decommissioning of different types of nuclear and radiation facilities.
- Grant consents for construction, commissioning, operation and decommissioning, after an appropriate safety review and assessment, for the establishment of nuclear and radiation facilities.
- Ensure compliance with the regulatory requirements prescribed by AERB during all stages of consenting through a system of review and assessment, regulatory inspection and enforcement.
- Prescribe the acceptance limits of radiation exposure to occupational workers and members of the public and acceptable limits for environmental releases of radioactive substances.
- Review the emergency preparedness plans for nuclear and radiation facilities and during the transport of large radioactive sources, irradiated fuel and fissile material.
- Review the training program, qualifications and licensing policies for personnel of nuclear and radiation facilities and prescribe the syllabi for the training of personnel in safety aspects at all levels.
- Promote research and development efforts in the areas of safety.
- Review the nuclear and industrial safety aspects in nuclear facilities under its purview.

NATIONAL MEDICAL COMMISSION BILL 2022

In News

The Union Health Ministry has introduced the draft National Medical Commission Bill 2022.

Analysis of Background:

Key Point of the Draft

- The Draft proposed to merge the existing National Board of Examinations in Medical Sciences (NBES) as an autonomous board under the National Medical Commission.
- Amend the existing Act so that all cases by medical colleges in matters related to the National Medical Commission (NMC) should be under the jurisdiction of the high court of Delhi instead of the current practice of filing pleas in high courts in different states.
- Introduce amendment in the National Medical Commission Act 2019 to include provisions for setting up a 5th autonomous board; the Board of Examinations in the Medical Sciences under the NMC to conduct the National Exit Test for all post-graduation and super-speciality courses.
- It will also conduct screening tests for foreign medical graduates.

National Medical Commission Act, 2019

- The National Medical Commission act replaced the Indian Medical Council Act, of 1956
- The main objective of the act is to ensure:
  - Availability of adequate and high-quality medical professionals.
  - Adoption of the latest medical research by medical professionals.
  - Periodic assessment of medical institutions.
  - An effective grievance redressal mechanism.
- It established the National Medical Commission (NMC).
  - The state governments to establish State Medical Councils at the state level.
  - The NMC consist of 25 members, appointed by the central government.
- Functions of the NMC:
  - Framing policies for regulating medical institutions and medical professionals.
  - Assessing the requirements of healthcare-related human resources and infrastructure.
  - Ensuring compliance by the State Medical Councils with the regulations made under the Bill.
  - Framing guidelines for the determination of fees for up to 50% of the seats in private medical institutions and deemed universities which are regulated under the Bill.

- The act established 4 autonomous boards under the supervision of the NMC. Each autonomous board will consist of a President and four members, appointed by the central government. These boards are:
  - The Undergraduate Medical Education Board (UGMEB): Responsible for formulating standards, curriculum, and guidelines, and granting recognition to medical qualifications at the undergraduate level.
  - The Post-Graduate Medical Education Board (PGMEB): Responsible for formulating standards, curriculum, and guidelines, and granting recognition to medical qualifications at the post-graduate level.
  - The Medical Assessment and Rating Board (MARB): Power to grant permission for establishing a new medical college, starting any postgraduate course, or increasing the number of seats.
  - The Ethics and Medical Registration Board: To maintain a National Register of all licensed medical practitioners, and regulate professional conduct.
  - Only those included in the Register will be allowed to practice medicine.
  - The NMC may grant a limited license to certain mid-level practitioners connected with the modern medical profession to practice medicine.
- These mid-level practitioners may prescribe specified medicines in primary and preventive healthcare; these practitioners may only prescribe medicines under the supervision of a registered medical practitioner.
- A uniform National Eligibility-cum-Entrance Test for admission to undergraduate and post-graduate super-speciality medical education in all medical institutions regulated.
- A common final year undergraduate examination called the National Exit Test for the students graduating from medical institutions to obtain a license for the practice.
- This test will also serve as the basis for admission into post-graduate courses at medical institutions under this Bill.

SC RULING ON FREEDOM OF SPEECH

In News

- A Constitution bench of the Supreme Court was unanimous on the issue that the right to free speech needed no additional restrictions.
- The bench said that “the grounds mentioned in Article 19(2) for restricting the right to free speech are exhaustive”.

Analysis of Background:

- The Court ruled that no additional restrictions could be imposed on the fundamental right to freedom of speech and expression.

- The court also highlighted that the existing “reasonable” restrictions under Article 19(2) of the Indian Constitution are “exhaustive”.
- The bench voted in the favor of freedom of speech and stated that the role of the courts is to protect fundamental rights and not to insert more restrictions on them.
- The court highlighted that “The restrictions under Article 19(2) are comprehensive enough to cover all possible attacks on the individual, groups/classes of people, the society, the court, the country, and the State”.

Freedom of Speech and Expression under the Indian Constitution

- The right to freedom of speech and expression is a Fundamental Right under Article 19.
- It implies that every citizen has the right to express his views, opinions, belief and convictions freely by word of mouth, writing, printing, picturing or in any other manner.
- The Supreme Court in several verdicts held that the freedom of speech and expression includes the following:
    - Right to propagate one’s views as well as the views of others.
    - Freedom of the press.
    - Freedom of commercial advertisements.
    - Right against tapping of telephonic conversation.
    - Right to telecast, that is, the government has no monopoly on electronic media.
    - Right against bundh called by a political party or organisation.
    - Right to know about government activities.
    - Freedom of silence.
    - Right against the imposition of pre-censorship on a newspaper.
    - Right to demonstration or picketing but not right to strike.
- The State can impose reasonable restrictions on the exercise of the freedom of speech and expression on the grounds of;
    - Sovereignty and integrity of India.
    - Security of the State.
    - Friendly relations with foreign states.
    - Public order.
    - Decency or morality.
    - Contempt of court.
    - Incitement to an offence.

TOPIC: IR

H-1B AND L-1 VISA

In News:

Indian IT professionals are struggling to find new employment in the US within the stipulated period under their work visas after thousands laid off.

Analysis of Backgorund:

- According to The Washington Post, nearly 200,000 IT workers have been laid off since November last year, including some record numbers in companies like Google, Microsoft, Facebook and Amazon.
- Over 30 to 40 percent of the Indian IT professionals have been laid off in the US, news agency PTI has reported citing industry insiders. A significant number of whom are H-1B and L1 visa holders.

What is H-1B and L1 visa?

- The H-1B visais a non-immigrant visa that allows US companies to employ foreign workers in speciality occupations that require theoretical or technical expertise.
- Technology companies depend on it to hire tens of thousands of employees each year from countries like India and China.
- L-1A and L-1B visas are available for temporary intracompany transferees who work in managerial positions or have specialised knowledge.

Impact:

- A significantly large number of Indian IT professionals, who are on non-immigrant work visas like H-1B are L1 and are now scrambling for options to stay in the US.
- They are now struggling to find a new job in the stipulated few months-time that they get under these foreign work visas after losing their jobs and change their visa status as well.
- The situation is getting worse for those on H-1B visas as they have to find a new job within 60 days or else, they would be left with no other option but to head back to India.
- As tech companies are of a layoff spree, getting a job within that short period, they feel is next to impossible.
- Adding to the miseries of these professionals is the latest decision of Google that they are pausing their Green Card processing.

INDUS WATER TREATY

In News:

India has issued a notice to Pakistan seeking a review and modification of the Indus Waters Treaty (IWT) citing Pakistan's "intransigence" in resolving disputes over the Kishanganga and Ratle (on Chenab River) hydropower projects, both in Jammu and Kashmir. The notice was sent after the "contravention of the graded mechanism of dispute settlement envisaged by Article IX of the IWT."

Analysis of Background:

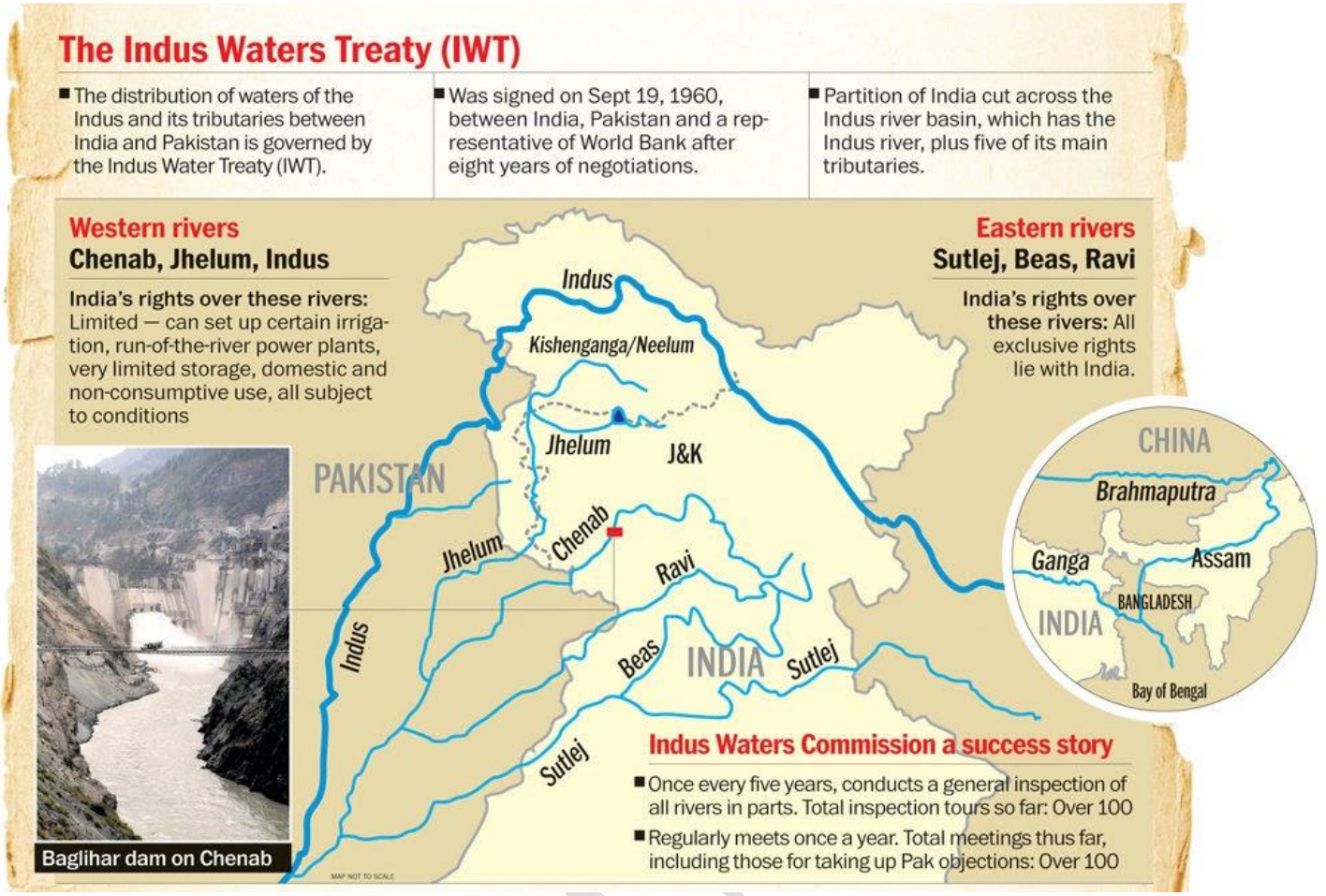
What is the History of the Dispute over the Hydel Projects?

- In 2015, Pakistan asked that a Neutral Expert should be appointed to examine its technical objections to the Kishanganga and Ratle HEPs. But the following year, Pakistan unilaterally retracted this request, and proposed that a Court of Arbitration should adjudicate on its objections.
- In August 2016, Pakistan had approached the World Bank seeking the constitution of a Court of Arbitration under the relevant dispute redressal provisions of the Treaty.
- Instead of responding to Pakistan's request for a Court of Arbitration, India moved a separate application asking for the appointment of a Neutral Expert.
- India had argued that Pakistan's request for a Court of Arbitration violated the graded mechanism of dispute resolution in the Treaty.
- In March 2022, the World Bank decided to resume the process of appointing a Neutral Expert and a Chairman for the Court of Arbitration.

What is Indus Waters Treaty?

About:

- India and Pakistan signed the IWT in September, 1960 after nine years of negotiations, with the World Bank being a signatory to the pact.
- The treaty sets out a mechanism for cooperation and information exchange between the two sides on the use of the water of the Indus River and its five tributaries Sutlej, Beas, Ravi, Jhelum, and Chenab.



- **Key Provisions:**
  - **Water Sharing:**
    - The treaty prescribed how water from the six rivers of the Indus River System would be shared between India and Pakistan.
    - It allocated the three western rivers—Indus, Chenab and Jhelum—to Pakistan for unrestricted use, barring certain non-consumptive, agricultural and domestic uses by India and the three Eastern rivers—Ravi, Beas and Sutlej—were allocated to India for unrestricted usage.
      - This means that 80% of the share of water went to Pakistan, while leaving the rest 20% of water for use by India.
  - **Permanent Indus Commission:**
    - It also required both the countries to establish a Permanent Indus Commission constituted by permanent commissioners on both sides.
    - According to the provisions of the IWT, the Permanent Indus Commission is required to meet at least once a year.
  - Rights over Rivers:
    - While Pakistan has rights over the waters of Jhelum, Chenab and Indus, Annexure C of the IWT allows India certain agricultural uses, while Annexure D allows it to build 'run of the river' hydropower projects, meaning projects not requiring live storage of water.

- **Dispute Resolution Mechanism:**
  - The IWT provides a three-step dispute resolution mechanism under Article IX of the Indus Waters Treaty, under which "questions" on both sides can be resolved at the Permanent Commission, or can also be taken up at the inter-government level.
  - In case of unresolved questions or "differences" between the countries on water-sharing, such as technical differences, either side can approach the World Bank to appoint a Neutral Expert (NE) to come to a decision.
    - And eventually, if either party is not satisfied with the NE's decision or in case of "disputes" in the interpretation and extent of the treaty, matters can be referred to a Court of Arbitration.

What is Kishanganga Hydroelectric Project?

- The Kishanganga project is located 5 km north of Bandipore in Jammu and Kashmir, India.
- It is a run-of-the-river project that includes a 37 m tall concrete-face rock-fill dam.
- It requires to divert water from the Kishanganga River through a tunnel to a power plant in the Jhelum River basin.
- It will have an installed capacity of 330 MW.
- The construction of this hydroelectric project began in 2007.
- Pakistan objected to the project arguing that it will affect the flow of the Kishanganga River (called the Neelum River in Pakistan).
- In 2013, The Hague's Permanent Court of Arbitration (CoA) ruled that India could divert all the water with certain conditions.

ORGANISATION FOR THE PROHIBITION OF CHEMICAL WEAPONS (OPCW)

In News:

The global chemical weapons watchdog said a nearly two-year investigation had found that at least one Syrian military helicopter had dropped gas cylinders on to residential buildings in the rebel-held Syrian city of Douma in 2018, killing 43 people.

Analysis of Background:

About OPCW:

- Headquarters in The Hague
- The convention is administered by the Organisation for the Prohibition of Chemical Weapons (OPCW), which acts as the legal platform for specification of the CWC provisions.
- The Conference of the States Parties is mandated to change the CWC and pass regulations on the implementation of CWC requirements.

- The Technical Secretariat of the organization conducts inspections to ensure compliance of member states.
- These inspections target destruction facilities (where permanent monitoring takes place during destruction), chemical weapons production facilities which have been dismantled or converted for civil use, as well as inspections of the chemical industry.
- The Secretariat may furthermore conduct "investigations of alleged use" of chemical weapons and give assistance after use of chemical weapons.

Chemical Weapons Convention (CWC):

- The Chemical Weapons Convention (CWC), officially the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction, is an arms control treaty administered by the Organisation for the Prohibition of Chemical Weapons (OPCW), an intergovernmental organization based in The Hague, The Netherlands.
- The treaty entered into force on 29 April 1997, and prohibits the large-scale use, development, production, stockpiling and transfer of chemical weapons and their precursors, except for very limited purposes (research, medical, pharmaceutical or protective).
- The main obligation of member states under the convention is to effect this prohibition, as well as the destruction of all current chemical weapons. All destruction activities must take place under OPCW verification.
- The CWC augments the Geneva Protocol of 1925, which bans the use but not the development or possession of chemical and biological weapons. The CWC also includes extensive verification measures such as on-site inspections, in stark contrast to the 1975 Biological Weapons Convention (BWC), which lacks a verification regime.
- As of 2021, 193 states have become parties to the CWC and accept its obligations.
- Israel has signed but not ratified the agreement, while three other UN member states (Egypt, North Korea and South Sudan) have neither signed nor acceded to the treaty.
- Most recently, the State of Palestine deposited its instrument of accession to the CWC on 17 May 2018.

Key Objectives of the Convention

- Prohibition of production and use of chemical weapons
- Destruction (or monitored conversion to other functions) of chemical weapons production facilities
- Destruction of all chemical weapons (including chemical weapons abandoned outside the state parties territory)

- Assistance between State Parties and the OPCW in the case of use of chemical weapons
- An OPCW inspection regime for the production of chemicals which might be converted to chemical weapons
- International cooperation in the peaceful use of chemistry in relevant areas.

INDIA-ISRAEL RELATIONS

In News:

Prime Minister Shri Narendra Modi spoke on the telephone with His Excellency Benjamin Netanyahu, Prime Minister of Israel.

Analysis of Background:

- Prime Minister conveyed his warm congratulations to H.E. Netanyahu for his election as the Prime Minister of Israel for a sixth time and wished him a very successful tenure.
- The two leaders expressed satisfaction at the rapid progress in the India-Israel Strategic Partnership in recent years and agreed on the potential for further strengthening strategic cooperation in a variety of areas.
- Prime Minister invited H.E. Netanyahu to visit India at an early date.
- Israel and India established diplomatic relations on the 29th of January 1992
- The two countries have extensive economic, military, and strategic relationships

Political relations:

- Political ties between the two countries are friendly.
- Prime Minister Modi undertook a historic first ever visit by an Indian PM to Israel from 4-6 July 2017, during which the relationship was upgraded to a strategic level.

Economic and Commercial Relations:

- India is Israel's third-largest trade partner in Asia and seventh largest
- Major exports from India to Israel include precious stones and metals, chemical products, textiles etc.
- Major imports by India from Israel include precious stones and metals, chemicals and mineral products, base metals and machinery and transport equipment.
- Potash is a major item of Israel’s exports to India.

Cooperation in agriculture:

- Under a comprehensive Work Plan for cooperation in agriculture signed on 10 May 2006, bilateral projects are implemented through Centres of Excellence.
- India has benefited from Israeli expertise and technologies in horticulture mechanization, protected cultivation, orchard and canopy management, nursery management, micro-irrigation and post-harvest management, particularly in Haryana and Maharashtra.
- Israeli drip irrigation technologies and products are now widely used in India.

Defence relations:

- India is the largest buyer of Israeli military equipment and Israel is the second-largest supplier of military equipment to India after Russia.
- Military and strategic ties between the two nations extend to intelligence-sharing on terrorist groups and joint military training.

Indian Community:

- There are approximately 85,000 Jews of Indian-origin in Israel (with at least one Indian parent), who are all Israeli passport holders.
- Recent developments in defence relations:
- In October 2021, India and Israel had agreed to form a task force to formulate a comprehensive 10-year roadmap to identify new areas of cooperation as part of efforts to further advance the bilateral defence cooperation.
- At the same meeting, it was also decided to form a Sub Working Group (SWG) on defence industry cooperation and in this regard, a Terms of Reference was signed between the two sides.
- Israel has been one of India's top defence partners supplying a range of high end defence equipment. Indian armed forces rely heavily on Israeli Searcher and Heron UAVs to meet their surveillance requirements with growing need for more.
- In the second half of last year, the Army also placed orders for smaller, expendable 'SkyStriker' drones to be manufactured in Bengaluru by a joint venture between Israel's Elbit System and India's Alpha Design Technologies, which is now part of Adani Group.
- The two countries have several joint development projects in the pipeline, including the Long Range Surface to Air Missile also called Barak-8 for the Indian Navy's warships. The development which saw some delays is now complete and the missile systems are being inducted.

- In another important project, in April, Hindustan Aeronautics Limited entered into a memorandum of understanding with IAI to convert six Boeing-767 civil passenger aircraft to midair refuelling aircraft in India for the Indian Air Force.
- However, another major deal for two more Phalcon Airborne Warning And Control Systems (AWACS), to add to three in Service, has been stuck for a while for final approval from the Cabinet Committee on Security. With the current focus on indigenous manufacturing and DRDO now indigenously developing larger AWACS, the Phalcon is unlikely to materialise.
- The Army which has operated Israeli small arms for a long time had contracted 16,497 Negev Light Machine Guns from Israel in March 2020 under fast-track procurement and they have since been inducted.

Y20 SUMMIT

In News:

Youth Affairs and Sports Minister Anurag Singh Thakur launched the themes of the Y20 summit, logo, and website in New Delhi in the curtain raiser event of Y20 Summit India.

Analysis of Background:

- The Y20 is the official youth engagement group for the G20 (Group of 20), the forum for the world's largest and most advanced economies.
- The Y20 is a process that brings together young leaders from across the globe, to discuss and debate global challenges and agree policy recommendations they would like to see G20 leaders take forward.
- India is hosting the Y20 summit for the first time.
- In Youth 20 Engagement Group, India's key focus is to bring young leaders from all across the globe together and discuss ideas for a better tomorrow and draft an agenda for action.
- In a run-up to the final Youth-20 Summit, for the next eight months, there will be Pre summits on the five Y20 themes along with various discussions and seminars at different Universities across the country.

UN WOMEN PEACEKEEPING

In News:

The Prime Minister, Shri Narendra Modi has expressed pride as Indian Army deploys its largest contingent of women peacekeepers in United Nation mission at Abyei, UNISFA. Shri Modi also said that India has a tradition of active participation in UN peacekeeping missions.

Analysis of Backgorund:

India and UN peacekeepers:

- For the first time in the history of UN peacekeeping, India sent an all-female Formed Police Unit (FPU)to be deployed in Liberia in 2007 after a civil war ravaged the African nation.
- According to the UN, of around 95,000 peacekeepers in 2020, women comprised 4.8% of military contingents and about 34% of personnel in peacekeeping missions were women.
- India is the third highest contributor of personnel to UN peacekeeping, with 5,481 troops serving in 12 UN missions worldwide.

United Nations Peacekeeping Force:

- It helps countries torn by conflict create conditions for lasting peace.
- Peacekeeping has proven to be one of the most effective tools available to the UN to assist host countries in navigating the difficult path from conflict to peace.
- UN peacekeepers provide security and political and peacebuilding support to help countries make the difficult, early transition from conflict to peace.
- UN peacekeepers (often referred to as Blue Berets or Blue Helmets because of their light blue berets or helmets) can include soldiers, police officers, and civilian personnel.
- UN Peacekeeping is guided by three basic principles:
    - Consent of the parties;
    - Impartiality;
    - Non-use of force except in self-defense and defense of the mandate.

UNGA RESOLUTION ON ISRAEL PALESTINE

In News:

The UNGA ended 2022 by passing a resolution that asked the body's highest court, the International Court of Justice (ICJ) to render its opinion on the legal consequences of Israel's prolonged occupation of Palestinian land.

Analysis of Background:

- The resolution was passed with 87 member countries voting favourably, as opposed to 26 countries, including the U.S. and Israel, voting against it. India was one of the 53 countries that abstained from the vote.

How has Israel altered its occupation of Palestinian land over the years?

- Official Israeli statistics show that Jewish settlers existed in historical Palestine even before the state of Israel was declared in 1948.
- A UNGA resolution had earlier sought to partition British mandate Palestine.
- But as the UN partition plan was rejected by the Arabs and the British mandate was coming to an end, Zionists went ahead declaring independence, triggering the first Arab-Israel war.
- When the war was over, Israel had captured more territories than what the UN plan had proposed and some 7,00,000 Palestinians were displaced
- Historical Palestine was divided into the State of Israel (including West Jerusalem), the West Bank (including East Jerusalem) that was taken over by Jordan and the Gaza Strip (controlled by Egypt).
- Tensions kept rising between Israel and three countries in the region — Egypt, Jordan, and Syria — which led to the six-day war of 1967.
- The war resulted in Israel capturing the West Bank, the Gaza Strip and East Jerusalem, along with Syria's Golan Heights and the Sinai Peninsula of Egypt.
- While the Sinai Peninsula was later returned to Egypt, other captured areas of Palestinian and Syrian territory remain under Israel's military control.
- Later, Israel also declared the whole of Jerusalem as its "eternal, undivided capital". While Israel withdrew from Gaza in 2005, it's external borders are still controlled by Israel and Egypt.
- While the UN Security Council passed a resolution in late 1967 stating that Israel must withdraw from the territories it seized in the war, it is yet to happen and the fate of Palestinian self-determination remains uncertain.
- Palestinians seek the West Bank as the heartland of a future independent State. However, in the decades since the 1967 war, Israel has constructed dozens of Jewish settlements in West Bank, alongside the three million Palestinians living under Israeli military rule.
- Most of the international community considers Israel's West Bank settlements illegal and an obstacle to peace. Incidents of violence and killings of Palestinians by Israeli forces have become common over the years.

What does the resolution seek to do?

- The resolution passed by the UNGA on December 30 asked the ICJ to provide its advisory opinion on the legal consequences of Israel's "occupation, settlement and annexation ... including measures aimed at altering the demographic composition, character and status of the Holy City of Jerusalem, and from its adoption of related discriminatory legislation and measures."
- While the U.S. rejected the resolution and major European powers abstained, the vote got unanimous support from the Arab nations.
- There are two possibilities when a referral is made to the ICJ, it can either lead to a settlement with a party withdrawing its case or it can lead to a trial followed by a verdict. While its rulings are binding, the ICJ has no power to enforce them.

International Court of Justice (ICJ):

- It is the principal judicial organof the United Nations (UN).
- It was established in June 1945by the Charter of the United Nations and began work in April 1946.
- ICJ is the successor to the Permanent Court of International Justice (PCIJ), which was brought into being by the League of Nations in 1922.
- Seat: ICJ is based at the Peace Palace in The Hague. It is the only one of the six principal organs of the UN that is not located in New York City.
- Roles:"to settle legal disputes submitted to it by States and to give advisory opinions on legal questions referred to it by authorized United Nations organs and specialized agencies".
- Membership:All members of the UN are automatically parties to the ICJ statute, but this does not automatically give the ICJ jurisdiction over disputes involving them. The ICJ gets jurisdiction only if both parties consent to it.
- Appellate: The judgment of the ICJ is final and technically binding on the parties to a case. There is no provision of appeal;it can at the most, be subject to interpretation or, upon the discovery of a new fact, revision.
- ICJ has no way to ensure compliance of its orders, and its authority is derived from the willingness of countries to abide by them.
- ICJ has 15 judgeswho are elected to nine-year terms by the UN General Assembly and Security Council, which vote simultaneously but separately. Four Indians have been members of the ICJ so far. Justice Dalveer Bhandari, former judge of the Supreme Court, has been serving at the ICJ since 2012.

India at the ICJ:

- India has been a party to a case at the ICJ on six occasions, four of which have involved Pakistan.
- They are:
  - Right of Passage over Indian Territory (Portugal v. India, culminated 1960);
  - Appeal Relating to the Jurisdiction of the ICAO Council (India v. Pakistan, culminated 1972);
  - Trial of Pakistani Prisoners of War (Pakistan v. India, culminated 1973);
  - Aerial Incident of 10 August 1999 (Pakistan v. India, culminated 2000);
  - Obligations concerning Negotiations relating to Cessation of the Nuclear Arms Race and to Nuclear Disarmament (Marshall Islands v. India, culminated 2016); and
  - (Kulbhushan) Jadhav (India v. Pakistan, culminated 2019).

ICJ Vs. ICC:

	International Court of Justice (ICJ) La Cour Internationale de Justice (CIJ)	International Criminal Court (ICC) La Cour pénale internationale (CPI)
Year Court Established	1946	2002
UN-Relationship	Official court of the U.N., commonly referred to as the "World Court."	Independent. May receive case referrals from the UN Security Council.
Location	The Hague, The Netherlands	The Hague, The Netherlands
Types of Cases	Contentious between parties & Advisory opinions	Criminal prosecution of individuals
Subject Matter	Sovereignty, boundary, & maritime disputes, trade, natural resources, human rights, treaty violations, treaty interpretation, and more.	Genocide, crimes against humanity, war crimes, crimes of aggression
Funding	UN-funded.	Assessed contribution from state parties to the Rome Statute; voluntary contributions from the U.N.; voluntary contributions from governments, international organizations, individuals, corporations and other entities.

What is the UNGA?

- The UN General Assembly (UNGA), the United Nation's chief policy-making and representative organ, was created in 1945.
- It meets from September to December every year, and then again between January and August.
- At the beginning of each regular session in September, the Assembly holds its main event — the general debate, where representatives of each member state are provided the opportunity to raise any issues that concern them.
- It is one of the six principal organs of the United Nations(UN).
- It serves as the main deliberative, policymaking, and representative organ of the UN
- Its powers, composition, functions, and procedures are set out in Chapter IV of the United Nations Charter.
- The UNGA is responsible for the UN budget, appointing the non-permanent members to the Security Council, appointing the Secretary-General of the United Nations, receiving reports from other parts of the UN system, and making recommendations through resolutions
- It also establishes numerous subsidiary organs to advance or assist in its broad mandate.
- The UNGA is the only UN organ wherein all member states have equal representation.
- It can reconvene for special and emergency special sessions.
- Voting in the General Assembly on certain important questions—namely recommendations on peace and security; budgetary concerns; and the election, admission, suspension or expulsion of members—is by a two-thirds majority of those present and voting.Other questions are decided by a simple majority. Each member country has one vote.
- Apart from the approval of budgetary matters, including the adoption of a scale of assessment, Assembly resolutions are not binding on the members.
- All 193 members of the United Nations are members of the General Assembly, with the addition of Holy See and Palestine as observer states.

Background:

ISRAEL PALESTINE CONFLICT TIMELINE	
1799	Napoleon offers Palestine as a home to the Jews.
1882	Rishon Le Zion, a major Zionist settlement is established in Palestine.
1885	The term Zionism is first coined.
1897	First Zionist congress is held in Switzerland and first Zionist organization is founded.

1916	Sykes-Picot agreement is signed dividing middle east between French and British.
1917	Balfour declaration is created. Britain promises a Jewish national home on Arab land.
1919	King-Crane Commission on the future of Palestine.
1922	League of Nations gives approval to British promises.
1929	Al-Buraq uprising, the first mass protests against increased Jewish migration.
1935	Peel Commission recommends partition of Palestine.
1947	UN adopts Resolution 181, a partition plan for Palestine into separate Jewish and Arab states which Palestine rejects.
1948	The state of Israel is created.
1949	First Arab-Israeli war and Israel seizes more land than agreed in armistices. Gaza strip is created. UN establishes UNRWA.
1950	Jordan assumes control of the West Bank.
1964	Palestine Liberation Organisation (PLO) is formed.
1967	6-day war and Israel occupies rest of Palestine including West Bank, Gaza Strip, Golan Heights (Syria), Sinai (Egypt). UNSC calls on Israel to withdraw from these areas.
1978	Egypt and Israel sign the Camp David accords
1987	First Intifada is launched in occupied Palestine territory.
1991	Madrid Peace Conference ends.
1993	Oslo Accord Signed. Palestine and Israeli leaders sign a Declaration of Principles in Washington. Here the PLO is recognized by Israel and given some powers in Gaza. The PLO recognizes Israel's right to exist. Violence is stopped. They agreed on a plan to implement a two-state solution as part of the Oslo Accords, leading to the establishment of the Palestinian Authority (PA).
2000	Camp David II Summit where Israel and PLO renew final status negotiations.
2002	Israel reoccupies Palestinian cities in West Bank in the wake of 2nd Intifada.
2005	Israel agrees to withdraw from Gaza but maintains control of airspace and some imports/exports while restricting some travel.
2008	Israel invades Gaza in Operation Cast Lead.
2014	50-day conflict over the summer in Operation Protective Edge after more rockets are launched at Israel. Israel invades Gaza again.
2017	U.S. announces decision to relocate the U.S. embassy to Jerusalem, recognizing the city as Israel's capital.

CROATIA

In News:

Croatia switched to the euro and entered Europe's passport-free zone -- two major milestones for the country after joining the European Union nearly a decade ago.

Analysis of Background:

- Croatia switched to the euro and entered Europe's passport-free zone -- two major milestones for the country after joining the European Union nearly a decade ago.
- The Balkan nation bid farewell to its kuna currency and became the 20th member of the eurozone.
- It is now the 27th nation in the passport-free Schengen zone, the world's largest, which enables more than 400 million people to move freely around its members.
- The union of 27 member states located in Europe is called the European Union. Out of these only 20 countries have adopted Euro as their authorised currency. These countries are collectively known as the Eurozone.
- The remaining countries of the European Union have not adopted the Euro, these countries have their own separate currency.
- In December 1991, important decisions related to political, monetary and economic integration of the Europe were taken by the heads of the states of 12 members' countries. This comes to be known as the Maastricht Treaty (Netherlands).
- "Maastricht Treaty" came into effect since November 1, 1993and gave birth to a new organisation known as "European Union".
- The "Maastricht Treaty" and documents of the European Union, singed in the February, 1992 state that all countries of the European Union will do efforts to make a common monetary and economic policy. Due to the intense efforts in this direction, the common currency of the Eurozone came into existence since January 1, 1999.
- To be able to join the Eurozone the EU member states are required to fulfil the so-called 'Convergence Criteria'. These are economic and legal conditions agreed in the Maastricht Treaty in 1992 and are also known as the 'Maastricht criteria'.
- According to the Maastricht treaty, if a EU country wants to join the Eurozone, then it will have to meet these 4 following conditions:
    1. Low Inflation: If a country wants to be in the Eurozone, its inflation should not exceed 1.5% of the top three lowest inflation having countriesof Eurozone.
    2. Low Interest Rate:Interest rates should not exceed 2% as compared to the first three lowest interest rate having countries.
    3. The annual budget deficit of the aspirant country should not exceed 3% of the Gross Domestic Product of its economy.

4. The debt of the aspirant country should not exceed 60% of the Gross Domestic Product of its economy.

Schengen Area:

- Schengen Areasignifies a zone where 27 European countries, abolished their internal borders, for the free and unrestricted movement of people, in harmony with common rules for controlling external borders and fighting criminality by strengthening the common judicial system and police cooperation.
- Schengen Area covers most of the EU countries, except Ireland, and the countries that are soon to be part of the Schengen Area: Romania, Bulgaria, and Cyprus. Although not members of the EU, countries like Norway, Iceland, Switzerland and Lichtenstein are also part of the Schengen zone.
- 23 members fully implement the Schengen acquis,
- Four of them – members of the EFTA, implement Schengen acquis through specific agreements related to the Schengen agreement.
- Iceland, Norway, Switzerland and Lichtenstein are associate members of the Schengen Area but are not members of the EU. They are part of the EFTA and implement the Schengen acquis through specific agreements related to the Schengen agreement.
- Monaco, San Marino, and Vatican City have opened their borders with, but are not members of the visa-free zone.
- The Azores, Madeira, and the Canary Islands are special members of the EU and part of the Schengen Zone even though they are located outside the European continent.
- There are four more EU members, that have not joined the Schengen zone: Ireland – which still maintains opt-outs and Romania, Bulgaria, and Cyprus – that are seeking to join soon.
- Schengen Area Countries:

About EU:

- European Union is an international organisation consisting of European Countries, which was formed in 1993.
- It came into force after the signing of the Maastricht Treatyby 28 countries.
- The Maastricht Treaty is also known as the Treaty of the European Union (TEU).
- Members of the EU: 27. UK made an exit from the EU on 31st January 2020
- European Union has 24 official languages
- Euro is the official currency for 19 of the 27 EU member countries
- The objectives of forming the European Union are:
- To increase political cooperation
- To enhance economic integration by creating a single currency the EURO.
- Unified security and foreign policy
- Common citizenship Rights
- Enhanced cooperation in the areas of judiciary, immigration and asylum.

- European Union was awarded the Nobel Prize for Peace in 2012.

INDIA AUSTRIA RELATIONS

In News:

Close on the heels of similar mobility agreements with France, the United Kingdom, Germany and Finland, India will sign a "Comprehensive Migration and Mobility Partnership Agreement" (MMPA) with Austria during External Affairs Minister S. Jaishankar's visit to Vienna.

Analysis of Background:

- While India has been keen to finalise these agreements with European countries as a stepping stone to resolving issues over the long-pending India-European Union (EU) Free Trade Agreement and facilitating Indian professionals working in these countries, the European countries also see them as a way to curb illegal immigration from India.
- This is a much-needed agreement, especially in view of the sharp increase in illegal migration Austria was confronted with last year, including over 15,000 illegal migrants from India with practically no chance of asylum.
- The agreement is now a useful tool to combat illegal migration together, as it enables the swift return of illegal migrants.
- In addition, the agreement will regulate multiple entry visas for professionals and student exchange programmes, and will be reviewed regularly by a Joint Working Group.
- This is the first trip to Austria by an Indian Foreign Minister in 27 years.

TOPIC: ECONOMY

GOLD EXCHANGE TRADED FUNDS (ETFS)

In News:

Inflow in Gold Exchange Traded Funds (ETFs) plunged by 90% to ₹459 crore in 2022 due to rising prices of gold, increasing interest rate structure coupled with inflationary pressures.

Analysis of Background:

Gold ETF:

- A Gold ETF is an exchange-traded fund (ETF) that aims to track the domestic physical gold price. They are passive investment instruments that are based on gold prices and invest in gold bullion.

- In short, Gold ETFs are units representing physical gold which may be in paper or dematerialised form. One Gold ETF unit is equal to 1 gram of gold and is backed by physical gold of very high purity. Gold ETFs combine the flexibility of stock investment and the simplicity of gold investments.
- Gold ETFs are listed and traded on the National Stock Exchange of India (NSE) and Bombay Stock Exchange Ltd. (BSE) like a stock of any company. Gold ETFs trade on the cash segment of BSE & NSE, like any other company stock, and can be bought and sold continuously at market prices.
- Buying Gold ETFs means one is purchasing gold in an electronic form. One can buy and sell gold ETFs just as one would trade in stocks. When one actually redeems Gold ETF, she does not get physical gold, but receives the cash equivalent. Trading of gold ETFs takes place through a dematerialized Account (Demat) and a broker, which makes it an extremely convenient way of electronically investing in gold.

How does a Gold ETF work?

Purity & Price:

- Gold ETFs are represented by 99.5% pure physical gold bars. Gold ETF prices are listed on the website of BSE/NSE and can be bought or sold anytime through a stock broker. Unlike gold jewellery, gold ETF can be bought and sold at the same price Pan-India.
- Where to buy:
- Gold ETFs can be bought on BSE/NSE through the broker using a demat account and trading account. A brokerage fee and minor fund management charges are applicable when buying or selling gold ETFs.

RISKS:

- Gold ETFs are subject to market risks impacting the price of gold. Gold ETFs are subject to SEBI Mutual Funds Regulations.
- Regular audit of the physical gold bought by fund houses by a statutory auditor is mandatory.
- Advantages of Gold ETF:
- Purity of the gold is guaranteed and each unit is backed by physical gold of high purity.
- Transparent and real time gold prices.
- Listed and traded on stock exchange.
- A tax efficient way to hold gold as the income earned from them is treated as long term capital gain.
- No wealth tax, no security transaction tax, no VAT and no sales tax.

- No fear of theft - Safe and secure as units held in Demat. One also saves on safe deposit locker charges.
- ETFs are accepted as collateral for loans.
- No entry and exit load.

Gold versus Gold ETFs:

ETF	Gold
It is a form of investment	Idle wealth
For a short-term or long-term financial goal	Personal use, loan collateral
No need to store. Hence, no risk	Must be stored away safely
Same value as that of physical gold	Subject to market rate fluctuations
Traded on the stock exchange	Purchased from a retailer/jeweller
Fund management expense (expense ratio)	High making charges

DIGITAL PAYMENTS

In News:

The Union Cabinet approved an outlay of ₹2,600 crore to promote payments using RuPay cards and the Unified Payments Interface (UPI).

Analysis of Background:

- The fund will be paid to banks in view of the lack of a Merchant Discount Rate (MDR) — a commission on digital transactions — for UPI and RuPay transactions.
- There have been complaints from the Reserve Bank of India (RBI) and banks, as there is a lack of financial sustainability of building digital payments infrastructure in the absence of payments needed to scale and maintain them.

MDR

A merchant discount rate, or MDR, is a rate charged to a merchant for the payment processing of debit and credit card transactions. The merchant discount rate is also referred to as the transaction discount rate (TDR). MDR is given as a percentage of each sales transaction processed.

Significance if the Incentive Scheme:

- Total digital payments transactions have registered a year-on-year growth of 59%, rising from [₹]5,554 crore in FY2020-21 to [₹]8,840 crore in FY2021-22."
- This recent Incentive Scheme will also promote UPI Lite and UPI 123PAY as economical and user-friendly digital payments solutions and enable further deepening of digital payments in the country.
- Digital Payments in India:
- India since independence has remained a cash dependent economy. India's cash to GDP ratio is 13 % whereas the global average is a maximum of 8%.
- The Indian government has been trying to go cashless to counter problems like illegal transactions, money laundering, black money ete. Demonetization was a big step towards going cashless and getting transactions digitized.
- Since then there has been a big shift and today we can see hawkers and tea-sellers accepting digital payments in many parts of India. Each month records Billions of transactions on NPCI's UPI platform.

INLAND WATERWAYS

In News:

Union Minister of Ports, Shipping & Waterways and Ayush announced major initiatives planned for Assam by the Ministry of Ports, Shipping & Waterways this year for the development of inland waterways in Guwahati.

Analysis of Background:

- Prime Minister Shri Narendra Modi will inaugurate Maritime Skill Centre for Northeast to ramp up capacity in Pandu port in Guwahati in January 2023.
- The other initiatives are the Ship Repair Facility at Pandu Multi Modal terminal and an elevated road connecting with the Multi Modal Terminal at Pandu with National Highway 27 in Guwahati. The facilities are part of major initiatives planned by the Ministry of Ports, Shipping & Waterways for revamping inland waterways in Assam & the Northeast.
- About National Waterways:
- India has a vast network of inland waterways that include river bodies, canals, backwaters and creeks.
- However, these inland waterways have been unutilised, as compared to other countries in the world.
- The National Waterways Actproposed 106 additional national waterways to the five national waterways declared earlier.

- The Inland Waterways Authority of India (IWAI)is responsible for the timely execution of national waterways projects and to ensure improved water transportation in India.
- Under the National Waterways Act, 2016, 111 inland waterways (including five national waterways in India declared earlier) have been declared as 'national waterways'.

The longest national waterway is the National Waterway 1 or the Ganga-Bhagirathi-Hooghly river system, running from Prayagraj in Uttar Pradesh to Haldia in West Bengal and covers a length of 1,620 kilometres.
The first national waterways in India or the National Waterway 1 is the Ganga-Bhagirathi – Hooghly River System from Haldia to Allahabad.
The Manimutharu River in Tamil Nadu or the National Waterway 69 is the shortest national waterway in India.

Operational national waterways of India:
Out of the 111 national waterways, there are 13 national waterways that are operational for shipping and navigation. These are:

1. National Waterway 1: Ganga-Bhagirathi – Hooghly River System (Haldia – Allahabad)
2. National Waterway 2: Brahmaputra River (Dhubri – Sadiya)
3. National Waterway 3: West Coast Canal (Kottapuram – Kollam), Champakara and Udyogmandal Canals
4. National Waterway 4: Phase – 1 development of the stretch Muktiyala to Vijayawada of river Krishna
5. National Waterway 10: Amba River
6. National Waterway 83: Rajpuri Creek
7. National Waterway 85: Revadanda Creek – Kundalika River System
8. National Waterway 91: Shastri river – Jaigad creek system
9. National Waterway 68: Mandovi – Usgaon Bridge to the Arabian Sea spanning 41 kilometres
10. National Waterway 111: Zuari – Sanvordem Bridge to Marmugao Port spanning 50 kilometres
11. National Waterway 73: Narmada river
12. National Waterway 100: Tapi river
13. National Waterway 97 :or Sunderbans Waterways: Namkhana to AtharaBankiKhal in West Bengal.

About Inland Waterways Authority of India (IWAI):

- The Inland Waterways Authority of India (IWAI) is responsible for the development and regulation of inland waterways for shipping and navigation.
- Launched in October 1986, the Noida-headquartered Authorityhas regional offices across different cities.
- It mainly undertakes projects for developing and maintaining the Inland Water Transport (IWT) infrastructure on national waterways through grants from the Shipping Ministry.

ANTI-DUMPING DUTY

In News:

The Association of Man-made Fibre Industry of India (AMFII) has appealed to the Union Finance Ministry to accept the recommendations of the Directorate General of Trade Remedies (DGTR) on the levy of anti-dumping duty (ADD) on imports of Viscose Staple Fibre from Indonesia.

Analysis of Background:

About Anti-Dumping Duty:

- Anti-dumping duty is a tariff imposed on imports manufactured in foreign countries that are priced below the fair market value of similar goods in the domestic market.
- Anti-dumping duty is imposed to protect local businesses and markets from unfair competition by foreign imports.
- The use of anti-dumping measures as an instrument of fair competition is permitted by the World Trade Organisation.
- Where dumping occurs, the WTO allows the government of the affected country to take legal action against the dumping country as long as there is evidence of genuine material injury to industries in the domestic market. The Government must show that dumping took place, the extent of the dumping in terms of costs, and the injury or threat to cause injury to the domestic market.

RUBBER PLANTATION

In News:

A research article, titled *Impact of Monoculture Rubber Plantation on non-Human Primates and Plant Diversity in South Tripura*, was released by Tripura University.

Analysis of Background:

Rubber Plantation overview

- Humans are overusing the world's tropical forests. According to World Wide Fund for Nature every year, about 140,000 square kilometers of forests are lost. A large proportion of primary forest in India has been converted into monoculture plantations like tea, oil palm, teak and natural rubber. Rubber plantations have doubled their global base from 1960 to 2000.
- In 2020, the worldwide planted area of rubber was 14,878.1 thousand ha, out of them 822,000 ha of which was in India, according to Statista's 2021 report. Culturing natural rubber in the last century has brought significant economic benefits for growers. But excessive rubber plantations are adversely affecting various wildlife and plant species.

Impact on Non-Human Primates and Biodiversity

- The number of monkeys in the rubber plantation area is much lower than in the nearby forests and the primates spend less time in rubber plantations.
- Due to the reduction in forest cover, monkeys occasionally enter rubber plantations for food, but they find little in monoculture plantation areas. As a result, monkeys are suffering, their behaviour is changing and species diversity is decreasing.
- Non-human primates are of central importance to tropical biodiversity and various ecosystem functions. These primates help in the pollination, seed dispersion and seed germination of many plants and they are essential seed predators in some ecosystems. But due to the growing rubber plantations, they do not get enough food, which makes their survival difficult. This threatens the species and the primates can go extinct, disrupting the environment's natural state.
- Fewer shrubs and herbaceous plants grow in rubber plantation areas than in the forests as people cut and destroy these plants. This has decreased the biodiversity value of the plantations.
- Many wild animals and plants are slowly disappearing as more and more forest land is being converted into plantations for financial gains.

Solution

- The solution is building eco-friendly rubber plantations. Growing fruiting plants in rubber plantation areas, maintaining a specified distance, so animals are more attracted to them.
- Various plants should also be kept intact at the edges of the rubber plantation and around the water bodies, which provide shelter or food habitat for many animals in these areas.
- The agroforestry system allows rubber plants, forest vegetation, edible and useful plants planted together and kept at proper intervals, which is economically suitable and also will help conserve biodiversity.

Rubber

- Rubber consists of polymers of the organic compound isoprene, with minor impurities of other organic compounds.
- The main chemical constituents of rubber are elastomers, or “elastic polymers,” large chainlike molecules that can be stretched to great lengths and yet recover their original shape.
- Thailand and Indonesia are two of the leading rubber producers.
- India is the world's second-biggest consumer of natural rubber and the fourth-largest producer of Rubber in the world after Thailand, Indonesia and Vietnam.
- *Hevea brasiliensis*, or rubber tree, is a flowering plant belonging to the spurge family The milky latex extracted from the tree is the primary source of natural rubber. *Brasiliense is* a tall deciduous tree.
- The tree requires a tropical or subtropical climate with a minimum of about 1,200 mm per year of rainfall, and no frost. If frost does occur, the results can be disastrous for production. In the wild, the tree can reach a height of up to 140 feet.

Distribution in India

- States like Kerala and Tamil Nadu are traditionally rubber-growing regions in India. However, Tripura, Assam, Manipur, Meghalaya, Karnataka, Andaman and Nicobars Islands, Goa, Maharashtra, Orissa, West Bengal and Andhra Pradesh have non-traditional rubber plantation areas as well, according to the Indian Council of Agricultural Research.
- Kerala being the largest producer produces around 74% of India's total rubber production.
- Kottayam, Kollam, Ernakulam, Kozhikode districts produce Rubber in Kerala.

- Nilgiri, Madurai, Kanniyakumari, Coimbatore and Salem are the chief rubber-producing districts of Tamil Nadu.
- Chikmagalur and Kodagu are the main producing districts in Karnataka.

TOPIC: ENVIRONMENT

BLACK-NECKED STORK

In News:

The black-necked stork was recorded for the second consecutive year in Porbandar, while two tagged demoiselle cranes were also sighted during a two-day bird count that concluded in Porbandar

Analysis of Background:

- BNS (Ephippiorhynchus asiaticus) is categorised as a near-threatened species on the Red List of the International Union for Conservation of Nature (IUCN) due to its declining population trend globally largely on account of habitat loss.
- It is considered a rare bird in Gujarat due to its small population size.
- The Khijadiya Bird Sanctuary near Jamnagar and the Marine National Park along the coast of Jamnagar and Devbhumi Dwarka district harbour the largest population of BNS in Gujarat.
- The species has been breeding successfully in Khijadiya, a Ramsar site, as well as in the coastal wetland area.
- Birds of this species are also sighted in Bharuch, Vadodara, Polo Forest in Sabarkantha and Kutch. They are also occasionally sighted at Nal Sarovar Bird Sanctuary, another Ramsar site, in the state.
- Porbandar is a major wintering ground for the demoiselle crane population that breeds in central Asia.

Black-Necked Stork:

- The black-necked stork (Ephippiorhynchus asiaticus) belongs to the family Ciconiidae.
- The black-necked stork is distributed in the Indian Subcontinent, Southeast Asia and Australia.
- There are two subspecies of these birds. The subspecies E. a. asiaticus occurs in Pakistan, India, Nepal and Sri Lanka. The subspecies E. a. australis occurs in New Guinea, and Australia.
- They are large birds, measuring 110 to 140 cm in length and weighing 4,000 grams. The male and female birds look alike. Their wingspan is 190 to 220 cm. Their height is between 120 to 150 cm.

- These storks inhabit marshes, wetlands, lakes, flooded grasslands, swamps, rivers and water meadows. They feed on fish, frogs and snakes. They breed during August to January in India.

BHOJ WETLAND

In News:

The National Green Tribunal has directed the Central Pollution Control Board (CPCB) and Madhya Pradesh Pollution Control Board (MPPCB) to periodically monitor the activities of a cruise vessel polluting the Bhoj wetland in Bhopal, MP.

Analysis of Background:

- The Bhoj wetland is situated in the heart of Bhopal district in Madhya Pradesh.
- The wetland consists of two man-made lakes--the upper lake and the lower lake.
- The upper lake, the oldest among large man-made lakes in central India, was created by king Bhoj in the 11th century by constructing an earthen dam across the Kolans river and the lower lake was constructed nearly 200 years ago mostly from the seepage from the upper lake.

More on details:

- In 1995, the Madhya Pradesh government initiated a Rs 2.5 billion project for the conservation of the wetland with the money borrowed from the Japanese Bank For International Cooperation (JBIC).
- In 2002, the Bhoj wetland was recognised as a wetland of international importance under the Ramsar Convention of 1971.
- As per a report by the Centre for Science and Environment (CSE), the upper lake has reduced from the initial 30 sq km to 8 sq km now. The lower lake also got reduced from 8 sq km to 2 sq km in 2009. The total length of the lake was 38 km, but it got reduced to 5 km in 2009.

Importance of Bhoj wetland:

- The upper lake in Bhopal is an important wetland which is home to more than 700 species of diverse flora like zooplankton, phytoplankton, etc.
- The wetland is also an important site of avian fauna with more than 150 species of both migratory and resident birds.
- This rich biodiversity of the wetland has, however, been affected adversely in the last few years due to various anthropogenic pressures and natural calamities, irregular rainfall during the last decade being one of them.

- The upper lake is the principal source of drinking water (40 percent) for the city of Bhopal; the lower lake meets out the requirement of raw water and enhances the beauty of the city.
- These lakes are ideal spots for watersports like kayaking, canoeing, parasailing and water skiing and attract tourists in hordes.
- The upper lake is a source of livelihood--both direct and indirect--for many communities including fishermen, boat owners and local vendors.

Problems the lakes face:

- The last six decades have seen rapid urbanisation near the Bhoj wetland resulting in various environmental problems.
- The water quality is getting deteriorated from the sewage inflow from urban areas, agricultural waste from rural areas and industrial effluents, apart from the flourishing growth of invasive aquatic plants, depletion of biodiversity and other anthropogenic activities.

HAIDERPUR WETLAND

In News:

Uttar Pradesh irrigation department drained out the Haiderpur wetland, forcing tens of thousands of migratory birds to leave the most prominent migratory bird nesting site in western Uttar Pradesh.

Analysis of Background:

- The draining out was done under pressure from farmers who complained of water logging in their fields due to high groundwater level.
- Haiderpur wetland is a Ramsar site, a wetland of international importance, on the border of Muzaffarnagar and Bijnor districts in Uttar Pradesh.
- Ramsar sites come under wetland rules, 2017, which calls for maintaining the ecological integrity of a wetland.
- Key to a wetland is water, but also wetland vegetation.
- While wetlands can be temporarily dry, depending on factors like rainfall, intentionally draining them of water is against the core value of the wetland rules.
- This human-made wetland was formed in 1984 by the construction of the Madhya Ganga Barrage on a floodplain of the River Ganga. It is located within the boundaries of Hastinapur Wildlife Sanctuary.
- Administrative region: Uttar Pradesh
- National legal designation: Wildlife Sanctuary - Hastinapur Wildlife Sanctuary

Species:

- Haiderpur Wetland provides habitat for numerous animal and plant species, including more than 30 species of plants, over 300 species of birds including 102 waterbirds, more than 40 fish and more than ten mammal species.
- This diverse habitat supports more than 15 globally threatened species, such as the critically endangered gharial (*Gavialis gangeticus*) and the endangered hog deer (*Axis porcinus),*black-bellied tern (*Sterna acuticauda*)*,* steppe eagle (*Aquila nipalensis),* Indian skimmer (*Rynchops albicollis*) and gold mahseer (*Tor putitora*).
- The Site supports more than 25,000 waterbirds, serves as a breeding site for the near-threatened Indian grassbird (*Graminicola bengalensis*) and provides refuge to the northern subspecies population of the vulnerable swamp deer (*Rucervus duvaucelii*) during its seasonal flood-driven migration.
- The Site also regularly supports more than 1% of the population of greylag goose (*Anser anser*)and bar-headed goose *(Anser indicus*).
- Haiderpur Wetland also helps to support the livelihoods of the local communities, and contributes to the maintenance of hydrological regimes and to hazard reduction.
- It is used for recreation and tourism, and scientific and educational activities are also associated with the Site.

NATIONAL CLEAN AIR PROGRAMME

In News:

Four years since the introduction of the National Clean Air Programme (NCAP) — India's first national policy on curbing air pollution — air quality has improved in only 49 out of 131 cities in 2021-22 from the previous financial year's figure, according to a report by the Centre for Research on Energy and Clean Air.

Analysis of Background:

Findings:

- Only 38 of the 131 cities that were given annual pollution reduction targets under agreements signed between State Pollution Control Boards (SPCBs), Urban Local Bodies (ULBs) and the Centre managed to meet the targets for 2021-22, the report noted.
- CREA estimates India will need to install more than 300 manual air quality monitoring stations per year to reach the NCAP goal of 1,500 monitoring stations by 2024. So far, only 180 stations were installed over the past four years.

About NCAP:

- The NCAP, announced four years ago, covers 132 of India's most polluted or so-called non-attainment cities.
- This is defined as a city whose air quality did not meet the national ambient air quality standards of 2011 to 2015.
- The NCAP aims to bring a 20%-30% reduction in pollution levels from PM2.5 and PM10 particles by 2024, using 2017 pollution levels as a base.
- For disbursing funds, the Central Pollution Control Board, which coordinates the programme, only considers levels of PM10, the relatively larger, coarser particles.
- However PM2.5, the smaller, more dangerous particles, aren't monitored as robustly in all cities, mostly due to the lack of equipment.
- Cities are required to quantify improvement starting 2020-21, which requires 15% and more reduction in the annual average PM10 concentration and a concurrent increase in "good air" days to at least 200.
- Anything fewer will be considered 'low' and the funding, provided by the Centre via the Environment Ministry, consequently reduced.

M-Sand

In News:

Northern Coalfields Limited (NCL), the Miniratna coal-producing company is all set to start production of 'M-Sand'-the core material used in construction in civil works in its Amlohri Project.

Analysis of Background:

M Sand

- M Sand is artificial sand made from the crushing of rock or granite for construction purposes in cement or concrete.
- It is used as a substitute for river sand.
- M sand differs from natural river sand in its physical and mineralogical properties.

Manufacturing:

M-Sand is manufactured in a three-stage process:

Crushing:

- Quarry and rock stones are crushed at jaw crushers, cone crushers, and vertical shaft impact crushers, respectively leading to the formation of angular and cubical fine aggregate particles.

Screening:

- Screening ensures this material is properly graded that's similar to river sand.

Washing:

- Washing removes all the micro-fine particles. Also, fine aggregates for concrete and plaster sand are also formed.

M Sand (Manufactured Sand)	River Sand
Made of on factories under the supervision	Available naturally at river beds.
Moisture is only available in water-washed M sand.	Moisture is trapped between the fine particles for concrete purposes
High concrete strength compared to river sand	Low concrete strength compared to M sand
The sand particles of M sand are in cubic form. This makes the bond stronger.	Bonding is weak because of its Excessive presence of flaky, sharp and angular grains
zero slit content	3-20% silt content
0% of marine products	2-4% Marine Products (shells, etc)
No oversized products as they are well standardized and manufactured under control.	6-10% enlarged material (stones) should be sieved
Better quality control from being manufactured in a controlled environment	There is no restriction on quality as it occurs naturally. There may be differences in silt contents in the same riverbed sand.
An eco-friendly product, which causes less damage to the environment compared to river sand.	Harmful to the environment. Environmental imbalances reduce groundwater levels and river water dries up.
M-sand dry density of 1750 kg/m3	Naturally Sand dry the density of 1600 kg/m3
M-sand specific gravity is approximately 2.73 (Depend on the parent rock.)	River sand specific gravity is approximately 2.65 (Depending on rocks in the catchment area.)
Made of on factories under the supervision	Available naturally at river beds.
Moisture is only available in water-washed M sand.	Moisture is trapped between the fine particles for concrete purposes

High concrete strength compared to river sand	Low concrete strength compared to M sand
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zero slit content	3-20% silt content
0% of marine products	2-4% Marine Products (shells, etc)

Advantages of M Sand:

- It is highly cohesive and compressive in strength.
- It does not have the presence of impurities such as clay, dust, and silt coatings. This helps in producing better quality concrete.
- M-sand produced under strict industrial control and manufactured to meet BIS standards has proven to produce stronger concrete compared to river sand.
- A nearly 30 %(percent) increase in masonry strength is obtained with the use of manufactured sand.
- It requires a lower water-cement ratio if the mortar is mixed with manufactured sand, which also results in better characteristics in the hardened state.
- It does not contain an organic and soluble compound that affects the setting time and properties of cement, thus the required strength of concrete can be maintained.
- Manufacturing sand also eliminates the environmental impact that occurred due to the lifting of natural sand from the river bed.

Disadvantages of M-sand:

- Improper crushing of manufacturing sand may lead to angular and flaky particles that are not suitable for concrete production, both technically and economically.
- Also, an adequate set up of crusher may not be available in some parts of the county like West Bengal, as it costs higher than river sand.
- For high-grade pumpable concrete in high-rise buildings, the requirement of cement is higher than the river sand, which may not be cost-effective.

M Sand in India:

- All the four southern states Andhra Pradesh, Tamil Nadu, Telangana, Karnataka have recognized it as a substitute for river sand, and have been promoting its use over the years. Gujarat also manufactures M-sand.
- Karnataka has been the most proactive of the lot. In fact, the 2011 sand policy encourages the establishment of M-sand units by giving it a top priority while allotting

quarries. The State has 164 M-sand manufacturing units that produce 20 million tonnes of M sand per annum.

Hurdles in Using Alternative Sands:

Manufactured sand is being used in India, but is still not popular due to the following reasons:

- Lack of standard: In India too there are no details and specifications, especially regarding gradation, properties like void content, sand equivalent, limits of deleterious materials, and on proper mix proportions.
- No government support: Besides the lack of government support, there are malpractices in every stage of construction, and lack of an appropriate policy to formulate and implement proper management of waste and use of alternatives. This is because even the government buildings are being built with river sand. Although there are guidelines for sustainable mining, illegal sand mining continues to be prevalent.
- Limited awareness: Lack of awareness of the possibilities of production and use of alternative sand in construction is a major barrier. There is a need to generate experimental data on different types of alternative sands and on their properties so that they can be recognized by the government and private construction sectors.
- Absence of suitable technology: Very few commercially viable and accepted technologies for the production of alternative sands are present. Knowledge to tackle feedstock storage and transportation for proper quality of the sands is still lacking. There are no proper testing equipment and lab facilities to ensure the quality of alternative sands. Also, the presence of quarry dust and inspection of production units is not undertaken.
- Hesitancy of people: Limited knowledge has made people reluctant towards using alternative sands. This reluctance is more amongst the government officials and builders regarding the sands' effect on quality.

Recommendations:

Generating Awareness:

- There is a pressing need to create awareness of the problems related to environmental degradation and promote the use of alternative sands.
- This can be brought about through the media, encouragement from different organizations, through seminars and conferences.

Government Initiative

- Engagement of organizations could generate extensive experimental data. This data in turn would help in creating guidelines and codes.
- Government organizations should set an example of using alternative sand in buildings, bridges, highways, skyscrapers, etc. to bring confidence in the public at large.
- Initiative by Construction Industry
- The construction industry can articulate guidelines to inspire the use of alternative sand in projects and create a market mandate.
- An association of builders in consultation with experts and scientists can start work to promote its usage. Likewise, contractors and builders can endorse the sands in their client buildings.

AIR QUALITY INDEX

In News:

CAQM holds an urgent review meeting with officials from NCR State Governments and Pollution control boards considering the sudden increase in Delhi's AQI.

Analysis of Background:

What is the AQI and how does it calculate pollution?

- Launched as part of the Swachh Bharat campaign, the AQI was to help simplify the common understanding of pollution.
- According to the Central Pollution Control Board, part of the Ministry of Environment, Forests and Climate Change, the AQI transforms complex air quality data of various pollutants into a single number (index value), nomenclature and colour.
- The pollutants measured include PM 10, PM 2.5, Nitrogen Dioxide, Ozone, Carbon, etc.
- There are six or eight pollutants in the affected air and each of these pollutants is given a weight based on a formula. That weight depends on the kind of impact it has on human health.
- The worst of these weights is given as composite air quality, so instead of giving you six different numbers, and six different colours, it throws up one single colour, one single number to denote the overall impact.
- Monitoring stations across the country assess these levels.
- AQI is a number, which is a measure of air quality. The higher the AQI, the worse the air.
- The colour-coded AQI index was launched in India in 2014, and it helps the public and the government understand the condition of the air and what subsequent measures are to be taken to combat the situation, based on its severity.

- There are six categories of AQI, namely 'Good' (0-50), 'Satisfactory' (50-100), 'Moderately polluted' (100-200), 'Poor' (200-300), 'Very Poor' (300-400), and 'Severe' (400-500).

What is the Graded Response Action Plan?

- GRAP is a set of emergency measures that kick in to prevent further deterioration of air quality once it reaches a certain threshold in the Delhi-NCR region.
- Approved by the Supreme Court in 2016 and notified in 2017, the plan was formulated after several meetings that the Environment Pollution (Prevention and Control) Authority (EPCA) held with state government representatives and experts.
- The result was a plan that institutionalised measures to be taken when air quality deteriorates.
- GRAP is incremental in natureand thus, when the air quality dips from 'poor' to 'very poor,' measures listed under both sections have to be followed.
    - Stage 1 of GRAP is activated when the AQI is in the 'poor' category (201 to 300),
    - Stage 2 is when it's in the 'Very poor' category (301-400),
    - Stage 3 is when the AQI is the 'Severe' category (401-450) and finally
    - Stage 4 is when it rises to the 'Severe +' category (more than 450).

The Commission for Air Quality Management in National Capital Region and Adjoining Areas Act 2021

- Adjoining areas have been defined as areas in Haryana, Punjab, Rajasthan, and Uttar Pradesh, adjoining the National Capital Territory of Delhi and NCR, where any source of pollution may cause adverse impact on air quality in the NCR.
- It dissolves the Environment Pollution Prevention and Control Authority established in the NCR in 1998.
- An Ordinance establishing a similar Commission was promulgated in October 2020. It lapsed in March 2021 and was repromulgated in April 2021. The Bill repealed the 2021 Ordinance.

Key features of the Bill include:

- Composition: The Commission will consist of:
- (i) a Chairperson, (ii) an officer of the rank of a Joint Secretary as the member-secretary and Chief Coordinating Officer, (iii) a serving or former Joint Secretary from the central government, (iii) three independent technical members with expertise in air pollution, and (iv) three members from non-government organisations.

- The Chairperson and members of the Commission will have a tenure of three years or till the age of seventy years, whichever is earlier.
- The Commission will also include ex-officio members: (i) from the central government and concerned state governments, and (ii) technical members from Central Pollution Control Board, Indian Space Research Organisation, and NITI Aayog. It may also appoint representatives of certain ministries.
- Selection of Commission: The central government will constitute a selection committee to recommend appointments of members of the Commission. The Committee will be headed by the Minister of Environment, Forest and Climate Change. Members of the Committee will include the Cabinet Secretary and the Minister of: (i) Commerce and Industry, (ii) Road Transport and Highways, and (iii) Science and Technology.
- Functions of the Commission: Functions of the Commission include: (i) co-ordinating actions by concerned state governments (Delhi, Haryana, Punjab, Rajasthan, and Uttar Pradesh), (ii) planning and executing plans to prevent and control air pollution in NCR, (iii) providing a framework for identifying air pollutants, (iv) conducting research and development through networking with technical institutions, (v) training and creating a special workforce to deal with issues related to air pollution, and (vi) preparing action plans such as increasing plantation and addressing stubble burning.
- Powers of the Commission: Powers of the Commission include: (i) restricting activities influencing air quality, (ii) investigating and conducting research related to environmental pollution impacting air quality, (iii) preparing codes and guidelines to prevent and control air pollution, and (iv) issuing directions on matters including inspections, or regulation which will be binding on the concerned person or authority.
- The Commission will be the sole authority with jurisdiction over matters defined in the Bill (such as air quality management). In case of conflicts, directions of the Commission will prevail over the orders of the respective state governments, the Central Pollution Control Board (CPCB), state PCBs, and state-level statutory bodies.
- Sub-Committees: The Commission is required to form sub-committees on: (i) monitoring and identification, (ii) safeguarding and enforcement, and (iii) research and development.
- Penalties: Contravention of provisions of the Bill, or orders and directions of the Commission will be punishable with imprisonment of up to five years, or fine of up to one crore rupees, or both. Appeals against the Commission's orders will lie with the National Green Tribunal.

INDIAN SKIMMER

In News:

Godavari estuary has become prime habitat for Indian skimmers: expert.

Analysis of Background:

- The Godavari estuary in Andhra Pradesh has become a prime and safe habitat for the Indian skimmer (Rynchops albicollis).
- The bird has been included in the International Union for Conservation of Nature (IUCN) Red list of endangered species.
- Six tagged Indian Skimmers have been sighted during this census so far and five of them were tagged in the Mahanadi area and one in the Chambal area. Indian Skimmer migrates to the Godavari estuary for feeding.
- Great Knot and Caspian Terns have been sighted in good numbers during the census.

Indian Skimmer:

- Rynchops albicollis
- Common Names: Indian skimmer, Indian scissors bill
- Kingdom : Animalia
- Phylum :Chordata
- Class :Aves
- Order :Charadriiformes
- Family: Laridae
- Genus :*Rynchops*
- Species :*albicollis*
- Conservation Status:
    - IUCN : Endangered
    - CITES:Not listed
    - IW(P)A:Not listed
    - U.S ESA : Not listed
- Distribution: More widespread in winter, the Indian skimmer is found in the coastal estuaries of western and eastern India. It occurs primarily on larger, sandy, lowland rivers, around lakes and adjacent marshes and, in the non-breeding season, in estuaries and coasts.
- Characteristics, Habitat and Behaviour:
    - The Indian skimmer grows to a length of 40-43 cm. It has black upper parts, a white forehead, collar and lower parts, a long, thick, deep orange bill with a yellow tip and longer lower mandible.

- It emits a nasal Kapor kip note, particularly in flight and when disturbed.

Major Threats:

- Habitat degradation. Exploitation and degradation of rivers and lakes through fishing, transportation, domestic use, irrigation schemes and pollution from agricultural and industrial chemicals are largely responsible for the decline of this species as these factors have reduced reproductive and foraging success.
- Excessive and widespread increases in the disturbance. The damming of the Chambal River, in upstream Rajasthan, has adversely affected its population at National Chambal Sanctuary, Uttar Pradesh, due to the dropping water levels allowing predators and livestock access to breeding islands.
- Predation by corvids like House crows (Corvus splendens), the presence of stray and domestic dogs, have been known to decimate breeding colonies.

The Godavari estuary:

- It is situated at the place where the 1330 km long Godavari meets the Bay of Bengal on the east coast of India in the state of Andhra Pradesh.
- River Godavari divides at Dowlaiswaram into two principal distributaries viz., the Vasishta and the Gautami which enclose a wide delta between them.
- The total area of this estuary is about 18000 ha.
- There are about 185 species of fish excluding clupeids
- Prawns form an important fishery in the Gautami-Godavari estuary.
- Of the several species of prawns, M. Monoceros which is the most abundant prawn, is available in the lower reaches of the estuary, particularly in the mangrove swamps and backwaters.
- The fisheries of Godavari estuary is being affected severely by the sandbar formation.

DEEPOR BEEL

In News:

Assam's only Ramsar site troubled by developmental projects and urban waste has 30 more waterfowl species than the total counted in 2022.

Analysis of Background:

About Deepor Beel:

- It is a perennial freshwater lake
- It is the only wetland in Assam designated as a site of importance for "conservation and sustainable use" under the Ramsar Convention on Wetlands.

- The landscape of Deepor Beel, a riverine wetland in the Kamrup district in the lower Brahmaputra valley, is dynamic.
- It sustains over 200 species of birds, including about 70 species of migratory birds.
- Issues:

Railway tracks:

- It is a treat to see wild Asiatic elephants from the Rani and Garbhanga Reserve Forests in Kamrup East Division bathing and feeding on nutritious aquatic food in the wetland.
- However, there is no guarantee that all the elephants foraging and frolicking in the water will return safely to the four elephant corridors crossing the railway track.
- For that matter, even their passage to the *beel* (lake) from the hills for a feast of the water hyacinth and shoots, rhizomes and flowers of the giant water lily, commonly known as *makhana* (*Eueyale ferox*), and other aquatic vegetation are fraught with danger.
- In the past two decades, at least 15 wild elephants were hit by passing trains while crossing the railway track.

Unregulated and increasing fishing activities:

- Some residents of these villages can be seen rowing their flat-bottomed boats to collect seeds of the giant water lily and nymphaea nuts that are in high demand in local markets.
- Unregulated and increasing fishing activities have come into conflict with the activities of migratory birds.
- The winged visitors use the wetland as a staging site for depositing fats by preying on the fish species.
- Birdlife international declared Deepor Beel as an Important Bird Area (IBA) site. Some of the unique migratory bird species that can be spotted here are the white-eyed pochard, the greylag goose, Baer's pochard and the gadwall, a dabbling duck.
- Drainage:
- The Deepor Beel, which was notified under the Guwahati Water Bodies (Preservation and Conservation) Act, 2008, is the only major stormwater drainage for the ever-expanding capital city.

Shrinking area:

- Contradictory positions of the River Rejuvenation Committee (RRC), Assam, and Guwahati Smart City Projects Limited on the total area of Deepor Beel is a reflection of the hard realities of the wetland standing at the crossroads of development priorities and conservation challenges.

Conservation threats:

- An experts' team identified the following major threats to the Deepor Beel ecosystem: Fragmentation of the hydrological regime, siltation, pollution, encroachment and land reclamation, species invasion, including alien species, unregulated recreation and tourism, over-harvesting of resources and climate change.

Unplanned urbanization:

- In the past two decades, unplanned urbanization around Deepor Beel has reduced the original water spread area, which is a cause of worry. If the existing landscape of Deepor Beel is further altered, it could trigger flash floods in the area.

ASIAN ELEPHANT IN NILGIRI

In News:

A recent paper published by a conservationist said that the Asian elephant has lost most of its optimal habitat in the Nilgiri biosphere Reserve.

Analysis of Background:

- The Indian elephant is one of three extant recognised subspecies of the Asian elephant and native to mainland Asia.

Asian Elephant

- Asian Elephant is distributed throughout the Indian subcontinent and Southeast Asia, from India in the west, Nepal in the north, Sumatra in the south, and to Borneo in the east.
- The Asian elephant is the largest living land animal in Asia.
- Since 1986, the Asian elephant has been listed as Endangered on the IUCN Red List, as the population has declined by at least 50 percent over the last three elephant generations, which is about 60–75 years.
- It is primarily threatened by loss of habitat, habitat degradation, fragmentation and poaching.
- The South Indian states of Karnataka, Kerala, Andhra Pradesh and Tamil Nadu are home to nearly 44% of the elephants.
- Karnataka has the highest number of elephants: 6049
- The elephant has been accorded the highest possible protection under the Indian wildlife law through its listing under Schedule I of the Wildlife (Protection) Act, 1972.

Project Elephant

- Project Elephant (PE) was launched by the Government of India in the year 1992 as a Centrally Sponsored Scheme with following objectives:
  - To protect elephants, their habitat and corridors.
  - To address issues of man-animal conflict.
  - The welfare of captive elephants
  - Elephant census is conducted once in 5 years under the aegis of Project elephant. Methods employed: direct counting and dung decay formula.

Haathi Mere Saathi

- Campaign Haathi Mere Saathi came into existence by the Ministry of Environment and Forests in partnership with the Wildlife Trust of India.
- The aim of this campaign is to increase public awareness and develop friendships between elephants and the local population. It is to conserve and protect elephants.

MIKE

- The Monitoring the Illegal Killing of Elephants (MIKE) program is an international collaboration that measures the levels, trends and causes of elephant mortality, thereby providing an information base to support international decision-making related to the conservation of elephants in Asia and Africa.
- The MIKE Programme was established by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)by Resolution 10.10 adopted at the tenth Conference of the Parties in 1997.
- There are currently 28 sites participating in the MIKE program in Asia, distributed across 13 countries: India has 10 sites.

GREEN HYDROGEN

In News:

The Union Cabinet, chaired by the Hon'ble Prime Minister Shri Narendra Modi, has approved National Green Hydrogen Mission.

Analysis of Background:

- The initial outlay for the Mission will be 19,744 crore, including an outlay of Rs.17,490 crore for the SIGHT programme, Rs.1,466 crore for pilot projects, Rs.400 crore for R&D, and Rs. 388 crore towards other Mission components.
- MNRE will formulate the scheme guidelines for implementation of the respective components.

- The Mission will result in the following likely outcomes by 2030:
    - Development of green hydrogen production capacity of at least 5 MMT (Million Metric Tonne) per annum with an associated renewable energy capacity addition of about 125 GW in the country.
    - Creation of over Six lakh jobs.
    - Cumulative reduction in fossil fuel imports over Rs. One lakh crore.
    - Abatement of nearly 50 MMT of annual greenhouse gas emissions.
- The Mission will have wide ranging benefits- creation of export opportunities for Green Hydrogen and its derivatives; Decarbonisation of industrial, mobility and energy sectors; reduction in dependence on imported fossil fuels and feedstock; development of indigenous manufacturing capabilities; creation of employment opportunities; and development of cutting-edge technologies.
- India's Green Hydrogen production capacity is likely to reach at least 5 MMT per annum, with an associated renewable energy capacity addition of about 125 GW.
- The targets by 2030 are likely to bring in over Rs. 8 lakh crore investments and create over 6 lakh jobs.
- Nearly 50 MMT per annum of CO_2 emissions are expected to be averted by 2030.
- The Mission will facilitate demand creation, production, utilization and export of Green Hydrogen.
- Under the Strategic Interventions for Green Hydrogen Transition Programme (SIGHT), two distinct financial incentive mechanisms – targeting domestic manufacturing of electrolysers and production of Green Hydrogen – will be provided under the Mission.
- The Mission will also support pilot projects in emerging end-use sectors and production pathways. Regions capable of supporting large scale production and/or utilization of Hydrogen will be identified and developed as Green Hydrogen Hubs.
- An enabling policy framework will be developed to support establishment of Green Hydrogen ecosystem.
- A robust Standards and Regulations framework will be also developed.
- Further, a public-private partnership framework for R&D (Strategic Hydrogen Innovation Partnership – SHIP) will be facilitated under the Mission; R&D projects will be goal-oriented, time bound, and suitably scaled up to develop globally competitive technologies.
- A coordinated skill development programme will also be undertaken under the Mission.
- All concerned Ministries, Departments, agencies and institutions of the Central and State Governments will undertake focussed and coordinated steps to ensure successful achievement of the Mission objectives.

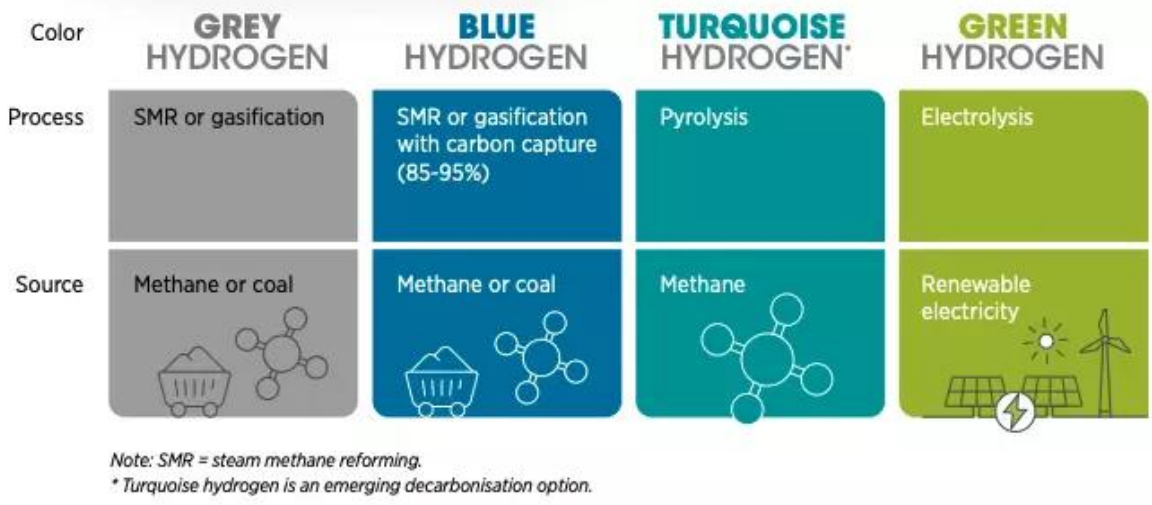
- Ministry of New & Renewable Energy will be responsible for overall coordination and implementation of the Mission.

About Hydrogen:

- There are no natural hydrogen deposits on earth, it has to be extracted from other compounds by a chemical process.
- The vast majority of industrial hydrogen is currently produced from natural gas through a process known as Steam Methane Reforming or SMR.
- Producing hydrogen in this way is sometimes referred to as Brown or Grey or even Blue Hydrogen.

Types of Hydrogen:

- Brown Hydrogen: Most of the gas that is already widely used as an industrial chemical is either brown, if it's made through the gasification of coal or lignite.
- Grey Hydrogen: If it is made through steam methane reformation, which typically uses natural gas as the feedstock. Neither of these processes is exactly carbon-friendly.
- Blue Hydorgen: Where the gas is produced by steam methane reformation but the emissions are curtailed using carbon capture and storage.
- Green Hydrogen: Green hydrogen, in contrast, could almost eliminate emissions by using renewable energy — increasingly abundant and often generated at less-than-ideal times — to power the electrolysis of water.



What is green hydrogen?

- A colorless, odourless, tasteless, non-toxic and highly combustible gaseous substance, hydrogen is the lightest, simplest and most abundant member of the family of chemical elements in the universe.

- But a colour — green — prefixed to it makes hydrogen the "fuel of the future". The 'green' depends on how the electricity is generated to obtain the hydrogen, which does not emit greenhouse gas when burned.
- Green hydrogen is produced through electrolysis using renewable sources of energy such as solar, wind or hydel power.
- Hydrogen gas can be used as a fuel in transportation, power generation and industrial activities. It does not release greenhouse gas emissions such as carbon dioxide when it is
- Green hydrogen, which has the potential to replace fossil fuels, is the name given to hydrogen gas produced using renewable energy such as wind or solar power that do not entail greenhouse gas emissions.

Making of Green Hydrogen:

- With electrolysis, all that is required to produce large amounts of hydrogen is water, a big electrolyser and plentiful supplies of electricity.

Usage of it:

- Replace the industrial hydrogen that gets made every year from natural gas.
- Use it as a precursor for other energy carriers, from ammonia to synthetic hydrocarbons.
- Directly power fuel cells in cars and ships.
- Add it to natural gas and burn it in thermal power or district heating plants.
- Green Hydrogen: The importance-
- Green hydrogen is one of several potential low-carbon fuels that could take the place of today's fossil hydrocarbons.
- Hydrogen is already widely used by industry, so technical problems relating to storage and transport are not likely to be insurmountable.
- The gas is potentially very versatile, with possible applications in areas rangingfrom heating and long-term energy storage to transportation.
- The opportunity for green hydrogen to be applied across a wide range of sectors means there is a correspondingly large number of companies that could benefit from a burgeoning hydrogen fuel economy.

Green Hydrogen Current Status:

- At present, less than 1 per cent of hydrogen produced is Green Hydrogen, according to IRENA's World Energy Transitions Outlook.

- India consumes about six million tonnes of hydrogen every year. This could increase to 28 million tonnes by 2050.
- India has favorable geographic location and abundance of sunlight and wind for the production of green hydrogen.
- India will become a net exporter of green hydrogen by 2030 due to its cheap renewable energy tariffs, according to the Global Hydrogen Council.

Challenges in producing Green Hydrogen:

- The challenge right now is that big electrolyzers are in short supply, and plentiful supplies of renewable electricity still come at a significant
- Storing and transporting the highly flammable gas is not easy; it takes up a lot of space and has a habit of making steel pipes and welds brittle and prone to failure.
- The bulk transport of hydrogen will require dedicated pipelines, which would be costly to build, pressurizing the gas, or cooling it to a liquid.
- High Cost: In a report published last year (using data from 2018), the International Energy Agency put the cost of green hydrogen at $3 to $7.50 per kilo, compared to $0.90 to $3.20 for production using steam methane reformation.
- Loss of Efficiency in every process: Electrolyzer efficiencies range from around 60 percent to 80 percent, according to Shell. The efficiency challenge is exacerbated by the fact that many applications may require green hydrogen to power a fuel cell, leading to further losses.

Why is India pursuing green hydrogen?

- Under the Paris Agreement (a legally binding international treaty on climate change with the goal of limiting global warming to below 2°C compared to pre-industrial levels) of 2015, India is committed to reducing its greenhouse gas emissions by 33-35% from the 2005 levels.
- At the 2021 Conference of Parties in Glasgow, India reiterated its commitment to move from a fossil and import-dependent economy to a net-zero economy by 2070.
- India's average annual energy import bill is more than $100 billion and the increased consumption of fossil fuel has made the country a high carbon dioxide (CO_2) emitter, accounting for nearly 7% of the global CO_2 burden.
- In order to become energy independent by 2047, the government stressed the need to introduce green hydrogen as an alternative fuel that can make India the global hub and a major exporter of hydrogen.
- The National Hydrogen Mission was launched on August 15, 2021, with a view to cutting down carbon emissions and increasing the use of renewable sources of energy.

Green Hydrogen Infrastructure in India:

- Government has said that country was focusing on producing blue and green hydrogen along with blended hydrogen in Compressed Natural Gas (CNG) for various purposes, including transport.
- Through technological advancements, India is blending hydrogen with compressed natural gas foruse as transportation fuel as well as an industrial input to refineries.
- 50 buses in Delhi are plying on blended hydrogen in Compressed Natural Gas on a pilot basis.
- The Indian Oil Corporation Limited announced it would set up the country's first Green Hydrogen.
- Reliance Energy said that it would invest Rs 600 billion in building factories to produce green hydrogen among other carbon friendly technologies.

Why India should opt for Green Hydrogen?

- Adoption of Green hydrogen technology is favorable in those sectors where direct electrification isn't feasible for ex., In Heavy duty, long-range transport and long-term storage in the power sector.
- With technological improvements, green hydrogen will become more affordable and accessible.
- It can be used in a wide range of existing applications such as fertilisers, mobility, power, chemicals and shipping.
- It can be blended up to 10 per cent by city gas distribution networks for wider acceptance.
- It is a cross-cutting solution that may reduce emissions across a range of sectors.

What can India do to build a global-scale green hydrogen industry?

- India should announce ambitious national targets for green hydrogen and electrolyser capacity by 2030.
- Launch an incentive programme for the production of electrolysers.
- Implementing complementary solutions that create virtuous cycles for ex., building the hydrogen infrastructure for refueling, heating and generating electricity at airports.
- Optimising distribution networks to decarbonise the gas grid.

SILENT VALLEY NATIONAL PARK

In News:

A bird survey conducted at the Silent Valley National Park in the last week of December identified 141 species, of which 17 were new. So far, 175 species of birds have been spotted in Silent Valley.

Analysis of Background:

- Silent Valley is located in the South-western corner of Nilgiris. The whole Park is a roughly rectangular tableland closed on all sides. It has high and continuous ridges along its entire east, north and northeast borders and a somewhat lower ridge along the entire western and southern border. Along its entire length, the plateau slopes toward the bed of Kunthipuzha, which divides it to two halves.
- A perennial river named Kunthipuzha is passing through the western side of the park, from north to south direction finally merging into Bharathapuzha.
- Brown wood owl, Banded Bay cuckoo, Malabar wood shrike, White-throated kingfisher, Indian nightjar, Jungle nightjar, and Large cuckoo shrike were among the 17 species newly identified in the Silent Valley.
- Birds such as Crimson-backed sunbird, Yellow-browed bulbul, Black bulbul, Indian white-eye and Indian swiftlet were found in abundance in Silent Valley.
- The indigenous tribal groups that live within park boundaries include Irulas, Kurumbas, Mudugas and Kattunaikkars.

DIEBACK DISEASE

In News:

The disease posing a threat to the neem trees has been identified as twig blight and dieback disease in Telangana

Analysis of Background:

- Neem shows antibacterial, antifungal, and other versatile properties, but it does not exempt the neem trees from being attacked by pests and diseases.
- It has become a familiar sight in Telanganaand also in some other southern states over the last few years that twigs and leaves of neem trees dry up.
- The dieback disease affects leaves, twigs and the inflorescence of neem trees of all ages and it causes almost 100% loss of fruit production in severely infected trees.
- The dieback disease was first reported in the country during the 1990s near Dehradun in Uttarakhand, while it was first noticed in Telangana in 2019.

- Since it was first detected three years ago, the disease had waned but resurfaced in Telangana this time around.
- The dieback disease is mainly caused by the fungi *Phomopsis azadirachtae*.
- The appearance of symptoms starts with the onset of the rainy season and becomes progressively severe in the later part of the rainy season and early winter.
- The dieback is a fungal disease but the neem trees are sometimes hit by insect infestation and the combination of both increases its impact.
- Though neem trees are strong enough to combat the damage caused by the disease, measures to control its spread can be undertaken at community level for better results.
- To control the disease, the twigs affected by the disease should be cut and a blend of fungicide and insecticide can be sprayed after their removal.
- Alternatively, a pit should be dug around an affected tree, and water mixed with fungicide and an insecticide should be poured into it.

BLACK CARBON AEROSOLS

In News:

The South Asia region adjacent to the Tibetan Plateau has among the highest levels of black carbon emission in the world.

Analysis of Background:

- Black carbon aerosols have indirectly affected the mass gain of the Tibetan Plateau glaciers by changing long-range water vapour transport from the South Asian monsoon region, a study has found.
- Black carbon aerosols are produced by the incomplete combustion of fossil fuels and biomass, and are characterised by strong light absorption.
- Many studies have emphasised black carbon aerosols from South Asia can be transported across the Himalayas to the inland region of the Tibetan Plateau.
- Researchers noted that black carbon deposition in snow reduces the albedo of surfaces -- a measure of how much of Sun's radiations are reflected -- which may accelerate the melting of glaciers and snow cover, thus changing the hydrological process and water resources in the region.
- Black carbon aerosols in South Asia heat up the middle and upper atmosphere, thus increasing the North–South temperature gradient.
- Accordingly, the convective activity in South Asia is enhanced, which causes convergence of water vapour in South Asia.

- Meanwhile, black carbon also increases the number of cloud condensation nuclei in the atmosphere.
- These changes in meteorological conditions caused by black carbon aerosols make more water vapour form precipitation in South Asia, and the northward transport to the Tibetan Plateau was weakened.
- As a result, precipitation in the central and the southern Tibetan Plateau decreases during the monsoon, especially in the southern Tibetan Plateau
- The decrease in precipitation further leads to a decrease of mass gain of glaciers.
- From 2007 to 2016, the reduced mass gain by precipitation decrease accounted for 11% of the average glacier mass loss on the Tibetan Plateau and 22.1% in the Himalayas.

Aerosol

- An aerosol is a suspension of fine solid particles or liquid droplets in air or another gas.
- Aerosols can be natural or anthropogenic.
- Examples of natural aerosols are fog or mist, dust, forest exudates and geyser steam.
- Examples of anthropogenic aerosols are particulate air pollutants and smoke.

Black Carbon

- Chemically, black carbon (BC) is a component of fine particulate matter (PM ≤ 2.5 μm).
- It is formed through the incomplete combustion of fossil fuels, biofuel, and biomass.
- Black carbon is a climate forcing agent contributing to global warming.
- It warms the Earth by absorbing sunlight and heating the atmosphere and by reducing albedowhen deposited on snow and ice (direct effects) and indirectly by interaction with clouds.
- Black carbon stays in the atmosphere for only several days to weeks
- The IPCC have posited that reducing black carbon is one of the easiest ways to slow down short term global warming.

MICROPLASTICS

In News:

Scientists from South Korea have developed a new water purification system that can quickly and efficiently filter out microplastics. Crucially, the polymer used is relatively inexpensive with excellent adsorption performance and good photothermal properties.

Analysis of Background:

- In an experiment, over 99.9 per cent of contaminants were taken out of the water in just 10 seconds.
- Microplastics have inundated the world, finding their way into the human food chain . While some traditional carbon-based filters can filter out microplastics, they have limitations — the adsorption rate is slow and they are not energy-efficient.
- The Korean team's breakthrough system requires lower levels of energy, making it ideal for solar-based use. This is particularly useful for developing countries where power supply is inconsistent.

What are microplastics?

- Microplastics are plastic debris smaller than 5mm in length, or about the size of a sesame seed.
- They come from a variety of sources, one of them is when larger pieces of plastic degrade into smaller pieces, which are difficult to detect.
- Why is microplastic pollution especially harmful?
- The durability of plastic, which implies that plastic can take hundreds to thousands of years to decompose depending on the type of plastic and where it has been dumped.
- In the oceans, plastic pollution impacts marine life, ocean health, coastal tourism and even human health.
- Over the past few years, various news reports have shown that marine animals such as whales, seabirds and turtles unknowingly ingest plastic and often suffocate.
- For humans, too, marine plastic pollution is harmful if it reaches the food chain. For instance, microplastics have been found in tap water, beer and even salt.
- One of the first studies to estimate plastic pollution in human ingestion that was published in June 2019 said that an average person eats at least 50,000 particles of microplastic each year. Consumption of plastic by humans is harmful since several chemicals that are used to produce plastics can be

Measures taken by government:

- India has pledged to ban all single-use plastics by 2022.
- All offices of central and state governments and major PSUs have been told to prohibit single-use plastic products.
- India has banned imports of solid plastic waste.
- India has passed the Plastic Waste Management Rules, 2016 and introduced the Extended Producer Responsibility.

Plastic Waste Management Rules, 2016

- It aims to increase minimum thickness of plastic carry bags from 40 to 50 microns.
- Expand the jurisdiction of applicability from the municipal area to rural areas, because plastic has reached rural areas also.
- Extended Producer Responsibility: To bring in the responsibilities of producers and generators, both in plastic waste management system and to introduce collect back system of plastic waste by the producers/brand owners, as per extended producers responsibility
- Introduced collection of plastic waste management fee through pre-registration of the producers, importers of plastic carry bags/multilayered packaging and vendors selling the same for establishing the waste management system
- Promote use of plastic waste for road construction as per Indian Road Congress guidelines or energy recovery, or waste to oil etc. for gainful utilization of waste and also address the waste disposal issue.

RHINO

In News:

Assam Chief Minister Himanta Biswa Sarma announced on January 1 that no rhinos were poached in the state in 2022. Special DGP G P Singh posted data on Twitter that showed last year was the first since at least 2000 in which there were no incidents of rhino poaching in Assam.

Analysis of Background:

Indian rhinoceros

- The Indian rhinoceros (Rhinoceros unicornis) is found only in the Brahmaputra valley, parts of North Bengal, and parts of southern Nepal.
- It has a single black horn that can grow up to 60 cm, and a tough, grey-brown hide with skin folds, which gives the animal its characteristic armour-plated look.
- The Indian rhino is listed as vulnerable (better than endangered, worse than near threatened) in the IUCN Red List; it was earlier placed in the endangered category.
- The WWF says the “recovery of the greater one-horned rhino is among the greatest conservation success stories in Asia”.
- According to the WWF, there are around 3,700 Indian rhinos in the wild today. Assam’s Kaziranga National Park (KNP) alone has 2,613 animals, according to a census carried out in March 2022. There are more than 250 other rhinos in the Orang, Pobitora, and Manas parks.

Rhino poaching

- Rhinos have been poached for their horn, which is prized in some cultures.
- An Assam Forest Department release in 2021 said "ground rhino horn is used in traditional Chinese medicine to cure a range of ailments, from cancerto hangovers, and also as an aphrodisiac"; in Vietnam, a rhino horn is considered a status symbol.
- Due to demand in these countries, poaching pressure on rhinos is ever persistent against which one cannot let the guard
- In 2019, the Assam government constituted a Special Rhino Protection Force to keep a check on rhino poaching and related activities at Kaziranga National Park (KNP). On September 22, World Rhino Day, in 2021, almost 2,500 rhino horns were burnt publicly in Bokakhat in KNP to "bust myths about rhino horns", and to send "a loud and clear message to the poachers and smugglers that such items have no value".

NILGIRI TAHR

In News:

Recently, the Tamil Nadu government launched an initiative for the conservation of the Nilgiri Tahr at Rs 25 crore.

Analysis of Background:

- Under The Nilgiri Tahr project, the Tamil Nadu government plans to develop a better understanding of the Nilgiri Tahr population through surveys and radio telemetry

studies, reintroduce the Tahrs to their historical habitat, address proximate threats and increase public awareness of the species

- The project is to be implemented for 5 year period from 2022 to 2027.

What is Nilgiri Tahr?

- It is an endangered species and the sole Caprinae species found in the tropical mountains of southern India.
- The animal inhabits meadows with steep cliffs at elevations between 300 metres and 2,600 metre above sea level.
- It is estimated that there are 3,122 Nilgiri Tahrs in the wild.
- Historically, the Nilgiri Tahr was known to inhabit a large portion of the Western Ghats.
- But today it remains restricted to a few scattered patches in Tamil Nadu and Kerala. It has become locally extinct in around 14% of its traditional shola forest-grassland habitat.
- IUCN – Endangered, Wildlife (Protection) Act of India, 1972 - Schedule I

TOPIC: SCIENCE AND TECH

NOROVIRUS

In News:

The Kerala Health Department confirmed two cases of gastrointestinal infection norovirus in class 1 students in Ernakulam district.

Analysis of Background:

What is norovirus?

- Norovirus is a highly contagious virus that is also sometimes referred to as the 'stomach flu' or the ' winter vomiting bug'.
- It causes diarrhea and vomiting. As per the World Health Organisation, norovirus is a viral illness that is the most common cause of acute gastroenteritis globally.

Transmission

- The disease is transmitted by direct contact with an infected person, contaminated food or touching a contaminated surface, and putting unwashed hands in the mouth. The infection is caused and spread through contaminated food and water.

Symptoms of Norovirus:

The most common symptoms that a person infected with Norovirus has been:

- Diarrhoea
- Vomiting
- Nausea
- Stomach pain
- Headache
- Body pain
    - The norovirus infection generally lasts for one to two days . However, it can cause dehydration in very young and old people, and in some patients, bodies will remain weak for one more week after contracting the infection.
    - Prevention from Norovirus:
    - Washing hands frequently and thoroughly with soap and water particularly after using the toilet and before preparing or handling food.
    - Disinfecting any surfaces or objects that could be contaminated.
    - Proper flushing in the toilet and cleaning of the surrounding area.
    - Avoiding eating raw, unwashed food.
    - One may get infected multiple times as the virus has different strains. Norovirus is resistant to many disinfectants and can withstand heat up to 60°C. Therefore, merely steaming food or chlorinating water does not kill the virus. The virus can also survive many common hand sanitisers.
    - During outbreaks, surfaces must be disinfected with a solution of hypochlorite at 5,000 parts per million.
    - Those infected should avoid contact with others and avoid preparing food for others while sick and for two days after symptoms stop.
    - Diagnosis and Treatment:
    - Diagnosis is done by real-time reverse transcription-polymerase chain reaction.
    - No vaccines are available for the disease.

Norovirus treatment:

- As of now, there is no specific medication to treat people infected with norovirus.
- Drinking plenty of liquids is important as one must ensure to replace the lost fluid from vomiting and diarrhoea.
- It helps to prevent dehydration, otherwise, patients have to be administered rehydration fluids intravenously.

- The disease is self-limiting. The infection, even though it takes a lot out of the patient, normally lasts only two or three days, and most individuals who are not very young, very old, or malnourished can ride it out with sufficient rest and hydration.

DIGITAL COMMUNICATION COMMISSION (DCC)

In News:

The Centre has decided to disband the Digital Communication Commission (DCC).

Analysis of Background:

Digital Communications Commission (Erstwhile Telecom Commission):

- The Telecom Commission was set up by the Government of India vide the Resolution dated 11th April, 1989with administrative and financial powers of the Government of India to deal with various aspects of Telecommunications.
- The Government, vide Resolution dated 22nd October,2018, has re-designated the 'Telecom Commission' as the 'Digital Communications Commission'.

Composition:

- The Digital Communications Commission consists of a Chairman, four full time members, who are ex-officio Secretaries to the Government of India in the Department of Telecommunications and four part time members who are the Secretaries to the Government of India in the concerned Departments.
- The Secretary to the Government of India in the Department of Telecommunications is the ex-officio Chairman of the Digital Communications Commission.
- The full-time Members of the Digital Communications Commission are Member (Finance), Member (Production), Member (Services) & Member (Technology).
- The part-time Members of the Digital Communications Commission are Cheif Executive Officer, NITI (National Institution for Transforming India) Aayog, Secretary (Department of Economic Affairs), Secretary (Ministry of Electronics & Information Technology) and Secretary (Department of Industrial Policy & Promotion). The Chief Executive Officer, NITI (National Institution for Transforming India) Aayog has been nominated as a (part-time) Member of the Digital Communications Commission vide the Resolution of the Government of India dated 15th March, 2016.

Mandate:

The Digital Communications Commission is responsible for:

1. Formulating the policy of Department of Telecommunications for approval of the Government;

2. Preparing the budget for the Department of Telecommunications for each financial year and getting it approved by the Government; &
3. Implementation of Government's policy in all matters concerning telecommunication.

"ONE WEEK, ONE LAB" CAMPAIGN

In News:

Union Minister for Science & Technology, Dr. Jitendra Singh, announced the launching of "One Week, One Lab" countrywide campaign.

Analysis of Background:

- In the “One Week One Lab” Campaign of the Council of Scientific & Industrial Research (CSIR) and each of its 37 laboratories, spread Nationwide, will showcase its legacy, exclusive innovations and technological breakthroughs every successive week.
- During the campaign each CSIR lab shall be organizing week long events including industry and start-up meet, students connect, society connects, display of technologies, etc.

Need of the Campaign:

- There is a plethora of technologies developed by the Scientists and researchers of CSIR laboratories for the society, but many of them remain confined to the laboratories.
- There is a need to establish the resourceful connection of people (stakeholders/entrepreneurs/students/ industry) to know more about the technologies for the advancement of technology and the progress of society.
- Final Thought
- “One week, one lab” campaign will offer an opportunity to each and every Lab to showcase the work being done by it so that others can avail of it and stakeholders can learn about it.

CSIR:

- The Council of Scientific and Industrial Research abbreviated as CSIR, was established by the Government of India in 1942 as an autonomous body. It has emerged as the largest research and development organisation in India. CSIR is also among the world's largest publicly funded R&D organisation which is pioneering sustained contribution to S&T human resource development in the country.
- Although it is mainly funded by the Ministry of Science and Technology, it operates as an autonomous body through the Societies Registration Act, 1860.

- The research and development activities of CSIR include aerospace engineering, structural engineering, ocean sciences, life sciences and healthcare including diagnostics, metallurgy, chemicals, mining, food, petroleum, leather, and environmental science.

FLOATOVOLTAICS

In News:

India's largest floating solar power project, spanning over 600 acres, is now fully operational at Ramagundam in Peddapalli district of Telangana.

Analysis of Background:

Floatovoltaics:

- Floating solar or floating photovoltaics (FPV), sometimes called floatovoltaics, is solar panels mounted on a structure that float on a body of water, typically a reservoir or a lake. The costs for a floating system are 20-25% higher than for ground-mounted systems.
- The first floating photovoltaic system was built in Japan in 2007. Currently, the world's largest floating solar farm is in Shandong, China.

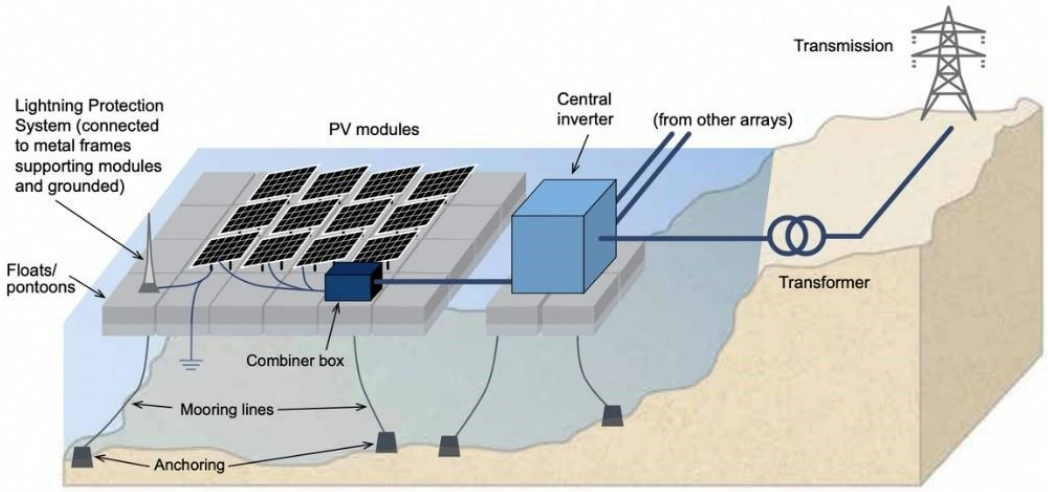
Floating Solar Power Plants in India:

- In recent years, floating solar power plants have become part of India's plans to achieve a national target of 100 GW solar capacity by 2022.
- According to a 2020 study by think tank The Energy and Resources Institute (TERI), reservoirs cover 18,000 square kilometres in India and can generate 280 GWthrough floating solar panels.
- India launched the National Solar Mission in 2010 to tap sources of renewable energy. According to a study done by TERI in association with the Energy Transmission Commission India programme, 7 MW capacity floatovoltaic projects were in operation as of 2019, while over 1.7 GW were in various stages of development. The Government plans to establish a renewable energy capacity of 500 GW by 2030.

Working of a Floating Solar Plant

- A network of floating solar panels, or photovoltaics/floatovoltaics are mounted on a structure that is made to float on the surface of a water body. This could be a reservoir, lake, irrigation canal, or pond.
- Usually, a floating solar plant will have :-
    - -a floating system,

- -a mooring structure to prevent panels from moving freely in water and to keep it near the shore,
- -a photovoltaic system to generate electricity using thermal energy, and
- -an underwater cable to transfer the generated power to a substation.



Source: Solar Energy Research Institute of Singapore (SERIS) at the National University of Singapore (NUS).

Advantages of Floating Solar Panel Farms

- Solar power is the cheapest electricity in history, as per an International Energy Agency (IEA) report.
- Besides constraints pertaining to land, scientists feel that ground-mounted solar panels are unable to function at their full potential as they heat up. This is where the floating solar technology has an edge even though such farms are comparatively more expensive.

Some advantages of floating solar power projects include,

1. No land occupancy: The main advantage of floating PV plants is that they do not take up any land, except the limited surfaces necessary for electric cabinet and grid connections. Their price is comparable with land-based plants, but floatovoltaics provide a good way to avoid land consumption.
2. Installation and decommissioning: Floating PV plants are more compact than land-based plants, their management is simpler and their construction and decommissioning straightforward. The main point is that no fixed structures exist like the foundations used for a land-based plant so their installation can be totally reversible.
3. Water conservation and water quality: Partial coverage of water basins can reduce water evaporation. This result depends on climate conditions and on the percentage of the covered surface. In arid climates such as parts of India, this is an important advantage since about 30% of the evaporation of the covered surface is saved.

4. Increased panel efficiency due to cooling: the cooling effect of the water close to the PV panels leads to an energy gain that ranges from 5% to 15%. Natural cooling can be increased by a water layer on the PV modules or by submerging them, the so-called SP2 (Submerged Photovoltaic Solar Panel). In these cases, the global PV module's efficiency rises thanks to the absence of thermal drift.
5. Tracking: Large floating platforms can easily be rotated horizontally and vertically to enable Sun-tracking (similar to sunflowers). Moving solar arrays uses little energy and doesn't need a complex mechanical apparatus like land-based PV plants. Equipping a floating PV plant with a tracking system costs a little extra while the energy gain can range from 15% to 25%.
6. Higher efficiency: Like any other electrical equipment, solar panels operate more efficiently when kept cold. According to the Environmental and Energy Study Institute, floating solar farms can be up to 15 percent more efficient than those on the ground due to the cooling effect of the water beneath the panels. As a coolant, water maintains the temperature of solar panels which eventually prevents loss of energy due to higher temperatures. Also, since they are deployed on the water's surface, it is convenient to clean and move the network in the direction of sunlight.
7. Reduces Environment Threats: Floating solar farms, if designed and deployed appropriately, reduce the threat posed by climate change to water bodies. Floating panels can offset climate change by 10 years, according to the WEF report. A floating solar farm that reduces wind speed and solar radiation by 10 percent across the entire lake could offset a decade of warming from climate change. Designs that shaded the lake more than sheltered it, by reducing sunlight more than wind, had the greatest cooling effect. Evaporation fell and the lake was mixed more frequently, which helps oxygenate the deeper water. Also, solar panels prevent the growth of algae in the water, which improves its quality. Algal blooms, a serious problem in industrialized countries, may be reduced. The partial coverage of the basins and the reduction of light on biological fouling just below the surface, together with active systems, can solve this problem.

SUPERCONDUCTIVITY OF MERCURY

In News:

- Recently, Researchers from the University of L' Aquila Italy have found a comprehensive microscopic understanding of the super productivity of Mercury.

Analysis of Background:

Mercury

- Mercury is a heavy, silvery-white metal that is liquid at room temperature.
- Compared to other metals, it is a poor conductor of heat, but a fair conductor of electricity.
- It has a freezing point of −38.83 °C and a boiling point of 356.73 °C, both the lowest of any stable metal.
- It is found either as a native metal(rare) or in cinnabar, metacinnabar, sphalerite, corderoite, livingstonite, and other minerals, with cinnabar (HgS) being the most common ore.

Superconductivity

- Superconductivity is a set of physical properties observed in certain materials where electrical resistance vanishes and magnetic flux fields are expelled from the material.
- In this, materials to conduct direct current (DC) electricity without energy loss when they are cooled below a critical temperature(referred to as T_c). These materials also expel magnetic fields as they transition to the superconducting state.
- This capacity produces interesting and potentially useful effects. Superconductivity was first observed in 1911 by H. K. Onnes, a Dutch physicist.
- Superconductors have been employed in, or proposed for use in, an enormous variety of applications. Examples include high-speed magnetic-levitation trains, magnetic-resonance-imaging (MRI) equipment, ultra-high-speed computer chips, high-capacity digital memory chips, alternative energy storage systems, radio-frequency (RF) filters, radio-frequency amplifiers, sensitive visible-light and infrared detectors, miniaturized wireless transmitting antennas, systems to detect submarines and underwater mines, and gyroscopes for earth-orbiting satellites.

Superconductivity of Mercury

- In 1911, Dutch physicist Heike Kamerlingh Onnes discovered superconductivity in mercury. He found that at a very low temperature, called the threshold temperature, solid mercury offers no resistance to the flow of electric current.

The BCS theory

- Scientists later classified mercury as a conventional superconductor because its superconductivity could be explained by the concepts of Bardeen-Cooper-Schrieffer (BCS) theory.

BCS Theory

BCS Theory describes superconductivity as a microscopic effect caused by a condensation of Cooper pairs- a pair of electrons in a superconductor that is attractively bound and has equal and opposite momentum and spin. Below a specific critical temperature, the electrons in a metal pair up to create bosons called Cooper pairs. These Copper pairs can move like water in a stream, facing no resistance to their flow, below a threshold temperature.

- While scientists have used the BCS theory to explain superconductivity in various materials, they have never fully understood how it operates in mercury — the oldest superconductor.
- Now, recently, scientists have drawn a clear picture of how mercury becomes a superconductor.

Recent Research on Mechanism of Superconductivity in Mercury:

- When the researchers accounted for the relationship between an electron's spin and momentum, they could explain why mercury has such a low threshold temperature (around –270°C).
- The group found that one electron in each pair in mercury occupied a higher energy level than the other. This lowered the Coulomb repulsion (like charges repel) between them and nurtured superconductivity.
- Thus, the group has explained how mercury becomes a superconductor below its threshold temperature.

TOPIC: SECURITY

LEOPARD 2 TANK

In News:

Germany has not decided whether to allow its Leopard 2 tanks to be sent to Ukraine.

Analysis of Background:

What is a Leopard 2 tank?

- The Leopard 2 is one of the world's leading battle tanks, used by the German Army for decades and by the militaries of more than a dozen other European nations, as well as by the armies of countries as far apart as Canada and Indonesia.
- It has seen service in conflicts in Afghanistan, Kosovo and Syria.
- The tank, which is powered by a diesel engine, features night-vision equipment and a laser range finder that can measure distance to an object, enabling it to better aim at a moving target while traveling over rough terrain.
- There are multiple iterations of the Leopard 2 with different features and designs.
- How could the tank help Ukraine?
- Until now, both Ukraineand Russia have used Soviet-era tanks in battle, and the Leopards would offer a big step forward in capability.
- Ukraine's government has been calling for tanks on top of earlier packages of military aid from allies in the United States and Europe that included aircraft, air defense systems to protect against Russian missile and drone attacks and longer-range artillery.
- Supplies of the Leopard 2 would help offset Russia's superiority in artillery firepower, which aided Moscow in seizing two cities in eastern Ukraine's Luhansk province
- What are the advantages of Leopards over other tanks?
- Chief advantage of the Leopard 2 was the quantity that could be sent to Ukraine and the relative ease of repair and logistics.
- In addition, because several European countries use the vehicles, multiple nations could contribute either the tanks themselves, or spare parts, training capacity or logistics, said Alander, an expert in northern European security and German foreign policy.

What are the potential pitfalls?

- Russia appears to be preparing for an offensive in the late winter or early spring.
- It is not clear that the supply of Western tanks, including the Leopard 2, would arrive at the battlefront quickly enough to confront that threat.

- Even if the Ukrainians get trained quickly, that could still take months, and there are still questions about how many tanks could be provided and at what level they could be maintained.

PRITHVI-II

In News:

A successful training launch of a Short-Range Ballistic Missile, Prithvi-II was carried out from the Integrated Test Range, Chandipur off the coast of Odisha

Analysis of Background:

- Prithvi is a tactical surface-to-surface short-range ballistic missile (SRBM) developed by Defence Research and Development Organisation (DRDO) of India under the Integrated Guided Missile Development Program (IGMDP).
- It is deployed by India's Strategic Forces Command.

Variants:

- The Prithvi missile project encompassed developing three variants for use by the Indian Army, Indian Air Force and the Indian Navy.
- The initial project framework of the Integrated Guided Missile Development Program outlines the variants in the following manner:
- Prithvi I (SS-150) – Army version (150 km) range with a payload of 1,000 kg
- Prithvi II (SS-250) – Air Force version (350 km) range with a payload of 500 kg
- Prithvi III (SS-350) – Naval version (350 km) range with a payload of 1,000 kg

Prithvi I

- Prithvi I class is a single-stage liquid-fueled surface-to-surface ballistic missile having a maximum warhead mounting capability of 1,000 kg, with a range of 150 km
- This class of Prithvi missile was inducted into the Indian Army in 1994

Prithvi II

- Prithvi II class is also a single-stage liquid-fueled missile having a maximum warhead mounting capability of 500 kg, but with an extended range of 250 km
- It was developed with the Indian Air Force being the primary user.
- It was first test-fired on 27 January 1996 and the development stages were completed in 2004.
- This variant has been inducted into the army as well.

Prithvi III

- Prithvi III class is a two-stage surface-to-surface missile.
- The first stage is solid fueled. The second stage is liquid-fueled.
- Prithvi III was first tested in 2000 from INS Subhadra, a Sukanya-class patrol vessel.
- *Dhanush (missile)*
- Dhanush is a variant of the surface-to-surface or ship-to-ship Prithvi III missile, which has been developed for the Indian Navy.
- It is capable of carrying both conventional as well as nuclear warheads with pay-load capacity of 500 kg-1000 kg and can strike targets in the range of 350 km.
- Dhanush is a system consisting of a stabilization platform and the missile.
- It is a customized version of the Prithvi and is certified for sea worthiness.
- Dhanush has to be launched from a hydraulically stabilized launch pad.
- Its low range acts against it and thus it is seen as a weapon either to be used to destroy an aircraft carrier or an enemy port.
- The missile has been tested from surface ships of the navy many times

K-9 VAJRA

In News:

The Defence Ministry has started the process for the procurement of 100 more K9-Vajra tracked self-propelled howitzers, which are built in India by Larsen & Toubro (L&T) using technology transferred from South Korean defence major Hanwha Defense Co. Ltd

Analysis of background:

- At the height of tensions in eastern Ladakh in 2020, the Army deployed a regiment of these howitzers to augment its long-range fire power against the backdrop of a massive build-up of forces by China across the Line of Actual Control.
- Buoyed by their performance, the Army is looking at eventually procuring 200 additional guns.
- The induction of Dhanush, K9-Vajra and M777 Ultra Light Howitzers has enhanced the reach of artillery firepower on the northern borders
- The K9-Vajra is a 155-mm, 52-calibre tracked self-propelled howitzer based on the K9 Thunder built by Hanwha Defense.
- The 100th gun was delivered to the Army in February 2021, the contract for which was signed in May 2017. The contract involved maintenance transfer of technology to an Army base workshop to support the howitzers throughout their operational life cycle.

- The K9-Vajra was mainly bought for use in deserts, but the stand-off prompted them to be deployed in the mountains as well.
- To ensure that they performed optimally in the extreme cold weather conditions of the mountains, the Army also procured "winterisation kits" for the regiment deployed.
- Since the stand-off, the Army has deployed its entire range of medium artillery guns and long-range rockets in the region to augment its long-range fire power as part of the reorientation towards the northern borders.

TOPIC: SOCIAL ISSUE

AISHE Data

- The Union Ministry of Education has released the All India Survey on Higher Education (AISHE) 2020-2021.
- The Ministry has been conducting the Survey since 2011, it covers higher educational institutions located in India.
- The survey collects information on different parameters such as student enrollment, teacher data, infrastructural information, financial information etc.
- In AISHE 2020-21, for the first time, the data was filled in using an entirely online data collection platform developed by the Department of Higher Education through the National Informatics Centre (NIC).

Key highlights of the survey:

- In higher education, the total enrollment has increased to nearly 4.14 crore in 2020-21 from 3.85 crores in 2019-20.
- Female enrolment has increased to 2.01 crore from 1.88 crores in 2019-20.
- Gross Enrolment Ratio (GER) for the 18-23 years age group has increased to 27.3 % from 25.6 % in 2019-20.
    - Gender Parity Index (GPI), the ratio of female GER to male GER, has increased from 1 in 2017-18 to 1.05 in 2020-21.
    - The female enrolment in North East States is 6.14 lakh in 2020-21, higher than the male enrolment of 5.92 lahks, For every 100 male students, there are 104 female students in North East Region.
- The enrolment in Distance Education is 45.71 Lakh, an increase of around 7% since 2019-20.

- Top 6 states in terms of the number of students enrolled; Uttar Pradesh, Maharashtra, Tamil Nadu, Madhya Pradesh, Karnataka and Rajasthan.
- About 79.06% of the total students are enrolled in undergraduate-level courses and 11.5% are enrolled in postgraduate-level courses.
    - Among Disciplines at the undergraduate level, enrollment is highest in Arts (33.5%), followed by Science (15.5%), Commerce (13.9%) and Engineering & Technology (11.9%).
    - Among streams at the postgraduate level, the maximum number of students are enrolled in Social Science (20.56%) followed by science (14.83%).
- The total number of pass-outs has increased to 95.4 Lakh in 2020-21 as against 94 Lakh in 2019-20.
- Availability of infrastructural facilities in HEIs in 2020-21:
    - Libraries in 97%
    - Laboratories in 88%
    - Computer centres in 91%.
    - Skill Development Centre in 61%.
    - Connectivity to National Knowledge Network in 56%.
- During 2020-21, the number of Universities has increased by 70, and the number of Colleges has increased by 1,453.
    - Since 2014-15, an increase of 353 Universities (46.4%).
    - The Institutes of National Importance (INIs) have increased from 75 in 2014-15 to 149 in 2020-21.
- The highest number of Universities is in Rajasthan (92), Uttar Pradesh (84) and Gujarat (83).
- The College Density, the number of colleges per lakh eligible population (population in the age group 18-23 years) has been 31. This was 27 in 2014-15.
- States with the Highest college density: Karnataka (62), Telangana (53), Kerala (50), and Himachal Pradesh (50).
- Top 8 Districts with the Highest number of Colleges: Bangalore Urban (1058), Jaipur (671), Hyderabad (488).
- The top States in terms of the number of colleges: are Uttar Pradesh, Maharashtra, Karnataka, Rajasthan, and Tamil Nadu.
- 43% of universities and 61.4% of colleges are located in Rural Areas.
- Faculty/teachers; about 57.1% are male and 42.9% are female.

Challenges in Indian Education System:

- India has achieved universal enrolment at the elementary level. This is a great achievement, but getting Students to School is only the beginning of human Capital formation.
- Poor quality of facilities, Shortage of qualified faculty.
- Date Curriculum, Limited university-industry Partnership.
- Indian origin Scientists have won the Nobel Prize, but post-independence work done in India has not led to a Science novel. If Indians Studying and working abroad can have a great impact, then obviously the problem has to do with our Systems of education and research.
- Broken Governance System. There are few rewards for being a good teacher and few Punishments for being a Careless one. Need more effective and accountable governance Systems.
- The greed of Private Colleges to earn the maximum from every Student puts traumatic Pressure on Students which results in mental breakdown.
- More girls than boys drop out of School. While boys drop out to work, girls usually Stay at home and help with domestic Work. Social Conception of gender roles is an important factor.
- Learning loss due to pandemics and the digital divide.

Steps by the Government:

- The 86th Constitution Amendment provides the Fundamental right to free and compulsory education under Article 21A includes a Common education System where the “rich and Poor are educated under one roof".
- Rashtriya Uchchatar Shiksha Abhiyan provides funding to eligible State higher educational institutions.
- Declaration of Educational Institutions as institutions of Eminence, to provide world-class education to Indian Students within the Country.
- Creation of Higher Education Financing Agency, for high-quality infrastructure in Premier educational institutions.
- National Institution Ranking Framework for ranking our higher education institutions.
- GIAN Initiative invites distinguished academicians, entrepreneurs, scientists, and experts from premier institutions across the world to teach in higher educational institutions in India.
- SWAYAM Portal for Online Courses.
- SWAYAM Prabha Provide HD educational Channels through DTH on a 24X7 basis.
- Sodhganga to develop a national repository of universities in India, digital Study material for higher education.

- Samagra Shiksha Scheme to ensure inclusive and equitable quality education at all levels of school education.
- The government is encouraging Open Online Courses via Swayam Platforms So that Students Can have access to quality lectures online.
- Artificial Intelligence (AI) can be used to Provide Personalized instructions based on Student needs.
- The government needs to work on improving digital infrastructure and ensure that students have access to mobile phones or laptops.

AMENDMENT RELATED TO ONLINE GAMING

Amendment related to online gaming:

- The Union Ministry of Electronics and Information Technology proposed an amendment to bring online gaming under the regulations of the Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021.
- The proposal is released for public consultation.
- The proposed model is similar to the rules in place for digital news sites and streaming services under the IT Rules, 2021.
- The minister highlighted that the proposed framework will;
    - Boost the legitimate domestic online gaming industry.
    - Ensure greater transparency.
    - Promote Consumer protection and investor confidence.
- The All India Gaming Federation (AIGF) stated that it would reduce the State-wise regulatory fragmentation that was a big challenge for the industry.
- Online Gaming Market in India
- A 2019 survey by the U.S.-based Limelight Networks found that India had the second-largest number of gamers after South Korea.
- The revenue of the Indian mobile gaming industry is expected to exceed $1.5 billion in 2022 and is estimated to reach $5 billion in 2025.
- The industry in the country grew at a CAGR of 38% between 2017-2020, as opposed to 8% in China and 10% in the US.
- It is expected to grow at a CAGR of 15% to reach Rs 153 billion in revenue by 2024. India's percentage of new paying users (NPUs) in gaming has been the fastest growing in the world for two consecutive years, at 40% in 2020 and reaching 50% in 2021.
- According to a report by the Federation of Indian Chambers of Commerce & Industry (FICCI), transaction-based games' revenues grew 26% in India, with the number of paying gamers increasing by 17% from 80 million in 2020 to 95 million in 2021.

- About Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021
- The Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021, was notified by the Central government on February 25, 2021, relates to digital news publishers, including websites, portals and YouTube news channels, and Over The Top (OTT) platforms, which stream online contents such as web series and films.
- It is jointly administered by the Ministry of Electronics and IT, and the Ministry of Information and Broadcasting.
- The Rules provide for a code of ethics to be followed by digital news publishers and OTT platforms; A three-tier grievance redress mechanism, which includes:
    - Self-regulation by publishers at the first level
    - Self-regulation by Self-regulating bodies of the publishers
    - An oversight mechanism by the Central government

Key Features of the Rules:

- Social media intermediaries, with registered users in India above a notified threshold, have been classified as significant social media intermediaries.
- They are required to appoint certain personnel for compliance, identification of the first originator of the information on its platform, and identify certain types of content.
- They need to appoint a Nodal Contact Person for 24x7 coordination with law enforcement agencies. Such a person shall be a resident of India.
- Appoint a Resident Grievance Officer who shall perform the functions mentioned under the Grievance Redressal Mechanism. Such a person shall be a resident of India.
- Publish a monthly compliance report mentioning the details of complaints received and action taken on the complaints.
- The Rules prescribe a framework for the regulation of content by online publishers of news and current affairs content and audio-visual content.
- A 3-tier Grievance Redressal Mechanism: Social media intermediaries shall appoint a Grievance Officer to deal with complaints and share the name and contact details of such officers.
- The grievance officer shall acknowledge the complaint within twenty-four hours and resolve it within 15 days from its receipt.
- Ensuring Online Safety and Dignity of Users, Especially Women Users: Intermediaries shall remove or disable access within 24 hours of receipt of complaints of contents that expose the privacy of individuals.

- Such a complaint can be filed either by the individual or by any other person on his/her behalf.
- Voluntary User Verification Mechanism: Users who wish to verify their accounts voluntarily shall be provided with an appropriate mechanism to verify their accounts and provided with a demonstrable and visible mark of verification.
- Giving Users An Opportunity to Be Heard: Users must be provided with an adequate and reasonable opportunity to dispute the action taken by the intermediary.
- Removal of Unlawful Information: An intermediary upon receiving actual knowledge should not host or publish any information which is prohibited under any law in relation to the interest of the sovereignty and integrity of India, public order, friendly relations with foreign countries etc.
- This Code of Ethics prescribes the guidelines to be followed by OTT platforms and online news and digital media entities.
- Self-Classification of Content: The OTT platforms would be required to self-classify the content into five age-based categories; U (Universal), U/A 7+, U/A 13+, U/A 16+, and A (Adult).

TOPIC: HEALTH

KALAZAR

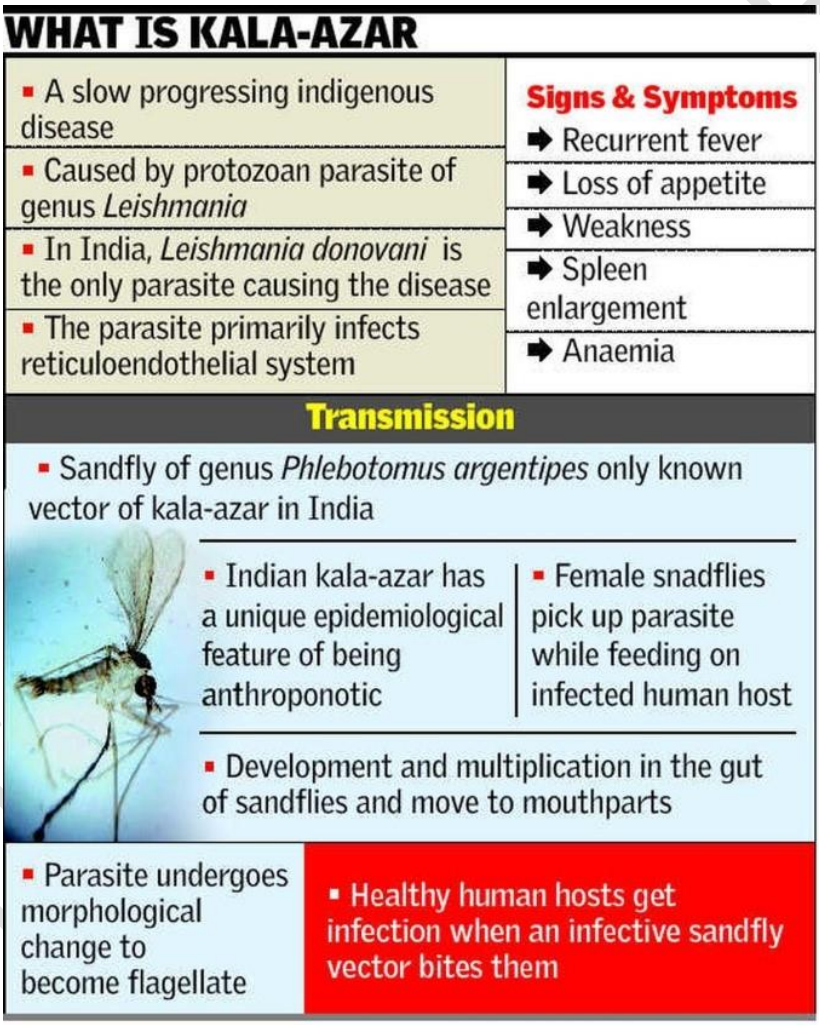
In News:

The Prime Minister, Shri Narendra Modi has expressed his happiness on the declining cases of Kala Azar disease.

Analysis of Background:

What is kala-azar or black fever disease?

- Kala-azar or Visceral Leishmaniasis is a protozoan parasitic disease, spread by sandfly bites. The flies are infected with the parasite called 'leishmania donovani'.



Sandflies:

- Sandflies are brown in color and have hairs on their bodies. The vector sandfly is known to live in cracks and crevices of muddy houses, especially in dark and humid corners.

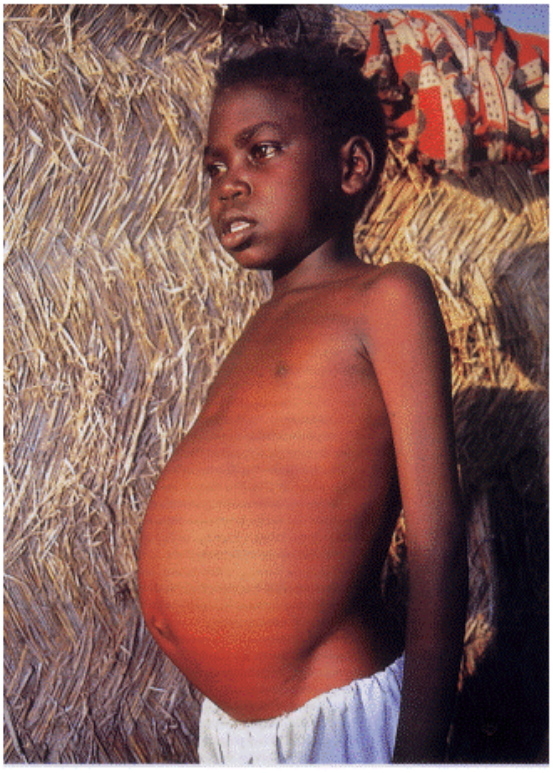
Vulnerable population:

- The disease affects some of the poorest people and is linked to malnutrition, population displacement, poor housing, a weak immune system and a lack of financial resources. Leishmaniasis is also linked to environmental changes such as deforestation, and urbanization. The disease is endemic in Bihar, Jharkhand, Uttar Pradesh and West Bengal.

Symptoms of kala-azar:

- Irregular bouts of fever over many days, weight loss, enlargement of the spleen and liver, and anemia are known symptoms. The skin may become dry, thin and scaly in patches and hair may be lost.
- In people with a light skin tone, grayish discoloration of the skin of hands, feet, abdomen and face may be seen, that is why the disease is also called “Black fever”.

Visceral leishmaniasis, Kala Azar, or dum dum fever



Kala azar was also called dum-dum fever, after a military station in the outskirts of Calcutta. Symptoms are a low degree of fever with hepatosplenomegaly and severe progressive cachexia (wasting), swollen lymph glands, leucopaenia, thrombocytopaenia with relative monocytosis and loss of hair. The parasites (*Leishmania donovani*) are mainly found in bone marrow, liver and spleen. If left untreated this manifestation of leishmaniasis is fatal in more than 90 % of cases.

Treatment

- Anti-leishmanial medicines are available for treatment. Vector control is also recommended by the WHO, which means reducing or interrupting the transmission of

disease by decreasing the number of sandflies in surroundings through insecticide spray, use of insecticide-treated nets, etc.

Steps being taken

- The government aimed to eliminate the disease in India by 2015, but that deadline was missed. However, the number of cases has been brought down significantly through the National Kala-Azar Elimination Programme.
- Under this program, medicines, insecticides and technical support were given by the central government, while state governments provided for the costs involved in implementation. The program was implemented through State/District Malaria Control Offices and the primary health care system.

ALZHEIMER

In News:

The Food and Drug Administration approved a new Alzheimer's drug called Lecanemab.

Analysis of BaCKGROUND:

What is Alzheimer's?

- Alzheimer's is a type of dementia that affects memory, thinking, and behavior.
- The disease process is largely associated with amyloid plaques, neurofibrillary tangles, and loss of neuronal connectionsin the brain.
- As the disease advances, symptoms can include problems with language, disorientation(including easily getting lost), mood swings, loss of motivation, self-neglect, and behavioral issues.
- The disease usually occurs in people over the age of 65 years with a very small proportion getting early-onset.
- The Dementia in India report 2020 estimates that there are 5.3 million people over the age of 60 years living with dementia, with the prevalence projected to increase to 14 million by 2050.

Prevention

- Just like physical exercise, exercising the brain every day is also important.
- "Learning new languages, developing hobbies like music, and solving puzzles like Sudoku keep the brain active and cognitively fit. It is also important for the elderly to go out, make new friends and socialize.

- The disease can also be kept at bay by mitigating risk factors such as diabetes, hypertension, and obesity through a good diet, exercise, enough sleep, and doing away with smoking.
- No treatments stop or reverse its progression, though some may temporarily improve symptoms.