Current Affairs MONTHLY

OCTOBER 2022

By CivilsTap Himachal

For HPAS & Other Competitive Exam in Himachal Pradesh

Mains

Contents

GENERAL STUDIES 1.

GEOGRAPHY

SUPER TYPHOON HINNAMNOR

- The strongest global storm of 2022 is barreling toward the East China Sea, threatening Japan's southern islands but posing only a potential risk to Taiwan or China's east coast.
- Super typhoon Hinnamnor, currently several hundred kilometers to the east of Okinawa, is expected to skirt the Japanese islands this weekend.
- The storm is packing sustained winds of about 150 miles (241 kilometres) per hour and has gusts around 184 mph, according to the US Joint Typhoon Warning Center.
- Hinnamnor would be the strongest storm of 2022 based on the maximum sustained wind speed recorded at this point.

Cyclones

- Cyclones are a type of low-pressure environment with rapid inward air circulation.
- In the Northern Hemisphere, air flows counter clockwise, while in the Southern Hemisphere, it circulates clockwise.

Tropical Cyclones

- The term 'Tropical Cyclone' is used by the World Meteorological Organization to describe weather systems with winds greater than 'Gale Force' (minimum of 63 km per hour).
- Tropical cyclones are formed in the region between the Tropics of Capricorn and Cancer.
- They're large-scale weather systems that form over tropical or subtropical oceans and coalesce into surface wind circulation.
- Tropical cyclones are one of the world's most destructive natural disasters.

Conditions for formation of Cyclones

- A consistent source of heat as tropical cyclones are thermally induced low-pressure systems.
- Large sea surface with a temperature higher than 27° C which is possible only during the late summers i.e. September, October, and November
- Presence of the Coriolis force.
- Small variations in the vertical wind speed.
- A pre-existing weak low-pressure area or low-level-cyclonic circulation;
- Upper divergence above the sea level system.

Origin of Tropical Cyclones

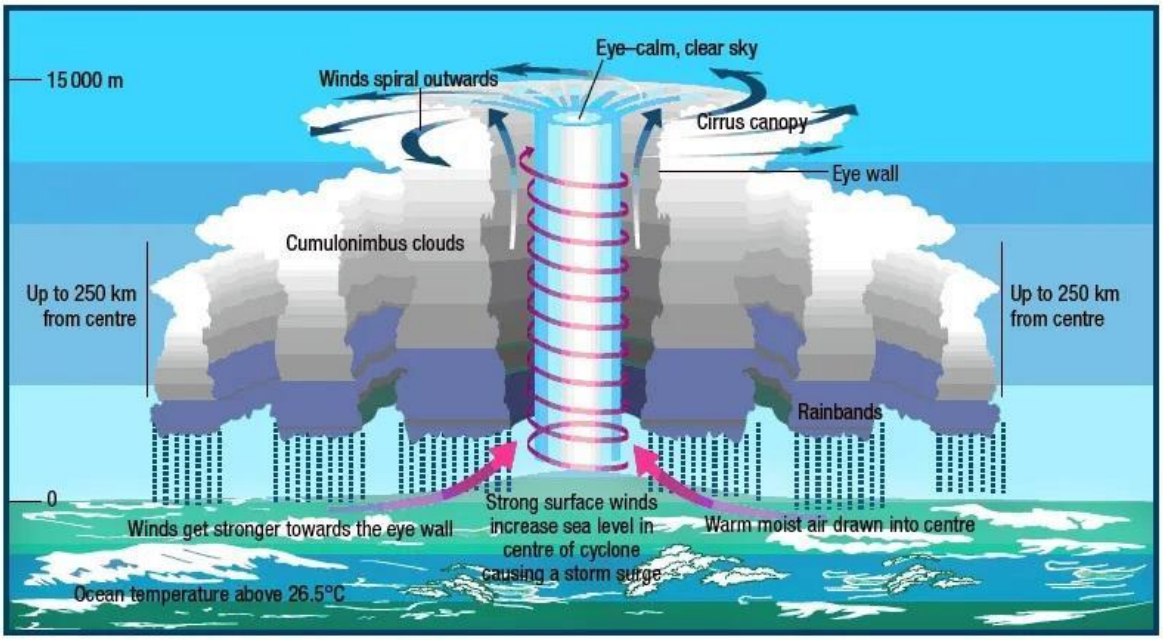
- Tropical cyclones arise over tropical oceans in late summers and have a thermal origin (August to mid-November).
- Because of the Coriolis effect, the powerful local convectional currents take on a whirling motion at these regions.
- These cyclones form and move until they reach a weak place in the trade wind belt.

Structure of Tropical Cyclone

- The structure of a Tropical Cyclone is typically a massive cumulonimbus cloud with rapidly rising air spiraling upwards at the margins of the eye.
- An eye is a region of calm with subsiding air. Around the eye is the Eyewall, where strong spiraling winds ascends and the height can reach up to the tropopause.

Tropical cyclones are formed by the following parts:

- **Eye:** The eye is the center of cyclones which is characterized by a calm area, sinking, and light wind. The eye is the calmest part of the Cyclone structure.Conservation of angular momentum and centrifugal force are the reasons behind its formation.
- **Eyewall:** A band around the eye of the greatest wind speed, where clouds reach the highest and precipitation is the heaviest. The heaviest wind damage occurs where a hurricane's eyewall passes over land.
- **Rain Bands:** Curved bands of clouds and thunderstorms that trail away from the eyewall in a spiral fashion. These bands are capable of producing heavy bursts of rain and wind. Sometimes gaps are found between spiral rain bands, where no impact (wind or rain) of cyclones are found.



Local Names

- North Atlantic (including Caribbean and Gulf of Mexico): Hurricanes
- Eastern and Central North Pacific: Hurricanes
- Western Northern Pacific: Typhoons
- Arabian Sea/Northern Indian Ocean: Tropical Cyclones
- South Indian Ocean: Tropical Cyclones/Willy-Willy for southwest Australia
- Coral Sea/South Pacific: Tropical Cyclone.

INDIA'S GROWING WATER CRISIS

- The UNESCO United Nations World Water Development Report of 2022 has encapsulated global concern over the sharp rise in freshwater withdrawal from streams, lakes, aquifers and human-made reservoirs, impending water stress and also water scarcity being experienced in different parts of the world.

- The new Water Report of the Food and Agriculture Organization of the United Nations (FAO) sounded a note of caution about this silent crisis of a global dimension, with millions of people being deprived of water to live and to sustain their livelihood.

Growing Water Stress

- The Water Scarcity Clock, an interactive webtool, shows that over two billion people live in countries now experiencing high water stress; the numbers will continue to increase.
- The Global Drought Risk and Water Stress map (2019) shows that major parts of India, particularly west, central and parts of peninsular India are highly water stressed and experience water scarcity.

- A NITI Aayog report, 'Composite Water Management Index' (2018) has sounded a note of caution about the worst water crisis in the country, with more than 600 million people facing acute water shortages.
- The typical response of the areas where water shortage or scarcity is high includes transfer of water from the hinterlands/upper catchments or drawing it from stored surface water bodies or aquifers.
- This triggers sectoral and regional competition; rural-urban transfer of water is one such issue of global concern.

Water Stress and Water Scarcity:

- Water scarcity is a physical, objective reality that can be measured consistently across regions and over time.
- "Water stress" refers to the ability, or lack thereof, to meet human and ecological demand for water.

Types of water scarcity

- Water scarcity is the lack of fresh water resources to meet the standard water demand. There are two types of water scarcity
- Physical water scarcity is where there is not enough water to meet all demands, including that needed for ecosystems to function effectively.
- Arid areas for example Central and West Asia, and North Africa often suffer from physical water scarcity.
- Economic water scarcity is caused by a lack of investment in infrastructure or technology to draw water from rivers, aquifers, or other water sources, or insufficient human capacity to satisfy the demand for water.
- Much of Sub-Saharan Africa has economic water scarcity.

Urban Water Use

- According to Census 2011, the urban population in India accounted for 34% of total population distributed in 7,935 towns of all classes.
- It is estimated that the urban population component in India will cross the 40% mark by 2030 and the 50% mark by 2050 (World Urbanization Prospects, 2018).
- The urban population accounted for 50% of the total world population by the end of the last century.
- Although the pace of India's urbanisation is relatively slow, it is now urbanising at a rapid pace — the size of the urban population is substantial.
- Water use in the urban sector has increased as more and more people shift to urban areas, and per capita use of water in these centres rises, which will continue to grow with improved standards of living.
- Examining the urban water management trajectory, it is evident that in the initial stages when a city is small, it is concerned only with water supply; in a majority of cases, water is sourced locally, with groundwater meeting the bulk of the supply.
- As the city grows and water management infrastructures develop, dependence shifts to surface water.
- With a further growth of cities, water sources shift further up in the hinterlands, or the allocation of urban water is enhanced at the expense of irrigation water.
- Almost all cities in India that depend on surface water experience this trend.
- City water supply is now a subject of inter-basin and inter-State transfers of water.

The case of Ahmadabad

- Ahmedabad is an interesting case in this context. More than 80% of water supply in this city used to be met from groundwater sources till the mid-1980s.
- The depth to groundwater level reached 67 meters in confined aquifers. The city now depends on the Narmada canal for the bulk of its water supply.
- The shift is from local groundwater to canal water receiving supply from an inter-State and inter-basin transfer of surface water.
- Whatever be the source, surface or groundwater, cities largely depend on rural areas for raw water supply, which has the potential to ignite the rural-urban dispute.
- Available studies covering Nagpur and Chennai indicate the imminent problem of rural-urban water disputes that the country is going to face in the not-so-distant future as water scarcity grows, which will be further exacerbated by climate change.

- A system perspective and catchment scale-based approach are necessary to link reallocation of water with wider discussions on development, infrastructure investment, fostering a rural-urban partnership and adopting an integrated approach in water management.
- Institutional strengthening can offer entry points and provide opportunities to build flexibility into water resource allocation at a regional level, enabling adjustments in rapidly urbanizing regions.

MANASBAL LAKE

- Central Kashmir's Manasbal Lake is once again open for training drill. It's a historic day after a gap of 33 years. NCC training activities of the naval wing are being revived at the lake.

Manasbal Lake

- Manasbal Lake is located in Ganderbal District in the State of Jammu and Kashmir in India.
- The name Manasbal is said to be a derivative of the Lake Manasarovar.
- Lake is encircled by three villages viz., Jarokbal, Kondabal (also called Kiln place, is situated on the north-eastern side of the lake) and Ganderbal and is stated to be the deepest lake (at 13 m or 43 ft depth) in India.]
- The large growth of lotus (Nelumbo nucifera) at the periphery of the lake (blooms during July and August) adds to the beauty of the clear waters of the lake.
- The Mughal garden, called the Jaroka, (meaning bay window) built by Nur Jahan overlooks the lake.
- The lake is a good place for bird watching as it is one of the largest natural stamping grounds of Aquatic birds in Kashmir and has the sobriquet of **"supreme gem of all Kashmir Lakes".**
- The root stocks of lotus plant which grows extensively in the lake are harvested and marketed, and also eaten by the local people.

CHEETAHS REINTRODUCE PROJECT

- On a modified B-747 that took off from Windhoek, Namibia, for Gwalior on Friday, are eight Namibian wild cheetahs five females, three males would-be founders of a new population in Kuno National Park in Madhya Pradesh.

- As translocation gained currency as a conservation tool (as well as for boosting hunting stock or tourism), the International Union for the Conservation of Nature (IUCN), a union of governments and civil society organisations, in 1995 came up with a guideline which has been updated since.

- **Genetic diversity:** It is often difficult to find genetically suitable animals, particularly for building a new population, when the source population itself is closely related. This can lead to inbreeding depression in the new population.

- **Habitat and prey base:** The factors that caused a species to lose numbers or go extinct must be dealt with to secure the habitat, before restocking so that colonies of reintroduced animals become large enough as quickly as possible to withstand fluctuations in both the environment and population size, experts say. Physical security, enough space, and ample food are the priorities.

- **Landscape viability: Simply** releasing and moving animals between pocket forests can at best halt further habitat fragmentation in the name of a charismatic species. Even if such assisted exchanges succeed in ensuring genetic viability, animals will remain susceptible to demographic and environmental events in such a broken landscape.

- **Curbing the cats' homing instincts:** risks from losing the released animal from the target site and human-animal conflict.

Kuno National Park, Madhya Pradesh:

- Established in 1981 as a wildlife sanctuary in the Sheopur and Morena districts.

- In 2018, it was given the status of a national park. It is part of the Khathiar-Gir dry deciduous forests eco region.
- Area of 344.686 km2
- Fauna: Indian leopard, jungle cat, sloth bear, dhole, Indian wolf, golden jackal, striped hyena, and Bengal fox, chital, Sambar deer, nilgai, four-horned antelope, chinkara, blackbuck and wild boar

CHEETAHS AND OTHERS: KNOW THE 7 BIG CATS

- The cheetah, which is being re-introduced to India from Africa, is not to be confused with the leopard, which too has spots that look somewhat similar. Here's a list of members of the 'cat' genus Panthera, Puma, and Acinonyx.

Panthera

- This is the genus of large wild cats that can roar, but can't purr. Among them, the lion, the leopard, and the jaguar are more closely related, while the other strand has the tiger and the snow leopard. The snow leopard is an exception to the rest of the group in that it can't roar.

Tiger (Panthera Tigris)

- Size: 75-300 kg
- Status: Endangered

- Jim Corbett's "large-hearted gentleman with boundless courage", the solitary and strongly territorial tiger is the largest of all wild cats and also the earliest Panthera member to exist.
- Primarily a forest animal, they range from the Siberian taiga to the Sunderban delta.
- The national animal of India, Bangladesh, Malaysia, and South Korea, the tiger was voted the world's favourite animal ahead of the dog in a 2004 Animal Planet global online poll.
- Madhya Pradesh has largest population of Tigers (526), followed by Karnataka (524) according to latest report by MoEF&CC.

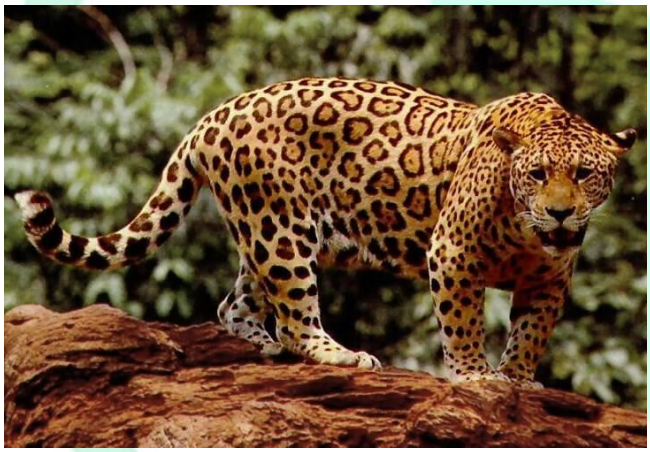
Lion (Panthera Leo)

Size: 100-250 kg
Status: Vulnerable

- Native to Africa and Asia, the lion is the most social cat, and lives in groups called prides.
- They prefer open forests such as scrubland, and adult males have a prominent mane.
- The lion is arguably the most widely recognised animal symbol in human culture — be it the Ashoka pillar in Sarnath, the main entrance to Buckingham Palace, or the 20th Century Fox and MGM logo.
- There are approximately 600 Asiatic lions left in the Gir Forest of Western India, their last remaining natural habitat.

Jaguar (Panthera Onca)
Size: 50-110 kg
Status: Near Threatened

- The largest cat in the Americas, the Jaguar has the strongest bite force of all wild cats, enabling it to bite directly through the skull of its prey.
- Melanistic (black) Jaguars are common and are often called black panthers.
- Jaguar was a powerful motif in the Mayan and Aztec civilisations.



Leopard (Panthera Pardus)
Size: 30-90 kg
Status: Vulnerable

- Similar in appearance to the Jaguar with a rosette patterned coat, the leopard was described by Jim Corbett as “the most beautiful of all animals” for its “grace of movement and beauty of colouring”.
- The most adaptable of all big cats, they occupy diverse habitats at all altitudes across Africa and Asia.
- Like black jaguars, melanistic leopards are called black panthers.
- In some African cultures, leopards are considered to be better hunters than lions.

Snow leopard (Panthera Uncia)
Size: 25-55 kg
Status: Vulnerable

- The ghost of the mountains, this smokey-grey cat lives above the snow line in Central and South Asia.
- The most elusive of all big cats, it cannot roar, and has the longest tail of them all — which comes in handy for balance while hunting along the cliffs, and also gives warmth when wrapped around the body.
- The snow leopard is the state animal of Ladakh and Himachal Pradesh.

PUMA
Closely related to the domestic cat, this genus has only one extant species, the cougar.

Cougar (Puma concolor)
Size: 40-100 kg
Status: Least Concern

- The cougar is the second-largest cat in the Americas. (The Jaguar is the largest.)
- Cougars are also called ‘mountain lion’ and ‘panther’ across their range from the Canadian Yukon to the Southern Andes.
- Concolor is latin for “of uniform colour”.

- The Incas designed the city of Cusco in the shape of a cougar.

Acinonyx

- This is a unique genus within the cat family, with only one living member, the cheetah.

Cheetah (Acinonyx jubatus)
Size: 20-70 kg
Status: Vulnerable

- The fastest land mammal, the cheetah is the only cat without retractable claws — the grip helps it accelerate faster than any sports car (0-100 km/hr in 3 seconds).
- Cheetahs are not aggressive towards humans, and they have been tamed since the Sumerian era.
- They don't breed well in captivity — picky females play hard to get.
- Cheetahs are not really big, and they hunt during the day to avoid competing with other big cats. Mac OS X 10.0, Apple's first major operating system, was code-named Cheetah in 2001.

HISTORY

MOHENJO DARO

- In the 1960s, hydrologist Robert L Raikes and archaeologist George F Dales put forward the theory that a series of catastrophic floods in the Indus around c. 1800 BC had wiped out the great urban centres of the Harappan civilization.
- Recently Pakistan's Department of Archaeology warned that heavy rainfall in the Sindh province threatened the World Heritage status of Mohenjo Daro, one of the largest of Indus Valley Civilization sites.

Mohenjo Daro

- The prehistoric antiquity of Mohenjo Daro, which flourished on the right (west) bank of the Indus river in the 3rd millennium BC was established by Rakhal Das Banerji of the Archaeological Survey of India in 1922.
- The ruins of the sprawling city of unbaked (burnt) brick 510 km north-east of Karachi and 28 km from Larkana in Sindh were recognised as a UNESCO World Heritage site in 1980.
- Mohenjo-daro, which means 'mound of the dead', was one of the oldest cities of the world.
- It is on the right bank of the Indus River.

Mound of the Dead

- Along with Harappa, Mohenjo Daro is the best known site of the bronze age urban civilization that flourished in the valley of the Indus between roughly 3,300 BC and 1,300 BC, with its 'mature' phase spanning the period 2,600 BC to 1,900 BC.
- The civilization went into decline in the middle of the second millennium BC for reasons that are believed to include catastrophic climate change.
- Sites of the Indus Valley Civilisation have been found in a large area extending from Sutkagen Dor in Balochistan near the Pakistan-Iran border to Rakhigarhi in Haryana's Hisar district, and from Manda in Jammu to Daimabad in Maharashtra.
- Other important sites of the Harappan civilization in India are at Lothal and Dholavira in Gujarat, and Kalibangan in Rajasthan.

Buildings

- The Great Bath is the most well-known structure of Mohenjo-Daro. It is a 612 metre long brickwork masterpiece.
- The greatest construction of the Mohenjodaro period has been discovered: a granary. This granary consists of 27 chambers of various sizes and shapes.
- Another important structure at Mohenjodaro is the Assembly Hall, which is a square pillared hall measuring 90X90 feet. Scholars agree that this pillared hall served as a social meeting place.

Can the sites be removed from the World Heritage List?
Yes, sites can be removed from the List.

- Arabian Oryx Sanctuary in Oman: Removed in 2007, after concerns over poaching and habitat degradation
- Liverpool – Maritime Mercantile City' (UK) – One of the world's major trading centres in the 18th and 19th centuries – famous for its pioneering dock technology, transport systems and port management.
- Elbe Valley in Dresden, Germany: After the construction of the Waldschloesschen road bridge across the Elbe river.

DARA SHIKOH

- Vice President calls Dara Shikoh as torchbearer of social harmony
- The Vice President said India had a glorious heritage of not only 'tolerance' for others' views, but a unique culture of 'engagement' with all views – a culture of pluralism and syncretism.

- He said that this spirit of mutual respect was exemplified by Indian kings too - from the time of the great Asoka to the crown prince Dara Shikoh.

About Dara Shikoh

- A genius, a skilled poet, and a Sanskrit scholar, Dara Shikoh studied Sufi and Vedic philosophies extensively.
- He (1615-59) was the eldest son of Shah Jahan and elder brother of Aurangzeb.
- He is described as a "liberal Muslim" who tried to find commonalities between Hindu and Islamic traditions.
- He is known as a pioneer of the academic movement for interfaith understanding in India.
- He had a deep understanding and knowledge of major religions, particularly Islam and Hinduism.
- He was inclined towards philosophy and mysticism over military pursuits in comparison to Aurangzeb.
- In 1655, his father declared him the Crown Prince, but was defeated by Aurangzeb, his younger brother, in 1657 after Shah Jahan fell ill.
- He was assassinated by Aurangzeb, in a bitter struggle for the throne on 30th August, 1659 when he was 44.

His Work

- Dara Shikoh's magnum opus **Majma-ul-Bahrain (which means 'Confluence of Two Oceans')** has helped in bringing stronger unity among the people of India. It remains ever relevant to not only India but to the entire humanity.
- He translated the Upanishads and other important works from Sanskrit to Persian.
- He was convinced that the Upanishads are what the Qur'an calls **'Al-Kitab Al-Maknoun' (The Hidden book).**

Promotion of Indian Culture:

- He acquired proficiency in Sanskrit and Persian, which enabled him to play a key role in popularising Indian culture and Hindu religious thought.
- He translated the Upanishads and other important sources of Hindu religion and spirituality from Sanskrit to Persian. Through these translations, he was responsible for taking the Hindu culture and spiritual traditions to Europe and the West.

SUBHAS CHANDRA BOSE

- A statue of Subhas Chandra Bose was unveiled by PM of India at India Gate, inaugurated along with the Kartavya Path that was earlier known as Rajpath.

Subhas Chandra Bose's Early Life

- Born to an upper-class Bengali family in 1897 in Cuttack, Subhas Chandra Bose was the ninth child of Janakinath and Prabhavati Bose.
- In 1909, Subhas Chandra Bose moved to Ravenshaw Collegiate School, where he completed his secondary education.
- While he continued his European education throughout his life, he became less drawn to Anglicized ways than his family members during his schooling.
- Influenced by the teachings of Ramakrishna and his disciple Swami Vivekananda, as well as the themes of Bengali novelist Bankim Chandra Chatterjee in his novel Ananda Math, Subhas found what he was looking for: "his Motherland's freedom and revival".
- After school, he entered the Presidency College in Calcutta in 1913, where he studied philosophy.
- His earliest battle with British authority occurred while he was a student, against Professor of History E F Oaten, who had once in class spoken about England's civilizing mission in India.
- Afterwards, Bose went to Cambridge University to prepare for the Indian Civil Services (ICS) exam in 1920.
- But later, determined to join the struggle for India's freedom, he abandoned the project and resigned from the ICS to join the Mahatma Gandhi-led national movement.

Bose's Disagreements with Gandhi

- After reaching Bombay, now Mumbai, in 1921, he obtained an audience with Gandhi to get a better understanding of his plan of action.
- While he had great respect for the Mahatma, Bose left the meeting dissatisfied with the answers he received.
- Gandhi was willing to wait a long time for Independence, Bose wanted immediate action, if not immediate results.
- Gandhi was anti-materialistic and hostile to modern technology, Bose saw technology and mass production as essential to survival and dignity.
- Gandhi wanted a decentralized society and disliked the modern state;
- Bose wanted a strong central government and saw the modern state as the only solution to India's problems.
- And finally, Bose did not share Gandhi's dedication to non-violence."
- Despite tensions between the two, Bose was well aware of the significance of a leader like Gandhi.
- Bose was the first to call him the "father of the nation" during an address from the Azad Hind Radio from Singapore in July 1944.

The rift within the Congress

- Over the next two decades, Bose devoted his life to the nationalist movement, gaining considerable political influence and becoming one of the most powerful leaders in the Congress party.
- In 1938, he was elected Congress president in the Haripura session, where he tried to push for swaraj as a "National Demand" and opposed the idea of an Indian federation under British rule.
- He stood for re-election in 1939 and defeated Dr Pattabhi Sitaramayya, the Gandhi-backed candidate.
- 12 of the 15 members of the Working Committee resigned from their roles.
- Bose tried to set up another working committee, but after being unable to do so, was forced to resign and was replaced by Prasad.
- Within a week, he proposed the creation of the "Forward Bloc" within the Congress Party, in order to bring the radical-left elements of the party together.

A Dramatic Escape

- Bose was arrested in 1940 before he could launch a campaign to remove the monument dedicated to the victims of the Black Hole of Calcutta, an incident when a number of European soldiers died while imprisoned in 1756.
- After going on a hunger strike, he was released from jail in December.
- He soon began his escape from India, travelling by road, rail, air and foot in various disguises to avoid British surveillance.
- He entered Soviet-controlled Kabul via the northwest of India and finally reached Nazi Germany, where he remained for two years.
- He was provided assistance to defeat the British, and Bose was allowed to start the Azad Hind Radio and was provided with a few thousand Indian prisoners of war captured by Germany.
- Bose soon turned his focus to South East Asia, specifically Singapore, a British stronghold that had been taken over by Japan

The INA and World War II

- The Indian National Army was formed in 1942, consisting of thousands of Indian prisoners of war captured by the Japanese, and supported by Japanese troops.
- After his arrival in Singapore, Bose announced the formation of the provisional government of the Azad Hind in October 1943.
- The Chalo Delhi campaign ended at Imphal however, as the British and British Indian armies, along with American air support were able to defeat the Japanese forces and the INA and push them out of Kohima as well.
- In April-May 1945, Bose, along with the INA soldiers as well as women he had recruited for the Rani of Jhansi regiment was forced to retreat on foot to Thailand, while facing incessant enemy fire.

- After the atomic bombs were dropped on Hiroshima and Nagasaki in August 1945, the war came to an end.
- After the Japanese surrendered on August 16, Bose left South East Asia on a Japanese plane and headed toward China.
- The plane, however, crashed, leaving Bose badly burned and dead.

VINOBA BHAVE,

- Vinoba Bhave, an ardent Gandhian who had launched the Bhoodan movement. His life was a manifestation of Gandhian principles.

Vinoba Bhave

- Vinoba Bhave (1895-1982) was an Indian nationalist and social-reform leader.
- Bhave's most notable contribution was the creation of the bhoodan (land gift) movement.
- He was born into a high-ranking Chitapavan Brahmin family in Gagode village, south of Bombay.
- He is regarded as the National Teacher of India.
- Bhave took the vow for celibacy and followed it all his life.
- He dedicated his life to religious work and the freedom struggle.

Role in Freedom Struggle:

- Instead of appearing for an exam in Bombay in 1918, Bhave threw away his books in the fire. This happened after he read an article by Mahatma Gandhi.
- He was an ardent follower of Gandhi.
- In 1940, Bhave was selected as the '**First Individual Satyagrahi'** against the British Raj by Gandhi in India.
- Bhave played an important role in the Quit India Movement.

Political Efforts

Bhoodan Movement:

- In 1951, Vinoba Bhave started his land donation movement at Pochampally in Telangana, the Bhoodan Movement.
- He took donated land from land owner Indians and gave it away to the poor and landless, for them to cultivate.

Gramdan:

- Then after 1954, he started to ask for donations of whole villages in a programme he called Gramdan.
- He got more than 1000 villages by way of donation. Out of these, he obtained 175 donated villages in Tamil Nadu alone.

Sarvodaya Movement:

- Vinoba observed the life of the average Indian living in a village and tried to find solutions for the problems he faced with a firm spiritual foundation. This formed the core of his Sarvodaya movement.
- Sarvodaya is Gandhi's most important social political movement. Like Satyagraha, it too is a combination of two terms, Sarva meaning one and all, and Uday meaning welfare or uplift. The conjunction thus implies Universal uplift or welfare of all as the meaning of Sarvodaya.
- Although Sarvodaya was a social ideology in its fundamental form, India's immediate post independence requirement demanded that it be transformed into an urgent political doctrine.

V. RAMASAMY PERIYAR

- Periyar E.V. Ramasamy's birth anniversary (September 17) as **Social Justice Day.**
- Periyar is often referred to as an iconoclast because of the rebellious nature of his ideas.
- His thoughts had clarity and honesty which led people practicing different faiths to discuss and debate his ideas on rationality and religion.

- He had vision for eradiating social evils, political reforms, oppressing the minorities, etc. some of his vision has been discussed in this article.
- The World Day of Social Justice is an international day recognizing the need to promote social justice, which includes efforts to tackle issues such as poverty, exclusion, gender inequality, unemployment, human rights, and social protections. It is celebrated on 20th February every year, different from India's case.

About E V Ramasamy Periyar:

- E V Ramasamy Periyar was born in 1879.He was an Indian social activist and politician.
- In the 1940s, Periyar launched a political party, Dravida Kazhagam (DK), which espoused an independent Dravida Nadu comprising Tamil, Malayalam, Telugu, and Kannada speakers.
- Periyar died in 1973 at the age of 94. Over the years, Periyar is revered as Thanthai Periyar, the father figure of modern Tamil Nadu.

As a member of Congress Party:

- E.V. Ramasamy joined the Indian National Congress in 1919.He disagreed with Gandhi over the question of separate dining for Brahmin and non-Brahmin students.
- He resigned from the party in 1925 and associated himself with the Justice Party and the Self Respect Movement which opposed the dominance of Brahmins in social life, especially the bureaucracy.

Vaikom Satyagraha(1924-1925):

- Vaikom Satyagraha was a satyagraha in Travancore,Kerala against untouchability in Hindu society.
- The Satyagraha was aimed at securing a freedom to all sections of society through the public roads leading to the Sri Mahadeva Temple at Vaikom.
- K. Kelappan played a dominant role in the Vaikom Satyagraha and was also the leader of the Guruvayur Satyagraha in 1932.
- Gandhiji, Chatampi Swamikal and Sree Narayana Guru had also supported the movement.Further, Periyar also came from Tamil Nadu to support the movement.
- The other prominent leaders in the movement include T K Madhavan, Velayudha Menon, K Neelakantan Namboothiri, T R Krishnaswami Iyer and George Joseph
- The movement managed to open the roads around the temple for their use.The temple entry movement gained momentum after this.

Self Respect Movement:

- The Self-Respect Movement was dedicated to the goal of giving non-Brahmins a sense of pride based on their Dravidian past.
- It's aim was to achieve a society where backward castes have equal human rights and encouraging backward castes to have self-respect in the context of a caste-based society that considered them to be a lower end of the hierarchy.
- It was founded in 1925 by S. Ramanathan who invited Periyar to head the movement in Tamil Nadu.

As a President of Justice Party:

- A political party known as the South Indian Libertarian Federation (commonly referred to as Justice Party) was founded in 1916.
- It was formed to principally oppose the economic and political power of the Brahmin groups.
- The party's goal was to render social justice to the non-Brahmin groups.Periyar took over the leadership of the party in 1938.

Relevance of Periyar in current times:

- On one level, a few people are benefiting greatly from the rampant rise of acts of violence against minorities. These people have such an external defence mechanism that it becomes easy for them to use incendiary rhetoric and get away with it.

- The discussion that Periyar initiated continues to-date, and is the antithesis to this manner of societal regression.
- Periyar proclaimed that he would always stand with the oppressed in the fight against oppressors and that his enemy was oppression.
- Spaces for debate are shrinking all over the world. Majoritarianism and populism are not enabling sensible conversations in any public sphere.
- At such a time, Periyar stands as a stellar precedent, reminding us of a time when people with opposing ideas were invited to the stage for a debate.

AMBEDKAR TOURIST CIRCUIT

- The Central government has announced a special tourist circuit encompassing five key sites associated with Dr. B.R. Ambedkar, including his birthplace Mhow, Delhi where he died, and London where he studied.
- The five cities in the tourist circuit as announced by the government are
- Mhow (his birthplace),
- London (where he resided and studied),
- Nagpur (also studied here),
- Delhi (where he passed away)
- Mumbai (where he was cremated).

Other Significant Incidence and Places

- The Mahar talab andolan. One of the greatest incidents of expression of freedom for Dalits.
- Mahad Satyagraha was a satyagraha led by Dr. Ambedkar on March 20, 1927 to allow untouchables to use water in a public tank in Mahad, currently in Raigarh district of Maharashtra.
- Pune is another landmark place for Dalit and Ambedkar history, where negotiations were held in the Yerwada jail between Dr. Ambedkar and Mahatma Gandhi on a separate electorate for depressed classes in the legislature of British India in 1932.
- The result was the Poona Pact signed by Dr. Ambedkar on behalf of the depressed classes and by Madan Mohan Malviya on behalf of upper caste Hindus.
- Kolhapur where in March 1920, another legendary social reformer, Chatrapati Shahuji Maharaj, declared Dr. Ambedkar as the true leader of the oppressed classes in India.

ARCHAEOLOGICAL SURVEY OF INDIA

- The **Archaeological** Survey of India recovered nearly 12,000-year-old artefacts in excavations on the outskirts of Tamilnadu's capital city Chennai. The ASI team has also found pit layers or artefacts separated by hundreds of years from the excavation sites.

Key Findings:

- **Mesolithic Period:** ASI discovered hand axes, scrappers, cleavers, and choppers from the Mesolithic period. They were recovered 75 cm from beneath the surface.
- **Sangam Era:** They discovered Sangam era (almost 2,000 years ago) artefacts including rouletted pottery, Roman amphora sherds, and glass beads suggesting active commerce with Rome. The ASI has also recovered gold ornaments from the excavations, pieces of bangles, terracotta toys, coins, and such items.

- **Early and Later Pallavas:** They discovered sculptures ranging from the early Pallava period (275 CE) to the late Pallavas on the floor inside the surrounding space (897 CE).

Significance of the findings:

- With these discoveries, Vadakkupattu village site has now become a culturally and archaeologically important site.

Archaeological Survey of India (ASI)

- The Archaeological Survey of India (ASI) under the Ministry of Culture is the premier organization for archaeological researches and protection of the cultural heritage of the nation.
- Maintenance of ancient monuments and archaeological sites and remains of national importance is the prime concern of the ASI.
- Besides, it regulates all archaeological activities in the country as per the provisions of the Ancient Monuments and Archaeological Sites and Remains Act, 1958.
- It also regulates Antiquities and Art Treasure Act, 1972. For the maintenance of ancient monuments and archaeological sites and remains of national importance the entire country is divided into 24 circles.
- Headquarters: New Delhi.
- Established: 1861 by Alexander Cunningham.

BUDDHIST CAVES, TEMPLES IN BANDHAVGARH TIGER RESERVE

- The Archaeological Survey of India (ASI) discovered Buddhist caves and stupas, and Brahmi inscriptions, dating back to the 2nd century.
- Hindu temples from the 9th-11th centuries, and possibly the world's largest Varaha sculpture also dating to the same period, at the Bandhavgarh Tiger Reserve in Madhya Pradesh.
- 46 new sculptures have come to light in exploration that took place 84 years after the last such effort in 1938.
- The ASI team discovered 26 mostly Buddhist caves dating back to the 2nd and 5th centuries.
- The caves and some of their remains had Chaitya [rounded] doors and stone beds typical of Mahayana Buddhism sites.
- The inscriptions mention sites such as Mathura and Kaushambi, and Pavata, Vejabharada and Sapatanaairikaa.
- The kings they mention include Bhimsena, Pothasiri and Bhattadeva.
- The Kalachuri dynasty, which spread over parts of Gujarat, Maharashtra and Madhya Pradesh, is also associated with the earliest Ellora and Elephanta cave monuments.
- Some remains of the Gupta period, such as door jambs and carvings in caves, have also been found.
- The ASI team found 24 inscriptions in Brahmi text, all dating back to the 2nd-5th centuries.

CULTURE OF INDIA

HOYSALA TEMPLE

- An expert team, including a representative from the International Commission on Monuments and Sites (ICOMOS) will visit the Hoysala temples at Belur, Halebid, and Somanathpur before submitting a report to UNESCO ahead of declaring them as a World Heritage Site.
- The team will visit the 12th Century Chennakeshava temple at Belur, the Hoysaleshwara temple (12th Century) at Halebid on 15th and the 13th Century Keshava temple at Somanathpur.

The Hoysala Temples

- The Hoysala temples have a basic Darvidian morphology though they reflect other influences including that of Central India's Bhumija mode, northern and western India's Nagara traditions, and Karnata Dravida modes of the Kalyani Chalukyas.
- The temples, instead of consisting of a simple inner chamber with its pillared hall, contain multiple shrines grouped around a central pillared hall and laid out in the shape of an intricately-designed star.
- Soft soapstone being the main building material.
- Decoration of the temple through sculptures – Both the interior and exterior walls, even the pieces of jewellery worn by the deities were intricately carved.
- Upraised platform known as Jagati.
- The walls and stairs of the temple followed a zigzag pattern.

Chennakeshava Temple

- Chennakeshava Temple is also referred to as Vijayanarayana Temple of Belur.It is a 12th-century Hindu temple in Karnataka.
- The temple was commissioned by King Vishnuvardhana in 1117 CE, on the banks of the Yagachi River in Belur also called Velapura, an early Hoysala Empire capital.
- The temple is devoted to Vishnu.
- The richly sculptured exterior of the temple narrates scenes from the life of Vishnu and his reincarnations and the epics, Ramayana, and Mahabharata. However, some of the representations of Shiva are also included.

International Commission on Monuments and Sites (ICOMOS):

- It is a professional association that works for the conservation and protection of cultural heritage places around the world.
- Headquartered in Charenton-le-Pont, France, ICOMOS was founded in 1965 in Warsaw as a result of the Venice Charter of 1964, and offers advice to UNESCO on World Heritage Sites.
- Objectives: Restoration of historic buildings and protect the world's cultural heritage threatened by wars and natural disasters under "Blue Shield"; of which ICOMOS is a partner and founding member.

SALAR JUNG MUSEUM

- A 14th century ceremonial sword that was sold in Hyderabad to a British General in the early 20th century is set to return to India. The sword is among the seven objects being repatriated by Glasgow Life, which manages Glasgow's museums.The tulwar was donated by to Glasgow Life museums' collections in 1978.

About the sword

- The sword, shaped like a snake, has serrated edges and a damascene pattern, with gold etchings of an elephant and tigers.
- The sword was exhibited by Nizam of Hyderabad (1896-1911) at the 1903 Delhi Durbar (a ceremonial reception held to commemorate the coronation of King Edward VII and Queen Alexandra as Emperor and Empress of India)

- The tulwar (sword) was purchased in 1905 by a British General from Maharaja Sir Kishen Pershad, the Prime Minister of Hyderabad.
- Kishen Pershad was known for his munificence where he was known to throw out coins to people chasing his motorcar.

Salar Jung Museum

- The Salar Jung Museum was established in the year 1951 and is located on the southern bank of the River Musi in Hyderabad, Telangana State of India.
- The Salar Jung family is responsible for its collection of rare art objects from all over the world.
- The family is one of the most illustrious families in Deccan history, five of them having been prime-ministers in the erstwhile Nizam rule of Hyderabad-Deccan.
- Nawab Mir Yousuf Ali Khan, popularly known as Salar Jung III was appointed prime minister by Nawab Mir Osman Ali Khan Nizam VII in 1912. Salar Jung III relinquished the post of dewan or Prime Minister in November 1914 and devoted his life in enriching his treasures of art and literature.
- The collection in the form of a museum was declared open on 16th December 1951 in Dewan Deodi, home of late Salar Jung's and was opened to the public by Pandit Jawaharlal Nehru, the first Prime Minister of India.
- Later the Government of India with the consent of the family members took over the Museum formally through a compromise deed and the museum was administered by the Ministry of Scientific Research and Cultural Affairs, Government of India.
- Finally, in 1961, through an "Act of Parliament" the Salar Jung museum along with its library was declared an "Institution of National Importance".
- The Museum was transferred to its present building, inaugurated by Dr. Zakir Hussain, President of India in the year 1968.

A Brief History of the Salar Jung Family.

- Nawab Mir Turab Ali Khan, Salar Jung I, was awarded the title of Salar Jung Bahadur at the age of 13, and later he was appointed as Prime Minister at the age of 24 by Nizam IV, Nawab Mir Farkhunda Ali Khan Nasir-ud-Daulah.
- Salar Jung I was inspired by commemorative mementos made for coronations and special events of European royal families. On his visit to England in 1876, he ordered ceramic objects bearing his portraits.
- He is also said to have bought the" Veiled Rebecca" to India along with many other master pieces. Mir Laiq Ali Khan was appointed first as secretary to the Council of Regency and later as a member of the Council of State. He was appointed as Prime Minister in 1884 by the Nizam VI of Hyderabad Nawab Mir Mehboob Ali Khan was conferred the title "Imad-us-Sultanat".
- Salar Jung III emulated the traditions of European royal families in commissioning famous manufacturing houses in Europe to specially design gold-crested cutlery and crockery.
- Nawab Mir Osman Ali Khan, the seventh Nizam appointed Mir Yousuf Ali Khan, Salar Jung III, as his prime minister in 1912. On health grounds, Salar Jung III relinquished the post of prime minister in November 1914. Thereafter, he devoted his time to enrich his art collection.

WORLD TOURISM DAY

- The Sarovaram Biopark in Kozhikode turned colourful during World Tourism Day celebrations organised under the aegis of National Service Scheme (NSS).
- Students painted "gratitude stones" to be distributed among visitors to the park and created colourful ecofriendly signboards in place of plastic signboards.
- Face art session and flash mob were held as part of the celebrations organised with the theme 'Rethinking Tourism' by the District Tourism Promotion Council (DTPC) in association with the NSS technical cell.
- A Kalaripayattu demonstration by Kadathanad K.P. Chandran Gurukkal Memorial Kalari Sangham marked the Tourism Day celebrations on Kappad Blue Flag Beach
- A marathon was held on the Vadakara beach with 50 students, people's representatives, and local residents.

Kalaripayattu

- Kalaripayattu is a great and ancient physical, cultural and martial art of Kerala.The martial art originated during the 3nd century BC to the 2nd century AD.
- The word kalari first appears in the Tamil Sangam literature (c. 300 BCE to 300 CE) to describe both a battlefield and combat arena.
- The Kalaripayattu is also considered as one of the oldest fighting systems in existence.
- Kalaripayattu techniques include a combination of steps (Chuvatu) and postures (Vadivu).
- Chuvatu literally means 'steps', the basic steps of the martial arts.Vadivu literally means 'postures' or stances are the basic characteristics of Kalaripayattu training.Named after animals,they are usually eight in number.

About NSS:

- National Service scheme is a Central sector scheme implemented by the Ministry of Youth Affairs and Sports of the Government of India.
- The scheme was launched in 1969.
- The scheme aims to develop the personality and character of the student youth through voluntary community service.
- NSS volunteers play an important role in spreading awareness about government initiatives such as Swachh Bharat Mission activities and yoga program.

GENERAL STUDIES 2.

POLITY

EMERGENCY CREDIT LINE GUARANTEE SCHEME

- The scheme was launched as a part of the Atma Nirbhar Bharat package for the Micro, Small, and Medium Enterprises (MSME) borrowers to mitigate the distress caused by the COVID-19 pandemic.
- The scheme was initially announced in May 2020 and then over a period of time, the Finance Ministry has expanded the scope of the ECLGS.
- Recently (May 2021), ECLGS 4.0 has been introduced which provides 100 percent guarantee cover to loans up to Rs.2 crore to hospitals/nursing homes/clinics/medical colleges for setting up on-site oxygen generation plants, interest rate capped at 7.5%.

Emergency Credit Line Guarantee Scheme

- The Scheme allowed additional funding of up to Rs.3 lakh crores to different sectors, especially Micro, Small, and Medium Enterprises (MSME) and MUDRA borrowers.
- Under the ECLGS, all loans sanctioned under the Guaranteed Emergency Credit Line (GECL) facility will be provided with additional credit. However, there are two specifications:
- The scheme would be applicable for loans sanctioned from the date of announcement of the scheme to October 31, 2020, [Now September 3, 2021] OR
- Guarantees for an amount of Rs.3 lakh crore are issued (whichever happens first) Disbursement is permitted up to December 31, 2021.

Major objectives of ECLGS

- As per this scheme, 100% guarantee coverage is to be provided by National Credit Guarantee Trustee Company Limited (NCGTC) to the Member Lending Institutions (MLI), Banks, Financial Institutions, and Non-Banking Financial Companies (NBFC)
- The Scheme aims at mitigating the economic distress faced by MSMEs by providing them additional funding in the form of a fully guaranteed emergency credit line.
- It shall also provide credit to the sector at a low cost, thereby enabling the small sector businesses to meet their operational liabilities and restart their manufacturing and work

Who is eligible under the ECLG Scheme?

- As per the latest eligibility criteria with the launch of the expanded Emergency Credit Line Guarantee Scheme, the following criteria had to be met to be applicable for a loan under the scheme:
- Enterprises with a turnover of up to Rs. 250 crores (FY 2019-20) with outstanding loans up to Rs. 50 crores, as of February 29, 2020
- GECL credit provided will be up to 20% of the borrower's total outstanding credit as of February 29, 2020.
- The maximum amount of loan that can be availed under the scheme is Rs. 5 crores.

Tenure & Interest Rates under ECLGS

- The loan tenure is for 4 years and the moratorium period of 1 year on the principal amount is also applicable [Now the loan tenure is 5 years]
- Interest rates under ECLGS have also been capped:
- 25% for Banks and Financial Institutions
- 14% for Non-Banking Financial Companies

- The National Credit Guarantee Trustee Company Ltd (NCGTC) is not allowed to charge any Guarantee Fee from the Member Lending Institutions that are included under this scheme.

ECLGS 4.0 – Expansion of the Scheme

- On 31st May 2021, the Indian government notified the expansion of the ECLGS. Under the version of ECLGS 4.0:
- 100 percent guarantee cover is being provided to hospitals/nursing homes/clinics/medical colleges for loans of up to Rs 2 crores at an interest rate of 7.5 percent. It is given for setting up on-site oxygen generation plants.
- The eligible borrowers who earlier had a loan tenure of four years can now avail of a loan tenure of five years.
- Additional ECLGS assistance of up to 10% of the outstanding as of February 29, 2020, to borrowers covered under ECLGS 1.
- The 500 crore loan ceiling under ECLGS 3.0 is being discontinued.
- The maximum additional ECLGS assistance to each borrower is being limited to 40% or Rs.200 crore, whichever is lower.
- Civil aviation sector is an eligible borrower under ECLGS 3.0.

About ECLGS 2.0

- The scheme was announced in November 2020 as a part of the Atma Nirbhar Bharat 3.0 package.
- The Emergency Credit Line Guarantee Scheme has been expanded to 27 new sectors, including the health sector.
- These 27 sectors have been identified by the Kamath Committee for one time debt restructuring. Power, construction, textiles, real estate, tourism are few among the many sectors identified.
- Individual beneficiaries for both, professional and self-employed people have also been included in the scheme
- The tenor has been upgraded to 5 years with a 1-year moratorium on repayment of principal.

About National Credit Guarantee Trustee Company Limited

- NCGTC or the National Credit Guarantee Trustee Company Limited was registered under the Companies Act, 1956 in 2014.
- It is a wholly-owned company of the Government of India.
- It was established by the Department of Financial Services, Ministry of Finance.
- The main role of the Organisation is to design credit guarantee programs, to share the risk of lending among the lenders, and facilitate financial access to a prospective borrower
- Conclusively, to revise the economy of the country which faced major disturbances due to the COVID lockdown, the Government of India decided to take charge of making the country self-dependent. And, the Emergency Credit Line Guarantee Scheme is one of those initiatives.

PM SHRI SCHEME

- A new centrally sponsored scheme aims to transform 14,500 government schools across the country into a showcase of the new National Education Policy.

What are the key features of NEP in school education?

- The National Education Plan (NEP) envisions a curriculum structure and teaching method organised into foundational, preparatory, intermediate, and secondary levels.
- Play-based learning will be used in the foundational years (preschool and grades I and II).
- At the preparatory level (III-V), light textbooks are to be introduced along with some formal classroom teaching.
- Further, at the medium level, subject teachers will also be introduced (VI-VIII). Arts and sciences as well as other fields will not be clearly separated throughout the secondary stage (IX–XII).

- The schools will use a cutting-edge, transformative, and all-encompassing approach to educating students.
- A learning-centered, discovery-oriented approach to teaching will be prioritized.
- Linkage with Sector Skill Councils and local industry for enhancing employability and providing better employment opportunities will be explored.
- A School Quality Assessment Framework (SQAF) is being developed, specifying the key performance indicators to measure outcomes. Quality evaluation of these schools at regular intervals will be undertaken to ensure the desired standards.
- Modern infrastructure will also be emphasized, including cutting-edge technology, intelligent classrooms, sports, and more.
- Schools that will be upgraded under the scheme will receive upgrades that include labs, modern classrooms, libraries, sporting goods, and art studios.
- They will be built as green schools, with energy-efficient infrastructure, recycling of garbage, water conservation, and curricular integration of an organic lifestyle.

Where will these schools come up?

- The PM SHRI schools will “provide mentorship" to other schools nearby.
- Since this school is sponsored by the Centre, it will bear 60 per cent of the cost of implementation.
- The remaining 40 per cent will be borne by the state or UT.
- In Himachal Pradesh, Uttarakhand, Jammu and Kashmir and the northeast, the contribution of the Centre can go up to 90 per cent.

How it is implementing?

- PM SHRI Schools would be implemented through the existing administrative structure available for Samagra Shiksha, Kendriya Vidyalayas (KVs) and Jawahar Navodaya Vidyalayas (JNVs).
- These schools shall be monitored vigorously to assess progress and understand the challenges faced in implementation of National Education Policy 2020.
- As per the union government Pedagogy adopted in PM shri schools will be more experiential, holistic, integrated, play/ toy-based (particularly, in the foundational years) inquiry-driven, discovery-oriented, learner-centred, discussion-based, flexible, and enjoyable.

‘TB-Mukt India’ Campaign

- The President of India virtually launched the Pradhan Mantri TB Mukt Bharat Abhiyaan.
- The President said that it is the duty of all citizens to give high priority to 'Pradhan Mantri TB-Mukt Bharat Abhiyaan' and to make this campaign a mass movement.
- It is because TB causes the largest number of deaths among all other infectious diseases in our country.
- India has a little less than 20 percent of the world's population, but has more than 25 percent of the total TB patients of the world.
- Most of the people affected by TB come from the poor section of society.
- Every day 1,200 Indians die of TB — 10 every three minutes.
- According to Health Ministry data, only 63% of the patients infected with the airborne disease are currently under treatment.
- Further, 1,47,000 patients are resistant to first- and second-line TB medicines.

TB Eradication

- According to the United Nations Sustainable Development Goals, all nations have set the goal of eradicating TB by the year 2030.
- But the Government of India has set the target of eradicating TB by the year 2025 and efforts are being made at every level to fulfill this resolution.
- At the current rate of progress, global targets to eliminate TB by 2030 will be missed by a 150 years.

What is Tuberculosis (TB)?

- Tuberculosis (TB) is an infectious airborne bacterial disease caused by Mycobacterium tuberculosis.

- It most commonly affects the lungs but can also damage other parts of the body.

Types of TB-related Conditions:

- **Latent TB:** The bacteria remain in the body in an inactive state. They cause no symptoms and are not contagious, but they can become active;
- **Active TB:** The bacteria do cause symptoms and can be transmitted to others;
- **Multi Drug resistant (MDR) TB:** It is caused by an organism that is resistant to at least isoniazid and rifampin, the two most potent first line TB drugs. These drugs are used to treat all persons with TB disease;
- **Extensively drug-resistant TB:** It is resistant to both first- and second-line drugs due to drug misuse and mismanagement. It is a more serious condition than MDR TB.
- Its symptoms usually include a cough (sometimes blood-tinged), weight loss, night sweats and fever.
- Patients with active symptoms require a long course of treatment involving multiple antibiotics.

What steps have been taken for combating TB?

- **National Strategic Plan for TB elimination (2017-25):** It plans to provide incentives to private providers for following the standard protocols for diagnosis and treatment as well as for notifying the government of cases. Further, patients referred to the government will receive a cash transfer to compensate them for the direct and indirect costs of undergoing treatment and as an incentive to complete treatment.
- **Nikshay:** It is an online tuberculosis reporting system for medical practitioners and clinical establishments that aims to increase the reporting of tuberculosis, especially from the private sector.
- **TB-free India Campaign:** It was launched to take the activities under the National Strategic Plan for TB Elimination forward in a mission mode for ending the epidemic by 2025.
- Currently, two vaccines VPM (Vakzine Projekt Management) 1002 and MIP (Mycobacterium Indicus Pranii) have been developed and identified for TB, and are under Phase-3 clinical trial.
- **Bacille Calmette-Guérin (BCG)** vaccine is presently the sole vaccine available for the prevention of Tuberculosis (TB). However, its efficacy is very less in countries on or near the equator like India, Kenya and Malawi, where the burden of TB is higher.

How to eradicate TB from the society?

- Spread Awareness about the Results from Treatment
- People have to be informed that prevention of this disease is possible.
- Its treatment is effective and accessible.
- The government provides free-of-cost facilities for prevention and treatment of this disease
- Eradicate the Stigma attached with the Disease
- Equipping the patients with vocational skills to help them join the workforce and live a prosperous and productive life.
- The governments, pharma / biotech companies, and foundations must increase investment in TB research, at least to the levels laid out in the UN High Level Meeting Report and make TB a central element in global pandemic response strategies.
- Include Private Sector in this fight.
- The private sector has a very crucial role to play in checking the rise of TB as it is the first place a patient from an urban area visits. We need to make them a partner in this fight.
- Advances in TB diagnostics, treatments and prevention need to be pursued and scaled up with the urgency they deserve. If we do not behave like TB is a global health emergency, we will continue to experience unacceptable suffering from a disease that has killed more than 20 million people in this century alone.

EKLAVYA MODEL RESIDENTIAL SCHOOLS

- In the context of the trend of establishing quality residential schools for the promotion of education in all areas and habitations in the country, the Eklavya Model Residential Schools (EMRS) for ST students take their place among the Jawahar Navodaya Vidyalays, the Kasturba Gandhi Balika Vidyalays and the Kendriya Vidyalays.

- Eklavya Model Residential School (EMRS) are set up in the States/UTs with grants under Article 275(1) of the Constitution of India.
- States/UTs are free to apportion funds out of their Article 275 (1) Grants to construct and run additional EMRS over the number sanctioned by the ministry.
- EMRS started in the year 1997-98 to impart quality education to ST children in remote areas in order to enable them to avail of opportunities in high and professional educational courses and get employment in various sectors.
- The schools focus not only on academic education but on the all-round development of the students.
- The Tribal Affairs Ministry in May , 2021, signed a Memorandum of Understanding (MoU) with Microsoft to help Tribal schools such as Eklavya Model Residential Schools (EMRS) and Ashram Schools have digital transformation. The MoU was signed digitally in an online event **'Empowering Youth for Success'.**
- National Education Society for Tribal Students (NESTS), is an autonomous Society has been set up under the Ministry of Tribal Affairs to establish, endow, maintain, control, and manage the schools and to do all acts and things necessary for or conducive to the promotion of such schools. The NESTS shall function through an Executive Committee under the Chairmanship of Secretary, Tribal Affairs.

Tribal Cooperative Marketing Development Federation of India (TRIFED):

- It was established in August 1987 under the Multi-State Cooperative Societies Act, 1984 by the Government of India as a National level Cooperative body under the administrative control of the then Ministry of Welfare of India, with the basic mandate of bringing about socio-economic development of tribals of the country by institutionalizing the trade of Minor Forest Produce (MFP) & Surplus Agricultural Produce (SAP) collected/ cultivated by them. As a market developer and service provider, the objective of TRIFED is socio-economic development of tribal people in the country by way of marketing development of the tribal products on which the lives of tribals depends heavily as they spend most of their time and derive a major portion of their income. The philosophy behind this approach is to empower tribal people with knowledge, tools and pool of information so that they can undertake their operations in a more systematic and scientific manner.

THE HIJAB CASE AND THE ESSENTIAL PRACTICES DOCTRINE

- A two-judge Bench of the Supreme Court of India is presently hearing arguments on the correctness of a Karnataka High Court judgment that upheld the ban on the use of the hijab by students in Karnataka.

The Karnataka Hijab row:

- A dispute pertaining to school uniforms erupted in Karnataka, when some Muslim students of a college who wanted to wear hijab to classes were denied entry on the grounds that it was a violation of the college's uniform policy.
- Several educational institutions Karnataka government's compulsory uniform order and denied entry to Muslim girls wearing the hijab. This was challenged in the Karnataka High Court (HC).

Possible actions by the Bench

- The Karnataka High Court made three primary findings in its judgment.
- First, it held that the use of a hijab is not essential to the practice of Islam. Thus, the right to freedom of religion was not violated.
- Second, it ruled that there exists no substantive right to freedom of expression or privacy inside a classroom and, therefore, these rights were simply not at stake here.
- Third, it held that the ban did not stem directly out of the government's order, which only called for a uniform dress code to be prescribed by the State or school management committees, and, hence, the law did not discriminate, either directly or indirectly, against Muslim students.
- To decide on the correctness of this verdict, the Supreme Court need not answer all the questions posed before it. A reversal of any of the three findings made by the High Court ought to result in a nullification of the ban.

Law and Religion

- In theory, the issues emanating out of these submissions ought to be capable of easy resolution, through an application of ordinary doctrines of constitutional law.
- But, as transcripts from the hearings have shown us, every time an argument over religious freedom in India is made, it invariably mires itself in the court-crafted doctrine of essential practice (ERP).
- Essential religious practice (ERP) test is a doctrine evolved by the supreme court (SC) to protect only such religious practices under fundamental rights, which are essential and integral to religion. The doctrine of "essentiality" was invented by the SC in the Shirur Mutt case in 1954.

As a kind of inquiry

- The essential practices doctrine owes its existence to a speech made by B.R. Ambedkar in the Constituent Assembly.
- Ambedkar was striving to distinguish the religious from the secular, by arguing that the state should be allowed to intervene in matters that are connected to religion but are not intrinsically religious.

Judicial Verdict

- Indeed, it was in this vein that the Supreme Court, in the case concerning the Shirur Mutt (1954), held that to determine what constituted an 'essential' aspect of religion, the Court ought to look towards the religion concerned, and to what its adherents believed was demanded by their faith.
- But since then, the Court has, with a view to determining the kinds of circumstances in which the state could legitimately intervene, transformed this doctrine into an altogether different form of inquiry.
- In a series of cases, the Court has assumed something akin to an ecclesiastical power and determined whether a practice which was religious in nature was also "essential" to that religion.
- It has allowed the Court to narrow the extent of safeguards available to religious customs by directly impinging on the autonomy of groups to decide for themselves what they deem valuable, violating, in the process, their right to ethical independence.
- The essential practices test is not without alternatives. In his concurring opinion, in the case concerning the ban on entry of women into the Sabarimala temple, Justice D.Y. Chandrachud proposed one such doctrine: a principle of anti-exclusion.
- The anti-exclusion principal postulates that where a religious practice causes the exclusion of individuals in a manner which impairs their dignity or hampers their access to basic goods, the freedom of religion must give way to the over-arching values of a liberal constitution.
- But until such time as the essential practices doctrine is overruled by a Bench of more than seven judges, the Court is bound to apply its tenets. Perhaps that reassessment will happen when a nine-judge Bench constituted in the review petitions filed against the judgment in the Sabarimala case passes judgment. For now, any Court hearing a matter touching upon a matter of faith has the unenviable task of acting not merely as an expert on law but also as an expert on religion

INDIAN OLYMPIC ASSOCIATION

- To ensure a fair development-oriented future of Olympic sports in India, the Supreme Court tasked former SC judge LN Rao with amending the Constitution of the Indian Olympic Association (IOA), preparing the electoral college as well as conducting elections.

The Indian Olympic Association

- It was formed in 1927.
- It is currently based in the Qutub Institutional Area, New Delhi, India.
- Harry Buck and Arthur Noehren were the founders of the IOA.
- Sir Dorabji Tata was the founding president of the Indian Olympic Association.
- It is an affiliated member of the International Olympic Committee (IOC), Commonwealth Games Federation (IGF), Olympic Council of Asia and many more.
- The Indian Olympic Association is governed by a 32-member Executive council. It acts as a body that selects athletes to represent India for various international events.
- It is registered as a Non-Profit Organisation under the Societies Registration Act of 1860

GOVERNANCE

NARCOTIC DRUGS AND PSYCHOTROPIC SUBSTANCES (NDPS) ACT

- While granting bail to a man arrested on June 1 for possessing 29 kg of bhang and 400 g of ganja, Karnataka High Court recently observed that nowhere in the Narcotic Drugs and Psychotropic Substances (NDPS) Act is bhang referred to as a prohibited drink or prohibited drug.

- The single judge Bench relied on two earlier judgments, Madhukar vs the State of Maharashtra, 2002 and Arjun Singh vs State of Haryana, 2004, where the courts had ruled that bhang is not ganja, and is therefore not covered under the NDPS Act.

What is bhang?

- Bhang is the edible preparation made from the leaves of the cannabis plant, often incorporated into drinks such as thandai and lassi, along with various foods.
- Bhang has been consumed in the Indian subcontinent for centuries, and is frequently consumed during the festivals of Holi and Mahashivratri.
- Its widespread use caught the attention of Europeans, with Garcia da Orta, a Portuguese physician who arrived in Goa in the 16th century, noting that, "[Bhang] is so generally used and by such a number of people that there is no mystery about it".

Bhang and the law

- Enacted in 1985, the NDPS Act is the main legislation that deals with drugs and their trafficking.
- Various provisions of the act punish production, manufacture, sale, possession, consumption, purchase, transport, and use of banned drugs, except for medical and scientific purposes.
- The NDPS Act defines cannabis (hemp) as a narcotic drug based on the parts of the plant that come under its purview.

a) **Charas:** "The separated resin, in whatever form, whether crude or purified, obtained from the cannabis plant and also includes concentrated preparation and resin known as hashish oil or liquid hashish."

b) **Ganja:** "The flowering or fruiting tops of the cannabis plant (excluding the seeds and leaves when not accompanied by the tops), by whatever name they be known or designated."

c) "Any mixture, with or without any neutral material, of any of the above forms of cannabis or any drink prepared therefrom."

- The Act, in its definition, excludes seeds and leaves "when not accompanied by the tops". Bhang, which is made with the leaves of the plant, is not mentioned in the NDPS Act.

Narcotics and Psychotropic Substances (NDPS) Act

- Narcotics and Psychotropic Substances (NDPS) Act was passed in 1985 to tackle the problem of illegal drugs in India.
- The Act establishes Narcotics Control Bureau as the apex drug law enforcement agency and empowers it to oversee the implementation of the NDPS Act and also the other International conventions related to it.
- It prohibits the production, sale, purchase, transport and consumption of narcotic drugs and psychotropic substances. The act extends to the whole of India and also in aircraft and ships that are registered in India.
- The NDPS Act has been amended thrice – in 1988, 2001 and 2014.
- The original Act provided no immunity to drug addicts, and there was no real difference in treatment of the user and the dealer.
- The Act was amended in 2001. After the amendment, the act became more tolerant and provided a distinction between a drug user and a drug dealer.
- The amendment was undertaken to focus on bigger fish: Those who smuggled the drugs and facilitated its trade.

- The objective of the amendment was to stop thinking of and treating drug users as hardened criminals, which they rarely are.
- Also, no relief can be sought by the drug convicts by termination, remission, and commutation of sentences passed.
- The bail provision under NDPS requires the court to have "reasonable grounds" to believe that the accused is not guilty and that he is unlikely to commit another offence while on bail.

Punishment and Rehabilitation:

- The Act prescribes quantity-based punishment. The Act differentiates between small and commercial quantities of various drugs.
- NDPS Act provides harsh sentences for those convicted of offences involves smuggling. It even provides for the death penalty in some cases where a person is a repeat offender.
- But the same act also provides for immunity from prosecution to those who are dependent on drugs. It also provides the setting up of treatment facilities for addicts.
- The penalties under this Act are severe considering the consequences of drug abuse and its trafficking.
- The offences under the Act attract jail terms ranging from one year to 20 years and fine depending on the crime.
- Under the Act, abetment, criminal conspiracy and even attempts to commit an offence attract the same punishment as the offence itself.
- Preparation to commit an offence attracts half the penalty.

Narcotics Control Bureau

- NCB is the nodal drug law enforcement and intelligence agency of India responsible for fighting drug trafficking and the abuse of illegal substance.
- It functions under Union Ministry of Home Affairs (MHA).
- It is headquartered in New Delhi.
- It was established in March 1986 to enable full implementation of Narcotic Drugs and Psychotropic Substances Act, 1985 and fight its violation through Prevention of Illicit Trafficking in Narcotic Drugs and Psychotropic Substances Act, 1988.
- Its mandate is to fight drug trafficking on an all-India level.

LGBTQIA+

- The National Medical Commission (NMC) has directed all the State Medical Councils to ban conversion therapy and has called it "professional misconduct".

What is conversion therapy?

- Conversion or reparative therapy is an intervention aimed at changing the sexual orientation or gender identity of an individual with the use of either psychiatric treatment, drugs, exorcism or even violence, with the aim being to make the individual a heterosexual.
- Conversion therapy also includes other measures that are aimed at altering the core identity of youth whose gender identity is incongruent with their sexual anatomy.

Risks associated with conversion therapy

- Such therapy is usually undertaken by people who pretend to be professionals but do not have any expertise.
- As per the American Academy of Child and Adolescent Psychiatry (AACAP), such conversion interventions are undertaken under the false impression that homosexuality and diverse gender identities are pathological and there is actually no need for conversion or other such interventions.
- Further, such therapy or interventions cause severe mental health issues such as anxiety, stress and drug use which can lead to suicide.

Madras High Court's ruling

- In June 2021, the Madras High Court while hearing about the ordeal of a same-sex couple who sought protection from their parents issued interim guidelines for the police, activists, Union and State Social Welfare Ministries, and the National Medical Commission to "ensure their safety and security to lead a life chosen by them."
- Further, the High Court prohibited any attempt to medically "cure" or change the sexual orientation of LGBTQIA+ community individuals.
- The court directed the authorities to take action against "individuals involving themselves in any form or method of conversion therapy," which would result in the withdrawal of the licence to practice medicine.
- The court then ordered the NMC to issue an official notification to regard "Conversion Therapy" as "professional misconduct."

Other important guidelines issued by the court

- The Madras High Court ordered the police to close the complaints of missing person cases, "without subjecting them to harassment" if it is found that the individuals were consenting adults belonging to the LGBTQIA+ community.
- The High Court also asked the Ministry of Social Justice & Empowerment to formulate a list of NGOs and other organisations that can help address various challenges faced by the individuals of the LGBTQIA+ community
- Further, the court directed that individuals of the community should be accorded legal assistance by the District Legal Services Authority along with various law enforcement agencies.
- The High Court highlighted the importance of undertaking sensitisation programmes to understand the needs of the individuals and also directed the agencies to follow the Transgender Persons (Protection of Rights) Rules, 2020, and the Transgender Persons (Protection of Rights) Act, 2019 in letter and spirit.

Recommendations

- The curriculum in educational institutions must be changed and should include chapters that ensure a better understanding of the community.
- Gender-neutral washrooms and toilets must be compulsorily set up in educational institutes and other places.
- Awareness programmes must be undertaken among the parents as the individuals are often misunderstood and abused at home which forces the individuals to opt for conversion therapies.

FUNDAMENTAL LEARNING SKILL

- The study was carried out jointly by the Union Ministry of Education and the National Council of Educational Research and Training (NCERT).
- A nationwide study has found that 37 per cent of students enrolled in Class III have "limited" foundational numeracy skills, such as identifying numbers, while 11 per cent "lack the most basic knowledge and skills".
- With a sample size of 86,000 students in 10,000 schools, the study — the largest ever in terms of scale at the foundational level also assessed the literacy skills of students in 20 languages including English.
- While 15 per cent lacked "basic skills" in English, 30 per cent were found to have "limited skills".
- National Achievement Survey (NAS), which evaluates learning outcomes of students in Classes III, V, VIII and X through a test based on multiple choice questions (MCQs) every three years, the findings of the Foundational Learning Study (FLS) were based on one-to-one interviews with each participant.

Depending on their performance, the students were categorised into four groups:

- Those who lacked the most basic knowledge and skills
- Those who had limited knowledge and skills
- Those who had developed sufficient knowledge and skills
- Those who had developed superior knowledge and skills.

Findings

- Students who could partially complete their grade-level tasks were put in the "limited skills" group.

- While those who failed to complete even the simple grade-level tasks were categorised as “lacking the most basic skills”.
- In numeracy, Tamil Nadu, at 29 per cent, had the maximum number of students who could not complete the most basic grade-level tasks, followed by Jammu and Kashmir (28 per cent), Assam, Chhattisgarh and Gujarat (18 per cent).
- In literacy, the findings were based on phonological awareness, decoding letters, decoding words, decoding non-words, reading fluency and comprehension. For instance, a child was made to read a text aloud and asked questions based on that text, which was not from the school syllabus.
- In English, 15 per cent students were found to be lacking even basic skills, 30 per cent had limited skills, 21 per cent had sufficient skills, while 34 per cent had fairly superior skills.
- In Hindi, 21 per cent fell under the worst performing bracket, while 32 per cent had limited proficiency.
- Among other Indian languages, the proportion of students who lacked basic skills was: 17 per cent in Marathi, 20 per cent in Bengali, 17 per cent in Gujarati, 17 per cent in Malayalam, 42 per cent in Tamil, and 25 per cent in Urdu.
- At the national level, 11 per cent did not have the basic grade-level skills; 37 per cent had limited skills; 42 per cent had sufficient skills; and 10 per cent had superior skills.

Utility of the Findings

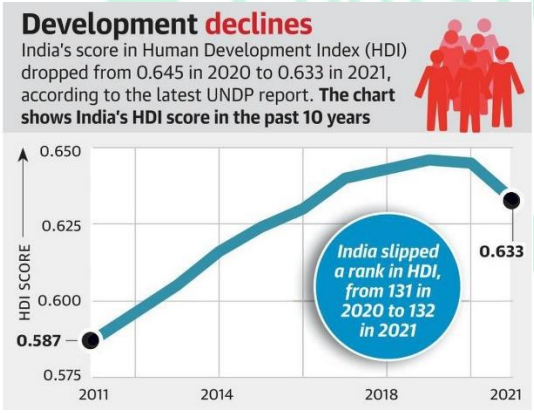
- The findings will set the baseline for NIPUN Bharat (National Initiative for Proficiency in Reading with Understanding and Numeracy), the Centre’s scheme to improve foundational learning.
- “The study also aims to establish reading proficiency benchmarks for fluency and comprehension for each of the languages being assessed.
- It will also provide data to report on Sustainable Development Goals at the global level,”.

National Initiative for Proficiency in Reading with Understanding and Numeracy (NIPUN Bharat)

- Aims to achieve universal foundational literacy and numeracy in primary classes and to ensure that all children attain grade-level competencies in reading, writing and numeracy.
- Lays down priorities and actionable agendas for States/UTs to achieve the goal of proficiency in foundational literacy and numeracy for every child by grade 3.
- Detailed guidelines have been developed for implementation of the NIPUN BHARAT Mission which includes the Lakshya or Targets for Foundational Literacy and Numeracy starting from the Balvatika upto age group 9.

UNDP'S HUMAN DEVELOPMENT INDEX

- India ranks 132 out of 191 countries in the Human Development Index (HDI) 2021, after registering a decline in its score over two consecutive years for the first time in three decades.
- The drop is in line with the global trend since the outbreak of COVID-19 during which 90% of the countries have fallen backward in human development.



HDI Index

- The Index is part of the Human Development Report 2021-2022 released by the United Nations Development Programme on Thursday.

- The HDI measures average achievement of a country in three basic dimensions of human development a long and healthy life, education and a decent standard of living.
- It is calculated using four indicators — **life expectancy at birth, mean years of schooling, expected years of schooling, and the Gross National Income (GNI) per capita.**
- The world over, nine out of 10 countries have slipped in their human development performance due to multiple crises such as COVID-19, the war in Ukraine and environmental challenges, indicating that human development globally has stalled for the first time in 32 years**.**
- India's HDI score of 0.633 places it in the medium human development category, lower than its value of 0.645 in 2018,<SU>indicating a reversal in progress.
- India's expected years of schooling stand at 9 years, down from 12.2 years in the 2020 report, although the mean years of schooling is up at 6.7 years from 6.5 years in the 2020 report.
- Although India retained its 132nd position in the Gender Development Index, the female life expectancy dropped from 71 years in the 2020 report to 68.8 years in the 2021 report.
- The mean years of schooling for females declined from 12.6 to 11.9 years in the corresponding period.
- India scored 0.123 in the Multi-Dimensional Poverty Index (MPI) with a headcount ratio of 27.9 per cent, with 8.8 per cent population reeling under severe multidimensional poverty.
- Over the last decade, India has lifted a staggering 271 million out of multidimensional poverty, the report noted.

India Among South Asian Countries

- Among India's neighbours, Sri Lanka (73rd), China (79th), Bangladesh (129th), and Bhutan (127th) are ranked above India, while Pakistan (161st), Nepal (143rd), and Myanmar (149th) are worse off.
- The report said around 90 per cent of countries registered a decline in their HDI value in 2020 or in 2021.

MeitY, Meta Launch Programme to Support 40 Startups

- The Ministry of Electronics and IT's (MeitY's) Startup Hub signed an agreement with social media giant Meta to launch an accelerator programme to offer grants to startups building services for the metaverse, a digital world which is a combination of virtual reality (VR) and mixed reality (MR) accessed through a browser or headset.
- The programme will support 40 early-stage startups working in extended reality (XR) technologies with a grant of Rs 20 lakh each.
- The accelerator programme will be implemented by four institutions
- International Institute of Information Technology, Hyderabad
- AIC SMU Technology Business Incubation Foundation, Sikkim
- Gujarat University Startup and Entrepreneurship Council, Gujarat
- Foundation for Innovation and Technology Transfer at IIT Delhi.
- Young Indian Startups, especially from tier 2/3 cities, will play a significant role in emerging tech areas like Web 3.0, blockchain, AI, Metaverse etc. and will shape the future of Technology and the internet for India and the world.

What is Extended Reality (XR)?

- XR is an emerging umbrella term for all the immersive technologies.
- The ones we already have today—augmented reality (AR), virtual reality (VR), and mixed reality (MR) plus those that are still to be created.
- All immersive technologies extend the reality we experience by either blending the virtual and "real" worlds or by creating a fully immersive experience.

What is Augmented Reality?

- Augmented reality is the integration of digital information with the user's environment in real time.
- Unlike virtual reality, which creates a totally artificial environment, augmented reality uses the existing environment and overlays new information on top of it.

Virtual reality (VR)

- In contrast to augmented reality, in a virtual reality experience, users are fully immersed in a simulated digital environment.
- Individuals must put on a VR headset or head-mounted display to get a 360 -degree view of an artificial world that fools their brain into believing they are, e.g., walking on the moon, swimming under the ocean

Mixed reality (MR)

- In mixed reality, digital and real-world objects co-exist and can interact with one another in real-time.
- This is the latest immersive technology and is sometimes referred to as hybrid reality. It requires an MR headset and a lot more processing power than VR or AR.

THE FUTURE OF OLD TIMES IN INDIA

- Life expectancy in India has more than doubled since Independence — from around 32 years in the late 1940s to 70 years or so today. Many countries have done even better, but this is still a historical achievement.
- Over the same period, the fertility rate has crashed from about six children per woman to just two, liberating women from the shackles of repeated child-bearing and child care. All this is good news, but it also creates a new challenge — the ageing of the population.
- The share of the elderly (persons aged 60 years and above) in India's population, close to 9% in 2011, is growing fast and may reach 18% by 2036 according to the National Commission on Population.

Pensions Help

- Recent work on mental health among the elderly in India sheds new light on their dire predicament. Evidence on depression from a collaborative survey of the Abdul Latif Jameel Poverty Action Lab (J-PAL) and the Government of Tamil Nadu is particularly telling.
- Among persons aged 60 and above, 30% to 50% (depending on gender and age group) had symptoms that make them likely to be depressed.
- The proportion with depression symptoms is much higher for women than men, and rises sharply with age. In most cases, depression remains undiagnosed and untreated.
- The hardships of old age are not related to poverty alone, but some cash often helps.
- Cash can certainly help to cope with many health issues, and sometimes to avoid loneliness as well.
- The first step towards a dignified life for the elderly is to protect them from destitution and all the deprivations that may come with it. That is why old-age pensions are a vital part of social security systems around the world.
- India has important schemes of non-contributory pensions for the elderly, widowed women and disabled persons under the National Social Assistance Programme (NSAP), administered by the Ministry of Rural Development.

About NSAP:

- NSAP is a Centrally Sponsored Scheme of the Government of India that provides financial assistance to the elderly, widows, and persons with disabilities in the form of social pensions.
- Only BPL persons are eligible for it.

Components of NSAP: Presently NSAP comprises of five schemes, namely –

- Indira Gandhi National Old Age Pension Scheme (IGNOAPS)
- Indira Gandhi National Widow Pension Scheme (IGNWPS)
- Indira Gandhi National Disability Pension Scheme (IGNDPS)
- National Family Benefit Scheme NFBS) and
- Annapurna Scheme

- **Indira Gandhi National Old Age Pension Scheme (IGNOAPS) :** The eligible age for IGNOAPS is 60 years. The pension is Rs.200 p.m. for persons between 60 years and 79 years. For persons who are 80 years and above the pension is Rs.500/ - per month.
- **Indira Gandhi National Widow Pension Scheme (IGNWPS) :** The eligible age is 40 years and the pension is Rs.300 per month. After attaining the age of 80 years, the beneficiary will get Rs.500/ - per month.
- **Indira Gandhi National Disability Pension Scheme (IGNDPS) :** The eligible age for the pension er is 18 years and above and the disability level has to be 80%. The amount is Rs.300 per month and after attaining the age of 80 years, the beneficiary will get Rs 500/ - per month . Dwarfs will also be a n eligible category for this pension.
- **National Family Benefit Scheme (NFBS) :** Rs. 20000/ - will be given as a lumpsum assistance to the bereaved household in the event of death of the bread - winner.
- **Annapurna Scheme :** 10 kgs of food grains (wheat or rice) is given per month per beneficiary.

Issues of NSAP:

- Eligibility for NSAP is restricted to "below poverty line" (BPL) families, based on outdated and unreliable BPL lists, some of them are 20 years old.
- The central contribution to old-age pensions under NSAP has stagnated at a tiny ₹200 per month since 2006, with a slightly higher but still paltry amount (₹300 per month) for widows.
- Many States have enhanced the coverage and/or number of social-security pensions beyond NSAP norms using their own funds and schemes. Some have even achieved "near-universal" (say 75%-80%) coverage of widows and elderly persons.
- "Targeting" social benefits is always difficult. There are huge exclusion errors in the BPL lists.
- Even when lists of left-out, likely-eligible persons were submitted to the local administration, very few were approved for a pension, confirming that they face resilient barriers in the current scheme of things.

Way forward

- Many Officials have absorbed the idea that their job is to save the government money by making sure that no ineligible person qualifies by mistake.
- For example, at some places in Tamil Nadu, if the applicant has an able-bodied son in the city, they may be disqualified, regardless of whether they get any support from their son. In their quest to avoid inclusion errors, many officials are less concerned about exclusion errors.
- **Remove Exclusion Error:** A better approach is to consider all widows and elderly or disabled persons as eligible
- Involvement of local self government like Panchayat at village level.

SCHEDULE TRIBES

- The Union Cabinet under the chairmanship of Prime Minister has approved the addition of four tribes to the list of Scheduled Tribes (ST), including those from Himachal Pradesh, Tamil Nadu and Chhattisgarh.

Tribes included in the list of the Scheduled Tribes

- The Hatti tribe in the Trans-Giri area of Sirmour district in Himachal Pradesh.
- The Narikoravan and Kurivikkaran hill tribes of Tamil Nadu.
- Binjhia tribe in Chhattisgarh.
- The tribe was listed as ST in Jharkhand and Odisha but not in Chhattisgarh.
- 'Betta-Kuruba' as a synonym for the Kadu Kuruba tribe In Karnataka.

Other Decision

- The Cabinet approved a proposal to bring the Gond community, residing in 13 districts of Uttar Pradesh, under the ST list from the Scheduled Caste list. This includes the five subcategories of the Gond community: Dhuria, Nayak, Ojha, Pathari and Rajgond.

- The Cabinet had also approved the inclusion of synonyms for 11 tribes in Chhattisgarh and one tribe in Karnataka so that variations in their spellings and pronunciations do not result in beneficiaries being left out of schemes.

What are the criteria for inclusion in ST List?

The criteria presently followed for the specification of a community as a Scheduled Tribe are

- Indications of primitive traits
- Distinctive culture
- Geographical isolation
- Shyness of contact with the community at large
- Backwardness.

Process to include tribes in the ST list:

- It will start with the recommendation from the respective State governments, which are then sent to the Tribal Affairs Ministry, which reviews and sends them to the Registrar General of India for approval.
- This is followed by the National Commission for Scheduled Tribes' approval before the list is sent to the Cabinet for a final decision.

CENTRAL BUREAU OF INVESTIGATION (CBI)

- Supreme Court made an observation about the Central Bureau of Investigation (CBI) as "a caged parrot speaking in its master's voice".

Central Bureau of Investigation

- The Central Bureau of Investigation (CBI), functioning under Dept. of Personnel, Ministry of Personnel, Pension & Public Grievances, Government of India, is the premier investigating police agency in India. It is also the nodal police agency in India that coordinates investigation on behalf of Interpol Member countries.

Background

- The Central Bureau of Investigation (CBI) owes its origin to the Special Police Establishment, constituted by the British government in 1941, which was substituted by the Delhi Special Police Establishment (DSPE) Act, 1946.
- The CBI came into existence on 1 April, 1963, through a Government of India resolution. The establishment of the CBI was recommended by the Santhanam Committee on Prevention of Corruption (1962-64)
- The CBI is not a statutory body. Its investigative and jurisdiction powers are governed by the DSPE Act, 1946.
- In 2021, The Delhi Special Police Establishment (DSPE) Act, of 1946 and the Central Vigilance Commission (CVC) Act, of 2003 were amended to extend the tenure of CBI and ED directors

Composition of CBI:

- The CBI is headed by a Director and he is assisted by a Special Director or an additional director.
- Additionally, it has a number of joint directors, deputy inspector generals, superintendents of police and all other usual ranks of police personnel.

Powers and Jurisdiction of CBI:

- DSPE Act confers upon the CBIs concurrent and co-extensive powers to carry out the investigation of the offences mentioned under the same section.
- The Central Government has the power to extend the jurisdiction of the CBI to any area, except union territories, that falls within the geographical boundaries of India, subject to the consent of the state so concerned
- An additional power conferred in the CBI Constitution is that CBI can correspond with and demand information from any Ministry or Department of the central or State Government
- The officers of the CBI also have the added power of being exempt from the provisions of the Right to Information Act of 2005.

- As a large number of public sector undertakings came up, the employees of these undertakings were also brought under CBI purview.
- Similarly, with the nationalization of the banks in 1969, the Public Sector Banks and their employees also came within the ambit of the CBI.
- CBI can Suo-moto take up investigation of offenses only in the Union Territories.
- The Central Government can authorize CBI to investigate a crime in a State but only with the consent of the concerned State Government.
- The Supreme Court and High Courts, however, can order CBI to investigate a crime anywhere in the country without the consent of the State.

HIGHER-LEVEL EDUCATIONAL INSTITUTIONS (HEIS)

- The National Assessment and Accreditation Council (NAAC), which carries out quality checks or assessments of Indian Higher-level Educational Institutions (HEIs), courted controversy recently over the rating of the Maharaja Sayajirao University of Baroda which changed from A to A+.
- Grading of the University withheld after receiving an anonymous complaint that the university unduly tried to influence the peer review team with gold, cash and other favours.

What is NAAC?

- The NAAC, an autonomous body under the University Grants Commission (UGC), assesses and certifies HEIs with gradings as part of accreditation.
- Through a multi-layered process, a higher education institution learns whether it meets the standards of quality set by the evaluator in terms of curriculum, faculty, infrastructure, research, and other parameters.
- The ratings of institutions range from A++ to C. If an institution is graded D, it means it is not accredited.

How is the accreditation process carried out?

- NAAC relies heavily on self-assessment reports of applicant institutions.
- The first step has an applicant institution submitting a self-study report of information related to quantitative and qualitative metrics.
- The data is then validated by NAAC expert teams, followed by peer team visits to the institutions.
- Only higher education institutions that are at least six years old, or from where at least two batches of students have graduated, can apply.
- The accreditation is valid for five years.
- When an institution undergoes the accreditation process for the first time it is referred to as Cycle 1, and the subsequent five-year periods as Cycles 2, 3 and so on.
- This last step has sparked controversy.

What are the alternatives being explored?

- From the prevailing “input-based” approach, the NAAC plans to adopt an “outcome-based approach”.
- The white paper states the current system is akin to accepting the claim of a PhD candidate that his thesis is of high quality.
- Instead, it suggests that emphasis should be on finding out if students are equipped with relevant skills and academic abilities.
- Rather than relying exclusively on the self-study reports of the HEIs, the NAAC should ask institutions to provide evidence such as samples of learning materials, continuous assessment tasks and final examinations to show they have outcomes of learning specified in the syllabus.

How many institutions in India are accredited?

- There are 1,043 universities and 42,343 colleges listed on the portal of the All India Survey on Higher Education.
- As per the latest data from June 21, there were 406 universities and 8,686 colleges that were NAAC-accredited.

- Among the states, Maharashtra accounts for the highest number of accredited colleges at 1,869 – more than twice as many as Karnataka's 914, the second highest.
- Tamil Nadu has the most accredited universities at 43.

Issues

- The fear of obtaining a poor grade or no accreditation at all holds back higher education institutes from voluntarily applying for evaluation.

Way forward

- It is recommended that the role of Peer Team visits be facilitatory in nature and not have a significant weightage in assessment and accreditation.
- The new system of Provisional Accreditation for Colleges (PAC) under which even one-year-old institutions could apply for accreditation should be further explored while maintaining quality.
  NAAC should help the colleges improve the quality of education they provide, such that they can be successful in meeting the standards that NAAC accreditation calls for.

PROMPT CORRECTIVE ACTION FRAMEWORK

- The Reserve Bank of India (RBI) removed Central Bank of India from its Prompt Corrective Action Framework (PCAF) after the lender showed improvement in various financial ratios, including minimum regulatory capital and net non-performing assets (NNPAs).

Prompt Corrective Action

- The PCA norm is a supervisory tool and is imposed when a bank breaches certain regulatory thresholds on capital to risk weighted assets ratio (CRAR), net NPAs and return on assets (RoA).
- PCA delineates three risk thresholds. Triggering of each threshold will result in invocation of PCA, with a gradually increasing set of restrictions.

With the first risk threshold breached,

- The RBI can restrict dividend distribution, or remittance of profits
- The promoters and shareholders of the NBFCs will be asked to put in more capital.
- The RBI will also restrict issuance of guarantees or taking other contingent liabilities on behalf of group companies, in case of core investment companies.

After hitting risk threshold 2,

- The NBFC will be prohibited from opening branches, in addition to restrictions under Threshold 1.

If the third risk threshold is triggered,

- The RBI can even restrict capital expenditure.
- There are other discretionary actions that the RBI can take, for example, special supervisory actions, or even removing the key executives.
- It is also important to note that apart from the actions mentioned in the PCA framework, the RBI can take any other action as it deems fit at any time.
- **Aim:** to initiate and implement remedial measures in a timely manner, so as to restore its financial health.
- **Scope:** Apply to all banks operating in India including foreign banks operating through branches or subsidiaries.

Conditions for Withdrawal of restrictions imposed:

- If no breaches in risk thresholds in any of the parameters are observed as per four continuous quarterly financial statements
- Based on Supervisory comfort of the RBI, including an assessment on sustainability of profitability of the bank.

COFFEE BOARD

- On the side lines of the annual conference of United Planters Association of Southern India, The Coffee Board is coming out with a sustainability code for Indian coffee.

Coffee Board

- The Government of India established the 'Coffee Board' through a constitutional act "Coffee Act VII of 1942" under the administrative control of Ministry of Commerce and Industry.
- The Board comprises 33 members including the Chairman, who is the Chief Executive and appointed by the Government of India.
- The remaining 32 members represent the various interests such as coffee growing industry, coffee trade interests, curing establishments, interests of labour and consumers, representatives of governments of the principal coffee growing states, and Members of Parliament.
- Role of Coffee Board: Coffee Board serves as the friend, philosopher and guide to the Coffee sector covering the entire value chain. The core activities are primarily directed towards research & development, transfer of technology, enhancement of production, quality improvement, export promotion and supporting development of Domestic market.
- The head office of the Coffee Board is situated in Bangalore.
- International Coffee Day is on 1st October.

About coffee and its cultivation:

- It is indigenous to Abyssinia Plateau (Ethiopia) from where it was taken to Arabia in 11th century. From Arabia, its seeds were brought to India by Baba Badan Giri in the 17th Century and were raised in the Baba Budan Hills of Karnataka.

Conditions of Growth

- The hot and humid climate
- Temperature between 15°C and 28 °C.
- Rainfall from 150 to 250 cm.
- Well-drained, rich friable loams containing a good deal of humus and minerals like iron and calcium are ideal for coffee cultivation.
- Dry weather is necessary at the time of ripening of the berries.
- The crop is not tolerant to
- Frost and snowfall.
- High temperature above 30°C and strong sunshine (Hence, generally grown under shady trees on Northern and Eastern aspects of Hill).
- Prolonged drought.
- Stagnant water (Hence, grown on hill slopes at elevations from 600 to 1,600 metres above sea level).

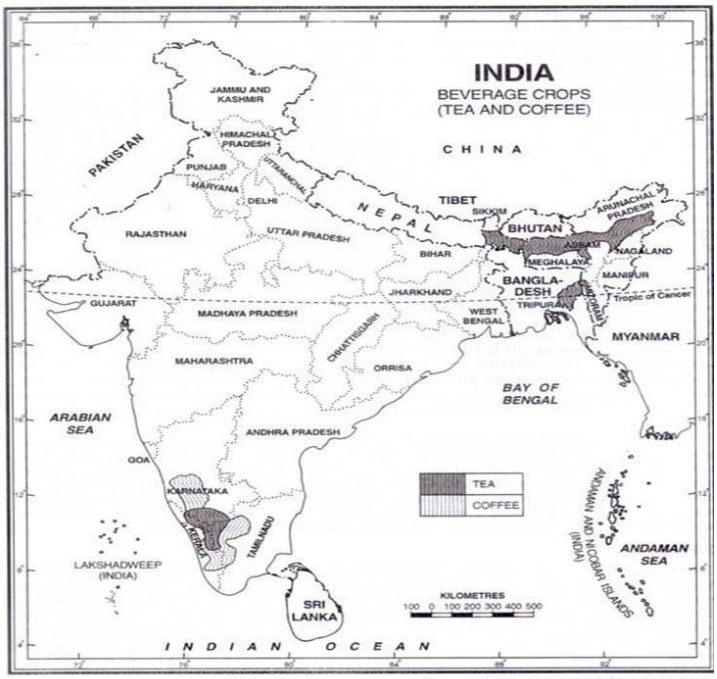


FIG. 24.6. India : Beverage Crops (Tea and Coffee)

Type and Varieties of Coffee

- The two main varieties of coffee viz., Arabica and Robusta are grown in India. Arabica is mild coffee, but the beans being more aromatic, it has higher market value compared to Robusta beans. On the other hand Robusta has more strength and is, therefore, used in making various blends.
- Arabica is grown in higher altitudes than Robusta.
- The cool and equable temperature, ranging between 15 degree Celsius to 25 degree Celsius, is suitable for Arabica while for Robusta, hot and

humid climate with temperature ranging from 20 degree Celsius to 30 degree Celsius is suitable.
- Arabica requires more care & nurture and is more suitable for large holdings whereas Robusta is suitable irrespective of size of the farm.
- The harvest of Arabica takes place between November to January, while for Robusta it is December to February.
- Arabica is susceptible to pests & diseases such as White Stem Borer, leaf rust etc., and requires more shade than Robusta.

India Hypertension Control Initiative

- India on Wednesday won a United Nations (UN) award for its 'India Hypertension Control Initiative (IHCI)', a large-scale hypertension intervention under the National Health Mission that saw 3.4 million hypertensive people identified and put on treatment at various government health facilities.

What is Hypertension?

- Hypertension was defined as having systolic blood pressure level greater than or equal to 140 mmHg or diastolic blood pressure level greater than or equal to 90 mmHg or/and taking anti-hypertensive medication to lower his/her blood pressure.

What is the IHCI?

- Recognising that hypertension is a serious, and growing, health issue in India, the Health Ministry, the Indian Council of Medical Research, State Governments, and WHO-India began a five-year initiative to monitor and treat hypertension.
- India has committed to a "25 by 25" goal, which aims to reduce premature mortality due to non-communicable diseases (NCDs) by 25% by 2025.
- One of the nine voluntary targets includes reducing the prevalence of high blood pressure by 25% by 2025.
- The programme was launched in November 2017.
- Before IHCI, many patients travelled to higher-level facilities such as community health centres (block level) or district hospitals in the public sector for hypertension treatment.
- Over three years, all levels of health staff at the primary health centres and health wellness centres were trained to provide treatment and follow-up services for hypertension.

Winners of the 2022 UN Inter-Agency Task Force and the WHO Special Programme on Primary Health Care Awards

- Eighteen organizations received the UN Inter-Agency Task Force on the Prevention and Control of NCDs and the WHO Special Programme on Primary Health Care (PHC) awards.
- Winners were announced on 21 September 2022 during the annual Friends of the Task Force meeting during the UN General Assembly.

Awards were made in three categories:

1. Ministries of health (or government agency under a ministry of health)
2. Ministries (or government agencies) beyond health
3. Non-state actors (non-governmental organization, academic institutions and philanthropy).

Rabies Control and Animal Welfare

- The death of a 12-year-old girl in Pathanamthitta has sharpened the focus on the rising number of rabies cases and the growing population of stray dogs in Kerala.

About Rabies

- It is a zoonotic viral disease.
- It is caused by the Rabies virus, of the Lyssavirus genus, within the family Rhabdoviridae.
- It is a Ribonucleic Acid (RNA) virus that is present in the saliva of a rabid animal (dog, cat, monkey, etc).
- Rabies is 100% fatal but 100% vaccine-preventable.

- 33% of global rabies deaths are recorded in India.
- Common Vectors/ Reservoirs of Virus
- The most common reservoir of the virus is the domestic/street dog especially in South Asia and Africa.
- More than 99% of human deaths due to rabies are caused by dog-mediated rabies.
- In developed nations like the USA, animals that transmit rabies are bats, foxes, raccoons, and skunks.
- Most mammals can carry the virus and hence can cause the disease.
- It spreads by the bite of a rabid animal that leads to the deposition of the saliva and the virus in the wound.
- The incubation period varies from 4 days to 2 years or sometimes even more.
- The incubation period means the time interval between the bite and the occurrence of symptoms/signs of the disease.

Symptoms

- Fever, Headache, Nausea, Vomiting
- Anxiety, Confusion, Hyperactivity, Hallucinations, Insomnia
- Difficulty swallowing
- Excessive salivation
- Partial paralysis
- Fear brought on by attempts to drink fluids because of difficulty swallowing water, etc.
- The death invariably occurs in 4 days to 2 weeks due to cardio-respiratory failure.

Control and Prevention of Rabies

- Get rabies vaccination to prevent the infection.
- Vaccinating your pet against the disease.
- Maintain distance from the wild animals.
- Wash wounds with soap and water and maintain good hygiene.
- Keep your pets away from the other stray dogs.
- Prevent bats from wandering around your campuses and living places.

Prevention of Cruelty to Animals Act, 1960

- The Prevention of Cruelty to Animals Act,1960, was adopted by the Indian Parliament in 1960 to prevent the inflicting of unnecessary pain or suffering on animals and to reform legislation connected to animal cruelty prevention.
- The Animal Welfare Board of India was established by the Indian government in accordance with the law's stipulations.
- This Act provides for punishment for causing unnecessary cruelty and suffering to animals. The Act defines animals and different forms of animals.
- It provides the guidelines relating to experimentation on animals for scientific purposes.

Prevention of Cruelty to Animals (Care and Maintenance of Case Property Animals) Rules, 2017

- Framed under the Prevention of Cruelty to Animals Act, 1960.
- The Rules allow a Magistrate to forfeit the animal of an owner facing trial under the Act.
- The animals are then sent to infirmaries, animal shelters, etc.
- The authorities can further give such animals for "adoption".

Animal Welfare Board of India

- The Animal Welfare Board of India is a statutory advisory body on Animal Welfare Laws and promotes animal welfare in the country.
- Established in 1962 under Section 4 of the Prevention of Cruelty to Animals Act, 1960 (No. 59 of 1960), the Animal Welfare Board of India was started under the stewardship of Late Smt. Rukmini Devi Arundale, well known humanitarian.

- From ensuring that animal welfare laws in the country are diligently followed, to provide grants to Animal Welfare Organizations and advising the Government of India on animal welfare issues, the Board has been the face of the animal welfare movement in the country for the last 50 years.
- The Board consists of 28 Members. The term of office of Members is for a period of 3 years.

STAR RATING FOR PACKAGED FOOD

- The Food Safety and Standards Authority of India has issued a draft notification on front-of-package labelling, which proposes "Indian Nutrition Rating" (INR) modelled on the health star-rating system.
- Packaged food to display the prescribed format of INR by assigning a rating from 1/2 star (least healthy) to five stars (healthiest).
- The INR is to be calculated on the basis of contribution of energy, saturated fat, total sugar, sodium and the positive nutrients per 100 gm of solid food or 100 ml of liquid food.
- The star assigned to a product "shall be displayed close in proximity to the name or brand name of the product on front of pack," says the draft notification.
- Certain food products such as milk and milk-based products, egg-based desserts, infant formula, salads and sandwich spreads and alcoholic beverages have been exempted.

Public health experts have been opposed to the health-star rating system:

- They say it gives a "health halo" because of its positive connotation making it harder to identify harmful products.
- They instead recommend warning labels such as an octagonal "stop" symbol which global studies have shown is the only format that has led to a positive impact on food and beverage purchases forcing the industry,
- For example in Chile, to reformulate their products and remove major amounts of sugar and salt.
- Stakeholders have been given 60 days to submit their responses to the draft notification.

Food Safety and Standards Authority of India (FSSAI)

- Food Safety and Standards Authority of India (FSSAI) is a statutory body established under the Food Safety and Standards Act, 2006 (FSS Act).
- FSSAI is an autonomous body.
- The administrative ministry for FSSAI is the Ministry of Health & Family Welfare.
- FSSAI is responsible for protecting and promoting public health through the regulation and supervision of food safety.
- FSSAI headquartered in New Delhi

OPERATION MEGH CHAKRA

- The Central Bureau of Investigation (CBI) conducted searches at 59 locations across 20 States and one Union Territory, as part of a pan-India drive against the circulation and sharing of Child Sexual Abuse Material (CSAM).
- The operation code-named "Megh Chakra" is being carried out following the inputs received from Interpol's Singapore special unit based on the information received from the authorities in New Zealand.

Operation Megh Chakra

- Operation Megh Chakra is one of the CBI-led global operations in recent times for rapid response to online child sexual exploitation cases with international linkages and organized cyber enabled financial crimes.
- It is aimed at identifying and acting against the individuals and gangs involved in circulating child sexual abuse material and blackmailing minors.
- The operation is targeted at cloud storage — therefore the code name 'Megha Chakra' — used by peddlers to circulate audio-visual material on illicit sexual activities with minors.

- The persons named in the First Information Reports (FIRs) were booked under the relevant provisions of the Indian Penal Code and the Information Technology Act, for allegedly being part of the syndicates that uploaded, circulated, sold, and viewed CSAM through various social media platforms and groups.
- Based on its findings, the CBI later decided to send requests to several countries for sharing and gathering information under the Mutual Legal Assistance Treaties (MLATs) on those involved in the racket.
- It sought to collate information from various law enforcement agencies within India, engage with relevant law enforcement agencies globally and coordinate closely through INTERPOL (International Criminal Police Organization) channels to combat online child sexual exploitation and such organized cyber-criminal activities.
- The probe had led to the identification of over 50 groups with more than 5,000 offenders, including the nationals of about 100 countries, also including Turkey, Poland, Sudan, South Korea, Uganda, Kuwait, Italy, Germany, Spain, Australia and Romania.

DADASAHEB PHALKE AWARD

- Asha Parekh will be honoured with the Dada Saheb Phalke award for 2020, the highest recognition in the field of Indian cinema.

Dadasaheb Phalke Award

- The Government of India started it in 1969 to commemorate Dadasaheb Phalke, known as the **'Father of Indian Cinema'.**
- He made India's first full-length feature film Raja Harishchandra in 1913.
- It is the highest honour for an artist in Indian cinema.
- It is presented annually at the National Films Awards ceremony by the Directorate of Film Festivals, an organisation set up by the Ministry of Information and Broadcasting.
- The recipients are honoured for their "outstanding contribution to the growth and development of Indian cinema."
- The award comprises a Swarna Kamal (Golden Lotus) medallion, a shawl, and a cash prize of Rs. 10 lakh.

Dadasaheb Phalke

- Raja Harischandra (1913), India's first feature film, was directed by Dadasaheb Phalke.
- He was born in 1870 at Trimbak in Maharashtra.
- He studied engineering and sculpture and developed an interest in motion pictures after watching the 1906 silent film The Life of Christ.
- Before venturing into films, Phalke worked as a photographer, owned a printing press, and had even worked with the famed painter Raja Ravi Varma.
- He was an Indian screenwriter, director, and producer.
- He is referred to as the **"Father of Indian Cinema."**
- In his honour, the Indian government established the Dadasaheb Phalke Award for lifelong contributions to Indian film.

INTERNATION RELATIONS

NON-PROLIFERATION OF NUCLEAR WEAPONS TREATY (NPT)

- The Tenth Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) concluded in New York.
- Marking 52 years of a treaty that every speaker described as the 'cornerstone of the global nuclear order' it was originally planned for its 50th year for 2020, but the conference was delayed due to COVID-19.
- After four weeks of debate and discussion, the delegates failed to agree on a final document.

NPT's Success and Weakness

- It is true that since 1970, when the NPT entered into force, only four of the 10 review conferences (in 1980, 1990, 2000 and 2010) have concluded with a consensus document,
- The review years were: 1975, 1980, 1985, 1990, 1995, 2000, 2005, 2010, 2015, 2022.
- Ironically, even the critical 1995 Review Conference that decided to extend the NPT into perpetuity, broke down.

About NPT

The NPT was negotiated during the 1960s to reconcile three competing objectives:

- Controlling the further spread of nuclear weapons beyond the P-5 countries (the U.S., the U.S.S.R., the U.K, France and China) that had already tested;
- Committing to negotiating reductions of nuclear arsenals leading to their elimination; and
- Sharing benefits of peaceful applications of nuclear science and technology

Progress

- Arms control talks between the U.S. and the U.S.S.R./Russia did take place and the two countries did succeed in bringing down their collective arsenals.
- Despite apprehensions that by the 1980s, there would be close to 25 nuclear powers, in the last 50 years, only four more countries have gone on to test and develop nuclear arsenals — India, Israel, North Korea and Pakistan.
- After the end of the Cold War and the break-up of the U.S.S.R. in 1991, non-proliferation remained a shared priority for the major powers and the International Atomic Energy Agency.

Weakness

- Progress on the other two aspects took a back seat;
- No meaningful discussions or negotiations on nuclear disarmament have ever taken place in the NPT framework.
- In 2019, the U.S. notified Russia of its decision to quit the 1987 Intermediate Range Nuclear Forces (INF) Treaty that had obliged both countries to get rid of all ground-launched missiles with a range of 500-5,500 km.
- The only surviving arms control treaty between Russia and the U.S. is the New START Treaty that imposes a ceiling on operational strategic nuclear weapons of 700 launchers and 1,550 warheads each.
- All that the five nuclear-weapon-states party to the NPT could manage at the conference was a reiteration of the 1985 Reagan-Gorbachev declaration that 'a nuclear war cannot be won and must never be fought'.
- The statement remains valid but clearly sounded hollow in the face of growing strategic rivalry between China, Russia and the U.S., rising nuclear rhetoric, and modernisation plans for nuclear arsenals being pursued.

Nuclear modernisation

- United States administration's Nuclear Posture Review is awaited, the U.S.'s 30-year nuclear modernisation programme, intended to provide 'credible deterrence against regional aggression' is already underway. This has been used to justify developing and deploying more usable low-yield nuclear weapons.

Russia and China

- Russia and China is developing hypersonic delivery systems that evade missile defences as well as larger missiles that do not need to travel over the Arctic.
- Also on the cards are nuclear torpedoes and new cruise missiles.
- Last year, satellite imagery over China revealed that at least three new missile storage sites are being developed.
- China on track to expand its arsenal from current levels of approximately 350 warheads to over 1,000 by 2030.
- Such a dramatic expansion raises questions about whether this marks a shift in the Chinese nuclear doctrine that has relied on a credible minimum deterrent and a no-first-use policy for the last six decades.

Cyber Threat

- Developments in space and cyber domains are blurring the line between conventional and nuclear weapons, leading to nuclear entanglement and rendering command and control systems vulnerable.
- This, in turn, compresses decision-making time and creates incentives for early use, raising nuclear risk.

Other Treaties

Treaty on the Prohibition of Nuclear Weapons

- Frustrated by the absence of progress on nuclear disarmament, the nuclear have-nots successfully negotiated a Treaty on the Prohibition of Nuclear Weapons (TPNW, also called Ban Treaty) in 2017 that entered into force in January 2021.
- All 86 signatories are nuclear have-nots and parties to the NPT.
- It is the first legally binding international agreement to comprehensively prohibit nuclear weapons, with the goal of leading towards their total elimination.

Strategy:

- For those nations that are party to it, the treaty prohibits the development, testing, production, stockpiling, stationing, transfer, use and threat of use of nuclear weapons, as well as assistance and encouragement to the prohibited activities.
- For nuclear armed states joining the treaty, it provides for a time-bound framework for negotiations leading to the verified and irreversible elimination of its nuclear weapons programme.

Comprehensive Test Ban Treaty (CTBT)

- The Comprehensive Test Ban Treaty (CTBT) was concluded in 1996 but has yet to formally enter into force because two major powers, the S. and China, have yet to ratify it.
- The CTBT is the Treaty banning all nuclear explosions – everywhere, by everyone.
- The Treaty will enter into force after all 44 States listed in Annex 2 to the Treaty will ratify it. These States had nuclear facilities at the time the Treaty was negotiated and adopted.
- India, North Korea and Pakistan have not yet signed the Treaty.
- While it is true that they do observe a moratorium on nuclear testing, modernisation plans could soon run up against the CTBT.
- Nobody wants a breakdown of the NPT but sustaining it requires facing up to today's political realities. The rivalries in a multipolar nuclear world create new challenges, different from what the world faced in a bipolar era of the 1960s when the NPT was concluded. Without addressing the new challenges, the NPT will weaken and with it, the taboo against nuclear weapons that has held since 1945.

KUSHIYARA RIVER TREATY

- During Bangladesh Prime Minister visit to India from September 5 to 8, the two sides signed a slew of agreements, including the first water sharing agreement since the landmark Ganga Waters Treaty, 1996.

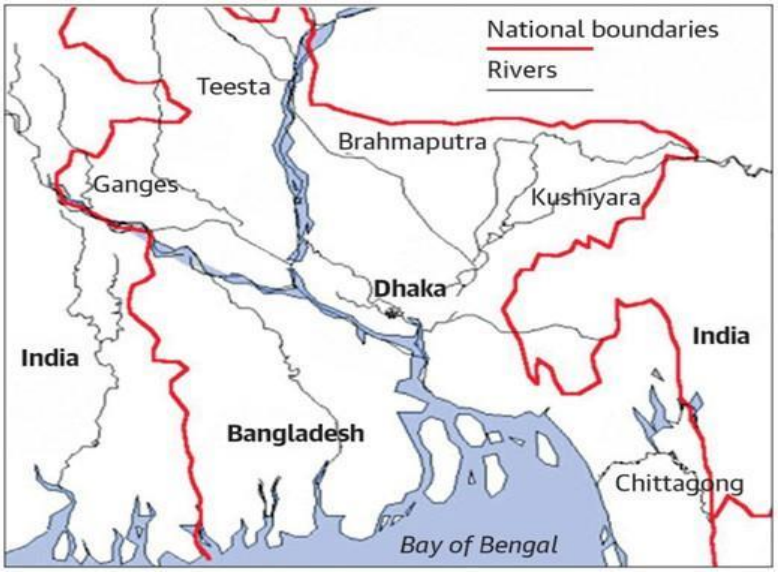
- A memorandum of understanding (MoU) was signed on sharing of the waters of the Kushiyara river, a distributary of the Barak river which flows through Assam, and then on to Bangladesh.
- The agreement comes in a year when both lower Assam in India and Sylhet in Bangladesh have witnessed deadly floods highlighting the requirement for greater cooperation on flood control and irrigation-related issues between the two countries.

Kushiyara River

- Kushiyara river is a distributary of the Barak River which originates in the uplands of Assam and flows through it, and then on to Bangladesh.
- Barak River rises in Manipur and is part of Surma-Meghna River System.
- The agreement is aimed to benefit the southern areas of Assam in India and the Sylhet region in Bangladesh.
- Bangladesh will be able to withdraw 153 cusecs (cubic feet per second) of water from the Kushiyara out of the approximately 2,500 cusecs of water that is there in the river during the winter season.
- The water of Kushiyara will be channelled through the Rahimpur Canal project in Sylhet.

What is the Kushiyara agreement?

- Over the last century, the flow of the Barak river has changed in such a way that the bulk of the river's water flows into Kushiyara while the rest goes into Surma.
- The agreement is aimed at addressing part of the problem that the changing nature of the river has posed before Bangladesh as it unleashes floods during the monsoon and goes dry during the winter.
- Approximately 10,000 hectares of land and millions of people will benefit from the water that will flow through a network of canals in Sylhet benefiting the farmers involved in Boro rice, which is basically the rice cultivated during the dry season of December to February and harvested in early summer.
- Bangladesh has been complaining that the Boro rice cultivation in the region had been suffering as India did not allow it to withdraw the required water from the Kushiyara.
- The agreement addresses Bangladesh's concern over water supply along the river, during the winter months but flood control in the basin of Kushiyara is expected to require much more work.



Why is the water from the Kushiyara so important for Rahimpur Canal?

- The water of the Kushiyara has been used for centuries in Sylhet's subdivisions.
- The utility of the river and the canal during the lean/winter season had gone down, affecting cultivation of rice as well as a wide variety of vegetables for which Sylhet is famous.
- The additional water of Kushiyara through the Rahimpur Canal therefore is the only way to ensure steady supply of water for irrigation of agriculture fields and orchards of the subdivisions of Sylhet.

Concerns

- India objection to the to the Rahimpur Canal of Sylhet which was built to help the farmers access Kushiyara's water – and claimed that the dyke and other infrastructure interfered in border security.

- Similar pact for Teesta River – which is a tributary of the Brahmaputra, originates in the Teesta Kangse glacier and flows through the state of Sikkim and West Bengal before entering Bangladesh; has been in the works for around a decade and is currently disputed.
- Impact of climate change on South Asian rivers that can affect communities and trigger migration.
- Bangladesh has cited low water flow in its rivers during the winter months as a matter of concern as it affects its agriculture sector.

What are the hurdles to the Teesta agreement?

- The Kushiyara agreement is relatively smaller in scale in comparison to Teesta that involves West Bengal, which has problems with the proposal.
- The Kushiyara agreement did not require a nod from any of the States like Assam from which the Barak emerges and branches into Kushiyara and Surma.
- The reduced water flow of the Kushiyara during winter and Teesta too, however, raise important questions about the impact of climate change on South Asian rivers that can affect communities and trigger migration.

INDIA'S RELATIONS WITH SAUDI ARABIA

- Since its independence, India has sought to maintain strong ties with Saudi Arabia, an important regional power and trading base in West Asia. Relations between the two countries are rooted in strong historical and civilisational links.
- Saudi Arabia is also home to more than 1.4 million Indian workers. The mutually beneficial partnership encompasses active cooperation in a wide spectrum of spheres.
- Union Minister of External Affairs co-chaired with his Saudi Arabian counterpart, Prince Faisal bin Farhan Al Saud, the first ministerial meeting of the Committee on Political, Security, Social and Cultural Cooperation (PSSC), established under the framework of the India-Saudi Arabia Strategic Partnership Council.
- He also met with the Gulf Cooperation Council (GCC) Secretary, the two leaders signed an MoU on the mechanism of consultations between India and the six-nation regional bloc.

Recent Developments

- On account of remarks on Prophet Mohammad by Nupur Sharma Saudi Arabia issued a strong statement condemning the same.
- Covid-19 pandemic: India provided 4.5 million COVISHIELD vaccines to the Kingdom, whereas, during the second wave, the latter provided India with COVID-relief material, particularly liquid oxygen. Large-scale repatriation exercise of the community due to the pandemic, which has led to more than 8,00,000 Indians being repatriated through Vande Bharat Mission
- Committee on Political, Security, Social and Cultural Cooperation (PSSC): established under the framework of the India-Saudi Arabia Strategic Partnership Council.
- India-Saudi Arabia Strategic Partnership Council – was formed to coordinate on strategically important issues. The council will be headed by the Prime Minister and Crown Prince Mohammed and will meet every two years.

Saudi Arabia significant to India

- **Indian Diaspora:** The 2.7 million strong Indian community is the largest expatriate group in Saudi Arabia. They send remittances of over US $11 billion annually to India.
- **Counter-terrorism:** India needs Saudi Arabia to support India's efforts against terrorism and against Pakistan. Saudi Arabia is an influential nation in Middle East and Muslim World. Riyadh has largely shown an understanding of India's terrorism-related concerns, and has agreed to work with India in countering the global menace.
- **Strategic significance:** Saudi is geographically located near Strait of Hormuz. This is world's most important oil artery and strategically important for India's energy security.

- **Investment:** Saudi has one of the largest Sovereign Fund in the World. It is an important nation to invest fund in India particularly in National Infrastructure and Investment fund (NIIF). India needs fund for its infrastructure sector.
- **Against Pakistan:** Saudi Arabia has a substantial influence over Pakistan. India can use this influence to bring Pakistan to negotiating table for talks on terrorism and bilateral relations.
- **Energy:** Saudi Arabia is a source of 17% or more of crude oil and 32% of LPG requirements of India and thus a key pillar of India's energy security. With US sanctions on Iran, India needs to import crude oil from other sources to meet its energy need. Saudi Arabia have offered India with additional crude oil supplies to meet India's growing needs.
- **Cultural:** The Saudi Kingdom facilitates Hajj pilgrimage to over 1,75,000 Indians every year. This is one of the other reasons why Saudi Arabia is an important country for India.
- **Exports:** Other areas of interest for joint collaboration are fertilisers, food security, infrastructure, renewable energy, etc. ICT, healthcare and pharmaceuticals, electronic and manufacturing facilities, and housing are other potential areas of enhanced cooperation.

Way forward

- Need for a balance policy in terms of strategic, defence and economic partnership
- Diversification of trade relations beyond crude oil and LPG
- Collaboration on handling terrorism through sharing of military insights and increasing joint military exercises.

Gulf Cooperation Council

- The Riyadh Agreement was issued which proposed cooperative efforts in cultural, social, economic, and financial affairs.
- A Constitution was initiated in March 1981 and was signed by the Gulf Heads of State (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the UAE) on May 25-26, 1981 at Abu Dhabi, the UAE. Consequently, the Gulf Cooperation Council (GCC) came into existence.
- The GCC is a political and economic alliance of countries in the Arabian Peninsula.
- It was established in 1981 to foster socioeconomic, security, and cultural cooperation.
- Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the UAE are its members.
- The Secretariat is located in Riyadh, Saudi Arabia.
- They gather every year to discuss cooperation and regional affairs.
- All current member states are monarchies, including three constitutional monarchies(Qatar, Kuwait, and Bahrain), two absolute monarchies (Saudi Arabia and Oman), and one federal monarchy (the United Arab Emirates).

ABRAHAM ACCORDS

- Two years ago, Israel, the United Arab Emirates and Bahrain signed the United States-brokered Abraham Accords. It was a historic moment for our peoples and nations, fostering new hope for peace and prosperity in the Middle East.

Key Points

- It also brought exciting opportunities for India and its thriving business community, which enjoys strong relations and engagement with our countries.
- The Abraham Accords were a product of collaboration between our nations towards normalisation of ties, bringing Israel closer to the Gulf nations that shared common values and mutual interests, and taking forward the peace initiative.
- It is deepening people-to-people ties and business opportunities.
- New joint ventures are being undertaken in critical sectors such as clean energy, health, innovation, technology, agriculture, water, trade, tourism, sustainability and much more.

- It has worked to produce academic collaborations between our universities, promote cultural exchange in the arts field, and raise awareness about our shared histories and heritage.
- Ultimately, we aim to further strengthen our mutual understanding and the close friendship between our people.

The I2U2 Group

- The Accords have paved the way for greater regional and multinational cooperation. Expanding economic opportunities continue to reach India, and we have already seen major commercial collaborations between companies from the UAE, Israel, Bahrain and the United States with the Indian private sector.
- One concrete example of high-level economic cooperation between our governments is the formation of the **I2U2 Group,** established by Israel, India, the UAE, and the United States.
- I2U2 was initially formed in October, 2021 following the Abraham Accords between Israel and the UAE, to deal with issues concerning maritime security, infrastructure, and transport in the region.
- At that time, it was called the 'International Forum for Economic Cooperation'.
- That was referred as the 'West Asian Quad'.

The project will also greatly benefit the people of India.

- I2U2 combines the strengths and resources of each member country to find innovative solutions to pressing global challenges and will serve as a model for multilateral cooperation with other like-minded countries.
- India is one of our important partners, and the breadth of our cooperation reflects our mutual interests:
- Championing a sustainable recovery from the Covid-19 pandemic, expanding trade, addressing climate change, and combating threats to international security and stability.
- India will get advantage of the Abraham Accords to deepen engagement with Israel without risking its ties with the UAE and the other Arab states.

GENERAL STUDIES 3.

INDIAN ECONOMY

LEGAL METROLOGY (PACKAGED COMMODITIES) RULES 2022

- The Department of Consumer Affairs, Legal Metrology Division has notified a draft amendment to the Legal Metrology (Packaged Commodities) Rules 2011.
- The Department of Consumer Affairs Legal Metrology Division has observed that many manufacturers/packagers/importers do not clearly label necessary declarations or prime constituents on the front of packaged commodities, which are deemed essential to be disclosed in order to protect consumer interests.

What are the mandatory provisions under the Legal Metrology (Packaged Commodities) Rules, 2011?

- It is mandatory under the Legal Metrology (Packaged Commodities) Rules, 2011 to ensure a number of declarations, such as
- The name and address of the manufacturer/packer/importer,
- The country of origin,
- The common or generic name of the commodity,
- The net quantity,
- The month and year of manufacture,
- The Maximum Retail Price (MRP) and consumer care information.
- As a consumer-oriented policy,
- All prepackaged commodities should also be inspected.
- As stated in Rule, the "principal display panel", in relation to a package, means the total surface area of a package containing the information required in accordance with these rules, namely that all the information should be grouped together and given in one place the pre-printed information could be grouped together and given in one place and the online information in another place.
- Additionally, Rule provides that the declaration on the package must be legible and prominent.
- The consumers' 'right to be informed' is violated when important declarations are not prominently displayed on the package.
- If there is more than one major product, Rule states that "the name or number of each product shall be mentioned on the package."
- This sub-rule is however, not applicable to mechanical or electrical commodities.

What are the proposed amendments?

- The Department of Consumer Affairs, Legal Metrology Division has suggested that at least two prime components should be declared on the package's front side along with the brand name.
- Currently, manufacturers list the ingredients and nutritional information only on the back of the packaging.
- The proposed Section states that when a commodity contains more than one constituent, the front side of the package must include a declaration of two or more of the commodities' prime constituents along with the brand name.
- This declaration must also include the percentage/quantity of the USPs of the product in the same font size as the declaration of the USPs.
- However, mechanical or electrical commodities are excluded from this sub-rule.
- When the new provision of Section is added, consumers will not be misled by the fake claims of manufacturers relating to the content in blended foods and cosmetics.

Earlier Amendment

- In July 2022, the Department of Consumer Affairs had notified the Legal Metrology (Packaged Commodities), (Second Amendment) Rules 2022.
- It allowed the electronic products to declare certain mandatory declarations through the QR Code for a period of one year, if not declared in the package itself.
- This amendment allows the industry to declare the elaborated information in the digital form through the QR Code.

Need for the Amendments

- It is common for consumers to assume that brands' claims are accurate, but such claims are usually misleading.
- The front side of the package must contain the percentage of the composition of the unique selling proposition (USP).
- A USP also known as a unique selling point, is a marketing strategy designed to inform customers about the superiority of one's own brand or product.
- Listing the USP of a product on the front of the package without disclosing its composition percentage violates consumer rights.
- Also, packages displaying key constituents must display a percentage of the content used to make the product.
- For example, if a brand sells aloe vera moisturiser or almond milk/biscuits, then the maximum percentage of the product should be aloe vera and almond, otherwise, the product name is misleading.

SHELL COMPANIES

- The Serious Fraud Investigation Office (SFIO) has arrested a man who had masterminded the incorporation of a large number of shell companies linked to China and provided dummy directors on their boards to run the fraudulent businesses.
- The arrest was part of the crackdown on Chinese shell companies that are allegedly into serious financial crimes in India.

What are shell companies?

- Shell companies are companies without active business operations or significant assets.
- Shell companies can be set up by business people for both legitimate and illegitimate purposes.
- Illegitimate purposes include hiding particulars of ownership from the law enforcement, laundering unaccounted money and avoiding tax.
- With the shell company as a front, all transactions are shown on paper as legitimate business transactions, thereby turning black money into white. In this process, the business person also avoids paying tax on the laundered money.
- All shell companies are not illegal. Some companies could have been started to promote start-ups by raising funds.

Indian laws to deal with shell companies

- Benami Transaction (Prohibition) Amendment Act 2016
- The Prevention of Money Laundering Act 2002
- The Companies Act, 2013.

Serious Fraud Investigation Office (SFIO)

- The Serious Fraud Investigation Office(SFIO) is a fraud investigating agency. It is under the jurisdiction of the Ministry of Corporate Affairs, Government of India.The SFIO is involved in major fraud probes and is the coordinating agency with the Income Tax and CBI.
- The Government approved setting up of this organization in 2003 on the basis of the recommendations made by the Naresh Chandra Committee which was set up by the Government in 2002 on corporate governance.

- As per the Companies Act 2013, SFIO is a multi-disciplinary organization under the Ministry of Corporate Affairs, consisting of experts in the field of accountancy, forensic auditing, banking, law, information technology, taxation, etc. for detecting and prosecuting or recommending for prosecution white-collar crimes/frauds.
- The SFIO conducts investigations on receipt of a report of the Registrar or on intimation of a special resolution passed by a company, request from any department of the Central Government or a State Government or in the public interest.
- SFIO is headed by a Director as Head of Department in the rank of Joint Secretary to the Government of India.
- The Headquarter of SFIO is in New Delhi, with five Regional Offices in Mumbai, New Delhi, Chennai, Hyderabad & Kolkata.

Tax evasion vs. Tax avoidance

- The objective of Tax avoidance is to reduce tax liability by applying the script of law whereas Tax evasion is done to reduce tax liability by exercising unfair means. Tax planning is done to reduce the liability of tax by applying the provision and moral law.

Common tax avoidance techniques include:

- Deducting a charitable donation
- Deducting Health Savings Account contributions
- Putting money into a 401(k)
- Using a student loan interest deduction

WINDFALL TAX

- Windfall taxes are designed to tax the profits a company derives from an external, sometimes unprecedented event for instance, the energy price-rise as a result of the Russia-Ukraine conflict.
- Analysts say that companies are confident in investing in a sector if there is certainty and stability in a tax regime.
- Since windfall taxes are imposed retrospectively and are influenced by unexpected events, they can brew uncertainty in the market.

What is a windfall tax?

- Windfall taxes are designed to tax the profits a company derives from an external, sometimes unprecedented event — for instance, the energy price-rise as a result of the Russia-Ukraine conflict.
- These are profits that cannot be attributed to something the firm actively did, like an investment strategy or an expansion of business.
- The U.S. Congressional Research Service (CRS) defines a windfall as an “unearned, unanticipated gain in income through no additional effort or expense”.
- Governments typically levy this as a one-off tax retrospectively over and above the normal rates of tax.
- One area where such taxes have routinely been discussed is oil markets, where price fluctuation leads to volatile or erratic profits for the industry.
- There have been varying rationales for governments worldwide to introduce windfall taxes, from redistribution of unexpected gains when high prices benefit producers at the expense of consumers, to funding social welfare schemes, and as a supplementary revenue stream for the government.

Why are countries levying windfall taxes now?

- Prices of oil, gas, and coal have seen sharp increases since last year and in the first two quarters of the current year, although they have reduced recently.
- Pandemic recovery and supply issues resulting from the Russia-Ukraine conflict shored up energy demands, which in turn have driven up global prices.
- The rising prices meant huge and record profits for energy companies while resulting in hefty gas and electricity bills for households in major and smaller economies.

- In July, India announced a windfall tax on domestic crude oil producers who it believed were reaping the benefits of the high oil prices.
- It also imposed an additional excise levy on diesel, petrol and air turbine fuel (ATF) exports.

What are the issues with imposing such taxes?

- Analysts say that companies are confident in investing in a sector if there is certainty and stability in a tax regime.
- Since windfall taxes are imposed retrospectively and are often influenced by unexpected events, they can brew uncertainty in the market about future taxes.
- Difficulty in constituting true windfall profits; their determination and level of normalisation of profit. A CRS report, for instance, argues that if rapid increases in prices lead to higher profits, in one sense it can be called true windfalls as they are unforeseeable but on the other hand, companies may argue that it is the profit they earned as a reward for risk-taking to provide the end user with the petroleum product.

- **The International Monetary Fund (IMF),** which released an advice note on how windfall taxes need to be levied also said that taxes in response to price surges may suffer from design problems—given their expedient and political nature.
- It added that "introducing a temporary windfall profit tax reduces future investment because prospective investors will internalise the likelihood of potential taxes when making investment decisions".
- The tax should be imposed on a share of economic rents (meaning excess profits).

EASTERN ECONOMIC FORUM

- The Eastern Economic Forum was established in 2015 to encourage foreign investments in Russia's Far East. Russia hosted the seventh Eastern Economic Forum (EEF) Vladivostok from September 5 to 8. The four-day forum is a platform for entrepreneurs to expand their businesses into Russia's Far East (RFE).

What is the Eastern Economic Forum?

- The EEF was established in 2015 to encourage foreign investments in the RFE.
- The EEF displays the economic potential, suitable business conditions and investment opportunities in the region.
- The agreements focus on infrastructure, transportation projects, mineral excavations, construction, industry and agriculture.

Who are the major actors in the Forum? What are their interests?

- **China** is the biggest investor in the region as it sees potential in promoting the Chinese Belt and Road Initiative and the Polar Sea Route in the RFE.
- The Trans-Siberian Railway has further helped Russia and China in advancing trade ties.
- China is also looking to develop its Heilongjiang province which connects with the RFE. China and Russia have invested in a fund to develop northeastern China and the RFE.
- **South Korea** has also been gradually increasing its investments in the region. South Korea has invested in shipbuilding projects, manufacturing of electrical equipment, gas-liquefying plants, agricultural production and fisheries.
- **Japan** is another key trading partner in the Far East. In 2017, Japanese investments through 21 projects amounted to $16 billion. Japan also sees a market for its agro-technologies which have the potential to flourish in the RFE, given similar climatic conditions.
- **India** seeks to expand its influence in the RFE. During the forum, Prime Minister expressed the country's readiness in expanding trade, connectivity and investments in Russia.
- India is keen to deepen its cooperation in energy, pharmaceuticals, maritime connectivity, healthcare, tourism, the diamond industry and the Arctic.
- In 2019, India also offered a $1 billion line of credit to develop infrastructure in the region. Through the EEF, India aims to establish a strong inter-state interaction with Russia. Business representatives of Gujarat and the Republic of Sakha have launched agreements in the diamond and pharmaceuticals industry.

What does the EEF aim for?

- The primary objective of the EEF is to increase the Foreign Direct Investments in the RFE.
- The region encompasses one-third of Russia's territory and is rich with natural resources such as fish, oil, natural gas, wood, diamonds and other minerals.
- The sparse population living in the region is another factor for encouraging people to move and work in the Far East.
- The region's riches and resources contribute to five per cent of Russia's GDP. But despite the abundance and availability of materials, procuring and supplying them is an issue due to the unavailability of personnel.
- The RFE is geographically placed at a strategic location; acting as a gateway into Asia. The Russian government has strategically developed the region with the aim of connecting Russia to the Asian trading routes.
- Russia is trying to attract the Asian economies in investing and developing the far east.
- The Ukraine war is a worrying issue as it affects the economic growth of the country. However, Russia believes that it can survive the economic crisis and the sanctions with the help of China and other Asian powers.
- Moreover, the coming together of countries like Myanmar, Armenia, Russia, and China seems like the forming of an anti-sanctions group in the international order.

Will India be able to achieve a balance between the EEF and the Indo-Pacific Economic Framework for Prosperity (IPEF)?

- The U.S.-led Indo-Pacific Economic Framework for Prosperity (IPEF) and the EEF are incomparable based on its geographic coverage and the partnership with the host-countries. India has vested interests in both the forums and has worked towards balancing its involvement. India has not shied away from investing in the Russia-initiated EEF despite the current international conditions.
- At the same time, India has given its confirmation and acceptance to three of the four pillars in the IPEF.
- The country understands the benefits of being involved in the development in the RFE but it also perceives the IPEF as a vital platform to strengthen its presence in the Indo-Pacific region.
- The IPEF also presents an ideal opportunity for India to act in the region, without being part of the China-led Regional Comprehensive Economic Partnership or other regional grouping like the Comprehensive and Progressive Agreement for Trans-Pacific Partnership .
- The IPEF will also play a key role in building resilient supply chains. India's participation in the forum will help in disengaging from supply chains that are dependent on China and will also make it a part of the global supply chain network.
- Additionally, the IPEF partners will act as new sources of raw material and other essential products, further reducing India's reliance on China for raw materials.
- Although, India has refrained from full participation in the trade pillar of the IPEF, it does not signify an end to India's role in the forum.

NATIONAL LOGISTICS POLICY

- The Prime Minister launched the National Logistics Policy (NLP) at Vigyan Bhawan, New Delhi. The launch of the policy a significant step in fulfilling the 'Pran' of India being a developed country.
- To ensure quick last mile delivery, end transport-related challenges, save time and money of the manufacturers, prevent wastage of the agro-products, concerted efforts were made and one of the manifestations of those efforts is today's National Logistics Policy.
- India is the 5th largest economy in the world but the logistics cost is high at around 13-14%.

What is Logistics?

- Logistics encompasses planning, coordinating, storing, and moving resources —people, raw materials, inventory, equipment, etc from one location to another, from the production points to consumption, distribution, or other production points.

National Logistics Policy 2022

- The policy focuses on key areas such as process re-engineering, digitisation, and multi-modal transport.
- It is a crucial move as high logistics cost impacts the competitiveness of domestic goods in the international market.
- The need for a national logistics policy was felt since the logistics cost in India is high as compared to other developed economies.

Aim of the National Logistics Policy(NLP)

- Reduce the cost of logistics from 14-18% of GDP to global best practices of 8% by 2030. Countries like the US, South Korea, Singapore, and certain European nations have such a low logistics cost-to-GDP ratio.
- Improve the country's Logistics Performance Index (LPI) ranking to be among top 25 countries by 2030.
- Create data-driven decision support systems (DSS) to enable an efficient logistics ecosystem.
- To improve the competitiveness of Indian goods both in domestic as well as export markets.

Key Building Blocks of the policy

- **Unified Logistics Interface Platform(ULIP):** It aims to collapse all logistics and transport sector digital services into a single portal, thereby freeing manufacturers and exporters from the present tyranny of long and cumbersome processes.
- **Ease of Logistics Services (E-Logs):** It aims to allow the industry to directly take up operational issues with government agencies for speedy resolution.
- **Comprehensive Logistics Action Plan:** It comprises integrated digital logistics systems, standardization of physical assets, benchmarking service standards, human resource development, capacity building, development of logistics parks etc.

Significance of the Policy

- PM Gati Shakti will get further boost and complementarity with the launch of the National Logistics Policy.
- The Policy will help make the sector an integrated, cost-efficient, resilient, and sustainable logistics ecosystem in the country as it covers all bases of the sector along with streamlining rules and addressing supply-side constraints.
- The policy is an endeavor to improve the competitiveness of Indian goods, enhance economic growth and increase employment opportunities.

Benefits of the policy

- National Logistics Policy has immense potential for development of infrastructure, expansion of business and increasing employment opportunities.
- Improve competitiveness
- Ensuring quick last mile delivery, end transport-related challenges, save time and money of the manufacturers, prevent wastage of the agro-products and improvement in coordination.
- Strengthening of the logistics sector will not only make the life of common man easier but will also help in increasing the respect of labour and workers.
- Issues related to logistics are reduced and when the country's exports increase, small industries and the people working in them benefit the most.

Way forward

- The National Logistics Policy will improve India's trade competitiveness, create more jobs, improve India's performance in global rankings and pave the way for India to become a logistics hub.

PROMPT CORRECTIVE ACTION FRAMEWORK

- The Reserve Bank of India (RBI) removed Central Bank of India from its Prompt Corrective Action Framework (PCAF) after the lender showed improvement in various financial ratios, including minimum regulatory capital and net non-performing assets (NNPAs).

Prompt Corrective Action

- The PCA norm is a supervisory tool and is imposed when a bank breaches certain regulatory thresholds on capital to risk weighted assets ratio (CRAR), net NPAs and return on assets (RoA).
- PCA delineates three risk thresholds. Triggering of each threshold will result in invocation of PCA, with a gradually increasing set of restrictions.

With the first risk threshold breached,

- The RBI can restrict dividend distribution, or remittance of profits
- The promoters and shareholders of the NBFCs will be asked to put in more capital.
- The RBI will also restrict issuance of guarantees or taking other contingent liabilities on behalf of group companies, in case of core investment companies.

After hitting risk threshold 2,

- The NBFC will be prohibited from opening branches, in addition to restrictions under Threshold 1.

If the third risk threshold is triggered,

- The RBI can even restrict capital expenditure.
- There are other discretionary actions that the RBI can take, for example, special supervisory actions, or even removing the key executives.
- It is also important to note that apart from the actions mentioned in the PCA framework, the RBI can take any other action as it deems fit at any time.
- **Aim:** to initiate and implement remedial measures in a timely manner, so as to restore its financial health.
- **Scope:** Apply to all banks operating in India including foreign banks operating through branches or subsidiaries.

Conditions for Withdrawal of restrictions imposed:

- If no breaches in risk thresholds in any of the parameters are observed as per four continuous quarterly financial statements
- Based on Supervisory comfort of the RBI, including an assessment on sustainability of profitability of the bank.

SHRINKFLATION

- Shrinkflation refers to the tampering of a product while maintaining retail price.

What is Shrinkflation?

- Shrink inflation is when a product downsizes its quantity while keeping the price the same. For example, reducing the scoops of ice cream in a container or reducing the number of chips in a packet would count as shrinkflation.
- In other words, shrinkflation occurs when goods shrink in size but consumers pay the same price. It occurs when manufacturers downsize products to offset higher production costs but keep retail prices same.
- It is a form of hidden inflation.
- Raising the price per given amount is a strategy employed by companies, mainly in the food and beverage industries, to stealthily boost profit margins or maintain them in the face of rising input costs.
- Shrinkflation is also referred to as package downsizing in business and academic research.

Shrinkflation can occur in different ways.

- It's not just the weight that will be compromised as it is not uncommon for companies to look for alternative options.
- If consumers are aware that the quantity is constantly declining, they would switch or change brands.
- To prevent this, a product can reformulate or remove ingredients while maintaining its price. For example, Cadbury Dairy Milk stopped using foil which it used to prevent chocolate from losing its quality and flavour in order to save expense.

- Though downsizing products reduces costs for manufacturers, it is an unfair practice toward consumers.
- It can lead to a loss of trust if companies fail to properly communicate with them.
- Shrinkflation can lead to customer frustration and deterioration of consumer sentiment towards a producer's brand.

Various implications

- In the event of shrinkflation, it is more difficult to accurately measure price changes or inflation.
- Price points become misleading when the basket of goods cannot always be measured by considering the product size.
- Tackling shrinkflation means tackling inflation.
- In India especially, inflation is a complex phenomenon caused by several factors, such as demand-pull factors, cost-push factors, and structural factors.
- Therefore, we need a mix of macroeconomic policies to manage demand and supply, as well as address structural rigidities in the economy.

THE ASIAN DEVELOPMENT BANK (ADB)

- The Asian Development Bank (ADB) cut its forecast for India's economic growth in 2022-23 to 7%, from 7.5% estimated in April, terming it a "modest downward revision" driven by higher-than-anticipated inflation and monetary tightening.

Asian Development Bank(ADB):

- The Asian Development Bank (ADB) is a regional development bank established on 19 December 1966.
- ADB is headquartered in Manila, Philippines.It aims to promote social and economic development in Asia.
- It assists its members and partners by providing loans, technical assistance, grants and equity investments to promote social and economic development.
- ADB has 68 members, of which 48 are from within Asia and the Pacific and 19 outside.
- Japan and US holds the largest proportion of shares in ADB followed by China, India and Australia. ADB is also an official United Nations Observer.

India and ADB:

- India was a founding member of ADB in 1966 and is now the bank's fourth-largest shareholder and top borrower.
- ADB commenced operations in India in 1986 and has since committed 229 sovereign loans totaling $38.9 billion.
- In 2018, ADB committed a record $3.03 billion for 19 sovereign projects to help India develop infrastructure and services in transport, energy among others.

ADB Green and Blue Bonds:

- The Green Bond program enables ADB to support its developing member countries seeking to mitigate greenhouse gas (GHG) emissions and adapt to the consequences of climate change, whilst delivering environmentally sustainable growth to help reduce poverty and improve the quality of life of their people.
- The Green Bond portfolio specifically targets projects that promote the transition to low carbon and climate resilient growth as set out in the ADB Green Bond Framework.
- In order to address the growing funding gap required to protect and restore ocean health, global markets need to systematically change. ADB's Blue bonds encourage that shift by increasing the amount of capital that can be invested in oceans to finance solutions at scale.

BASEL III NORMS

- Indian banks may continue their fundraising spree in the next few months by issuing Basel III-compliant and infrastructure bonds as they rush to meet rising credit demand and lock in funds at cheaper rates.

Basel Norms

- Basel norms or Basel accords are the international banking regulations issued by the Basel Committee on Banking Supervision.
- The Basel norms is an effort to coordinate banking regulations across the globe, with the goal of strengthening the international banking system.
- It is the set of the agreement by the Basel committee of Banking Supervision which focuses on the risks to banks and the financial system.
- **Objective:** To improve the banking sector's ability to absorb shocks arising from financial and economic stress, to reduce the risk of spill over from the financial sector to the real economy, to raise capital standard and to implement strong international compensation standards aimed at ending practices that lead to excessive risk-taking.

BASEL I

- BCBS introduced the capital measurement system called Basel capital accord in 1988. It was also known as Basel 1.
- It was almost entirely concerned with credit risk.
- It established the capital and risk-weighting structure for banks.
- The required minimum capital was set at 8% of risk-weighted assets (RWA).
- RWA refers to assets with varying risk profiles. For example, an asset backed by collateral would be less risky than a personal loan with no collateral.
- Capital is divided into two categories: Tier 1 capital and Tier 2 capital.

BASEL II

- BCBS published Basel II guidelines in June 2004, which were considered to be refined and reformed versions of the Basel I accord.
- The guidelines were founded on three pillars, as the committee refers to them:
- **Capital Adequacy Requirements:** Banks should keep a minimum capital adequacy requirement of 8% of risk assets.
- **Supervisory Review:** According to this, banks were required to develop and implement better risk management techniques for monitoring and managing all three types of risks that a bank faces: credit, market, and operational risks.
- **Market Discipline:** This necessitates stricter disclosure requirements. Banks must report their CAR, risk exposure, and other information to the central bank on a regular basis.

BASEL III

- The Basel III guidelines were published in 2010.
- These guidelines were put in place in response to the 2008 financial crisis.
- There was a need to further strengthen the system because banks in developed economies were undercapitalized, over-leveraged, and relied more on short-term funding.
- Furthermore, the quantity and quality of capital required under Basel II were deemed insufficient to contain any additional risk.
- The Basel III norms aim to make most banking activities, such as trading books, more capital-intensive.
- The guidelines are intended to promote a more resilient banking system by focusing on four critical banking parameters: capital, leverage, funding, and liquidity.
- It consists of undisclosed reserves, preference shares, and subordinate debt.
- In 1999, India adopted the Basel 1 guidelines.

About Basel III compliant Bonds

- The bonds qualify as tier II capital of the bank, and has a face value of Rs 10 lakh each, bearing a coupon rate of 6.24 per cent per annum payable annually for a tenor of 10 years.
- There is a call option after 5 years and on anniversary thereafter.

- Call option means the issuer of the bonds can call back the bonds before the maturity date by paying back the principal amount to investors.

FUND OF FUNDS FOR STARTUP INDIA

- Govt commits Rs.7,385 crore under Fund of Funds for Startup India Investment for 88 Alternative Investment Funds (AIFs), 720 startups supported by AIFs.
- Amount committed under FFS records a CAGR of over 21% since launch in 2016
- Performing startups supported through FFS show valuation increase by more than 10 times with some achieving unicorn status.

Fund of Funds for Startups(FFS)

- It was launched in 2016 under Startup India Initiative.
- Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce and Industry is its nodal ministry.
- It has aim to increase capital availability as well as to catalyze private investments and thereby accelerate the growth of the Indian startup ecosystem.
- The fund was announced with a corpus of Rs. 10,000 crores. The corpus is to be built up over the 14th and 15th Finance Commission Cycles through budgetary support.
- FFS does not invest in startups directly but provides capital to SEBI registered Alternate Investment Funds(AIFs) known as daughter funds which in turn invest money in high-potential Indian startups.
- SIDBI has been given the mandate of managing the FFS through the selection of daughter funds and overseeing the disbursal of committed capital.
- FFS has not only made capital available for startups at the early stage, seed stage and growth stage but also played a catalytic role in facilitating the raising of domestic capital, reducing dependence on foreign capital and encouraging homegrown and new venture capital funds.

Alternative Investment Fund

About Alternative Investment Fund (AIF):

- It means any fund established or incorporated in India which is a privately pooled investment vehicle which collects funds from sophisticated investors, whether Indian or foreign, for investing it in accordance with a defined investment policy for the benefit of its investors.
- Applicants can seek registration as an AIF in one of the following categories,
- Category I AIF: Venture capital funds (Including Angel Funds), SME Funds, Social Venture Funds, Infrastructure funds
- Category II AIF
- Category III AIF
- Fund of Funds is an investment strategy of holding a portfolio of other investment funds rather than investing directly in stocks, bonds or other securities. In the context of AIFs, a Fund of Fund is an AIF which invest in another AIF.

THE MALTHUSIAN TRAP

- The Malthusian trap or Malthusian check refers to the theory that as the human population grows there is increasing pressure on earth's resources, which in turn acts as a check on the further rise in population.
- It is named after English economist Thomas Malthus who elaborated on the concept in his 1798 book An Essay on the Principle of Population, which quite famously inspired Charles Darwin.
- In his book, Malthus argued that while rise in food production in a country can lead to improved living standards for the general population, the benefit is likely to be temporary.
- This is because, Malthus argued, increasing availability of food would encourage people to have more kids since they could afford to feed them now, thus leading to a rise in the total population and a drop in per capita income levels.

- The Malthusian trap was at the core of the Simon-Ehrlich wager in 1980. While Ehrlich, like Malthus, argued that there are natural limits to economic growth; Simon argued that private property rights and the price mechanism in a market economy offered tremendous incentives for people to use scarce resources carefully and to come up with innovations and living standards could rise along with increasing population levels.

Industrial Revolution

- Malthus' idea has often been cited by modern environmentalists and other social scientists who believe that rising human population puts unsustainable pressure on earth's resources.
- In the pre-modern age, whenever there was a rise in food production due to whatever reason, this caused per capita income to rise for a while as long as population levels remained stable.
- However, the population of the country increased quite quickly which ensured that per capita income returned to its historical trend.
- Whenever food production dropped on the other hand, there was famine which caused the death of a large number of people. The drop in human population continued until the country's per capita income rose to subsistence levels.
- Either way, resource constraints kept a check on human population.
- The industrial revolution that happened in the 18th and 19th centuries is seen as a landmark event that broke the historical relationship between human population and living standards.
- It witnessed the rising use of man-made technology, which made sure that human beings could produce more output in the form of goods and services for each unit of the earth's resource that they exploited.

Criticism

- Critics of the Malthusian trap believe that the industrial revolution decisively refuted Malthus as human population levels and living standards have risen in tandem ever since the event.
- In other words, according to critics, there may be no strict inverse correlation between population growth and the living standards of people.
- As long as human beings can find ways to use earth's resources more efficiently, their population can grow without compromising their living standards even in the long-term.
- In fact, some argue that as human population rises, the chances of breakthrough innovations happening rise manifold as there would be more human minds working on solving humanity's problems.

SCIENCE AND TECHNOLOGY

ANTI-RADIATION PILLS

- With fears of a nuclear disaster at Ukraine's Zaporizhzhia power plant growing, the European Union has decided to pre-emptively supply 5.5 million anti-radiation pills to be distributed among residents in the vicinity.

What is a radiation emergency?

- These are unplanned or accidental events that create radio-nuclear hazard to humans and the environment.
- Such situations involve radiation exposure from a radioactive source and require prompt intervention to mitigate the threat.
- Dealing with such an emergency also involves the use of anti-radiation tablets.

What are anti-radiation pills?

- Potassium iodide (KI) tablets, or anti-radiation pills, are known to provide some protection in cases of radiation exposure.
- They contain non-radioactive iodine and can help block absorption, and subsequent concentration, of radioactive iodine in the thyroid gland.

How do these pills work?

- After a radiation leak, radioactive iodine floats through the air and then contaminates food, water and soil.
- While radioactive iodine deposited during external exposure can be removed using warm water and soap, according to the World Health Organisation, the bigger risk is inhaling it.
- "Internal exposure, or irradiation, occurs when radioactive iodine enters the body and accumulates in the thyroid gland.
- The thyroid gland, which uses iodine to produce hormones to regulate the body's metabolism, has no way of telling radioactive from non-radioactive iodine.
- Potassium iodide (KI) tablets rely on this to achieve 'thyroid blocking'. KI pills taken a few hours before or soon after radiation exposure ensure that non-radioactive iodine in the medicine is absorbed quickly to make the thyroid "full".
- "Because KI contains so much non-radioactive iodine, the thyroid becomes full and cannot absorb any more iodine – either stable or radioactive – for the next 24 hours.
- But KI pills are preventive only and cannot reverse any damage done by radiation to the thyroid gland.
- Once thyroid gland absorbs radioactive iodine, those exposed are at a high risk of developing thyroid cancer.

Is the method fool-proof?

- Anti-radiation pills do not provide 100% protection. "The effectiveness of KI also depends on how much radioactive iodine gets into the body and how quickly it is absorbed in the body.
- Also, the pills are not meant for everybody. They are recommended for people under 40 years of age.
- Pregnant and breastfeeding women are also advised to take them. While it can protect the thyroid against radioactive iodine, it cannot protect other organs against radiation contamination.

Substitutes for KI?

- The US Food and Drug Administration advises against using salt or iodine supplements as they do not contain enough iodine to trigger thyroid blocking.

CHINOOK HELICOPTERS

- The US Army has grounded its fleet of CH-47 Chinook helicopters after finding the helicopter to be at risk of engine fires. The Indian Air Force (IAF) also operates a fleet of Chinook Helicopters.

Why has the US Army grounded Chinooks?

- The US Army operates around 400 Chinook helicopters which are medium-lift, multi-role helicopters manufactured by Boeing who perform a variety of tasks in support of Army operations.
- As per the news broken by The Wall Street Journal, the Chinook fleet has been grounded by the US Army as it is suspected that some engine fires broke out on an unspecified number of helicopters.
- There have been no casualties because of these fires, yet a decision was taken to ground the helicopters as a precautionary measure.

About Chinook

- India had signed a 3-billion-dollar deal with the US in 2015 for the purchase of 15 Chinook heavy lift and 22 AH-64E Apache attack helicopters.

Features

- The Chinook is a multi-role, vertical-lift platform, which is used for transporting troops, artillery, equipment and fuel.
- It is also used for humanitarian and disaster relief operations and in missions such as transportation of relief supplies and mass evacuation of refugees.
- Chinooks have a unique twin engine, tandem rotor design which has become one of the most visibly recognised symbols of the American armed forces.
- The helicopter, which can carry around 10 tonnes of load, significantly enhanced IAF's air lift capabilities.

CERVAVAC

- Cervavac, India's first indigenously developed quadrivalent human papillomavirus (qHPV) vaccine for the prevention of cervical cancer.
- Despite being largely preventable, cervical cancer is the fourth most common cancer among women globally, according to the WHO. In 2018, an estimated 570,00 women were diagnosed with the disease and it accounted for 311,000 deaths across the world.

How common is cervical cancer in India?

- India accounts for about a fifth of the global burden of cervical cancer, with 1.23 lakh cases and around 67,000 deaths per year.
- Almost all cervical cancer cases are linked to certain strains of human papillomavirus (HPV), a common virus that is transmitted through sexual contact.
- While the body's immune system usually gets rid of the HPV infection naturally within two years, in a small percentage of people the virus can linger over time and turn some normal cells into abnormal cells and then cancer.
- Cervical cancer is preventable if detected early and managed effectively, it kills one woman every 8 minutes in the country.

Who developed the new qHPV vaccine?

- Cervavac was developed by the Pune-based Serum Institute of India in coordination with the Government of India's Department of Biotechnology (DBT).
- Cervavac received market authorisation approval from the Drug Controller General of India.

About the new vaccine

- Cervavac was developed by the Pune-based Serum Institute of India in coordination with the Government of India's Department of Biotechnology (DBT).
- HPV vaccines are given in two doses and the antibodies that develop after both are administered can last up to six or seven years.
- Unlike Covid vaccines, booster shots may not be required for the cervical cancer vaccine.
- Until now, the HPV vaccines available in India were produced by foreign manufacturers at an approximate cost of Rs 2,000 to Rs 3,500 per dose.

- Cervavac is likely to be significantly cheaper, slated to cost approximately Rs. 200 to 400.
- It has also demonstrated a robust antibody response that is nearly 1,000 times higher than the baseline against all targeted HPV types and in all dose and age groups.

SPARK' Program

- The Central Council for Research in Ayurvedic Sciences (CCRAS), has taken a unique initiative to support the research efforts of bright young minds of the Country by developing the Studentship Program for Ayurveda Research Ken (SPARK) for Ayurveda (BAMS) students studying in recognised Ayurveda colleges.
- SPARK program is primarily developed to help students develop acumen for research and to further support and incentivise their research ideas.

INS Vikrant

- INS Vikrant, the country's first indigenous aircraft carrier and the most complex warship ever built.
- The ship is christened after India's first aircraft carrier Vikrant, which played a vital role in the 1971 war.
- The ship with a displacement of 42,800 tonnes was designed by the Navy's Warship Design Bureau (WDB) and built by Cochin Shipyard Limited (CSL), a public sector shipyard under Ministry of Ports, Shipping and Waterway.
- The ship would be capable of operating an air wing of 30 aircraft comprising
- MiG-29K fighter jets,
- Kamov-31 early warning helicopters, and
- MH-60R multi-role helicopters
- Indigenously manufactured Advanced Light Helicopters (ALH)
- Light Combat Aircraft (LCA-Navy).
- Fighter aircraft are launched using the Short Take Off But Arrested Recovery (STOBAR) method.
- INS Vikrant is equipped with a ski-jump for launching aircraft, and a set of three 'arrester wires' for their recovery onboard.

Features

- The Vikrant stretches 262 metres in length, exceeding that of two football fields and is 62 metre wide. Around 20 aircraft can be parked in the hangar.
- It has a top speed of around 28 knots (more than 50 kmph) and a cruising speed of 18 knots with an endurance of about 7,500 nautical miles.
- Over 76 per cent of the material and equipment on board the carrier is indigenous, including 21,500 tonnes of special grade steel developed indigenously and used in Indian naval ships for the first time.
- The Made-in-India warship is a feather in the country's cap, as only five or six nations have the capacity of building an aircraft carrier.

New Naval Ensign

- Prime Minister unveiled the new Naval Ensign (flag) at Kochi which bears the seal of Chhatrapati Shivaji Maharaj, who laid the foundations of a modern navy.
- Shivaji's navy gave his enemies sleepless nights and this was the reason that the British colonialists decided to break the back of the Indian naval enterprise.
- How does the Indian Navy identify with Shivaji (reign 1674-80) and the great Maratha admiral Kanhoji Angre (1669-1729).
- Written by Man Aman Singh Chhina , Edited by Explained Desk
- Chandigarh | Updated: September 2, 2022 10:15:10 pm
- Newsguard
- Indian Navy | New naval Ensign | Indian Navy's new ensign unveiledIndian Navy's new ensign unveiled: The flag is inspired by Chhatrapati Shivaji Maharaj.
- Prime Minister Narendra Modi unveiled the new Naval Ensign (flag) at Kochi on Friday (September 2), which bears the seal of Chhatrapati Shivaji Maharaj, who laid the foundations of a modern navy.

- Shivaji's navy gave his enemies sleepless nights, the Prime Minister said, and this was the reason that the British colonialists decided to break the back of the Indian naval enterprise.
- But now, the Indian Navy's new flag, inspired by Shivaji, will fly proudly in the sky and on the seas, the Prime Minister said.
- How does the Indian Navy identify with Shivaji (reign 1674-80) and the great Maratha admiral Kanhoji Angre (1669-1729), and how did they ensure Maratha supremacy of the seas?

Shivaji and the seas

- Chhatrapati Shivaji Maharaj put great emphasis on sea-faring prowess, and laid the foundations of a modern naval force in the 17th century.
- The Indian Navy has always acknowledged this fact, and has named a training establishment in Lonavla as INS Shivaji and a shore based logistics and administrative hub of Western Naval Command, Mumbai, as INS Angre after Kanhoji Angre, the acclaimed Maratha naval commander.
- The use of the octagonal design of the seal of Shivaji on the new Naval Ensign is a formal stamp on the umbilical ties of the Indian Navy with the navy of the Maratha empire.

Extent of Naval Prowess

- Shivaji's strategic thought ensured that a strong naval presence was established along the Konkan coast to protect the sea trade of the Maratha empire.
- As per an Indian Navy document, "The navy under Shivaji was so strong that the Marathas could hold their against the British, Portuguese and Dutch.
- Shivaji realised the importance of having a secure coastline and protecting the western Konkan coastline from the attacks of Siddis' fleet".
- Shivaji built ships in towns such as Kalyan, Bhivandi, and Goa, both for trade and to establish a fighting navy.
- He also built a number of sea forts and bases for repair, storage and shelter.
- Shivaji fought many lengthy battles with Siddis of Janjira on coastline.
- The fleet grew to reportedly 160 to 700 merchant, support and fighting vessels.
- He started trading with foreigners on his own after possession of eight or nine ports in the Deccan.

Kanhoji Angre

- Kanhoji Angre was the commander of Maratha navy, and is credited with laying a strong naval foundation which ensured that the Marathas were a sea-faring power to reckon with.
- Kanhoji is credited with holding his own against the English, Portuguese and Dutch naval forces.
- He ensured that the merchants plying their trade for the Maratha empire were protected on the seas.
- He set up a base in Colaba with more bases at Suvarndurg and Vijaydurg near Ratnagiri.
- In the estimation of many historians, Kanhoji was the greatest naval commander in pre-modern Indian history.
- Before the Marathas, the Cholas had a formidable sea-faring fleet of ships which, though not being strictly warships, were able to lead expeditions all around the Bay of Bengal.

Siddis of Janjira

- Janjira State was a princely state in India during the British Raj.
- Its rulers were a Siddi dynasty of Habesha descent and the state was under the suzerainty of the Bombay Presidency.
- Janjira State was located on the Konkan coast in the present-day Raigad district of Maharashtra.

DARK SKY RESERVE

- In a first-of-its-kind initiative, the Department of Science & Technology (DST) has announced the setting up of India's first dark sky reserve at Hanle in Ladakh in the next three months.
- Hanle, which is about 4,500 metres above sea level, hosts telescopes and is regarded as one of the world's most optimal sites for astronomical observations.

- However, ensuring that the site remains well-suited for astronomy implies keeping the night sky pristine, or ensuring minimal interference to the telescopes from artificial light sources such as electric lights and vehicular lights from the ground.
- A dark sky reserve is a designation given to a place that has policies in place to ensure that a tract of land or region has minimal artificial light interference.
- The International Dark Sky Association is a U.S.-based non-profit that designates sites as international dark sky places, parks, sanctuaries and reserves, depending on the criteria they meet.
- Several such reserves exist around the world but none so far in India.
- In June, a three-way Memorandum of Understanding (MOU) was signed among the Union Territory administration, the Ladakh Autonomous Hill Development Council (LAHDC), Leh, and the Indian Institute of Astrophysics (IIA), Bengaluru, which uses and maintains the telescopes, for launching the dark space reserve.

Significance

- Promotion astro-tourism, villages around Hanle would be encouraged to promote homestays equipped with telescopes that visitors can use to view the night sky.
- Villagers would also be trained to help visitors with astronomical observations.

Ideal Conditions

- The Indian Astronomical Observatory, the high-altitude station of the IIA, is situated to the north of Western Himalayas, at an altitude of 4,500 metres above mean sea level.
- Located atop Mt. Saraswati in the Nilamkhul Plain in the Hanle Valley of Changthang, it is a dry, cold desert with sparse human population.
- The cloudless skies and low atmospheric water vapour make it one of the best sites in the world for optical, infrared, sub-millimetre, and millimetre wavelengths.
- The Himalayan Chandra Telescope, High Energy Gamma Ray Telescope, Major Atmospheric Cherenkov Experiment Telescope and GROWTH-India are the prominent telescopes located at the Hanle observatory.

INFLATABLE AERODYNAMIC DECELERATOR

- The Indian Space Research Organisation (ISRO) has successfully tested a technology that could aid cost-effective recovery of spent rocket stages and safely land payloads on other planets.
- The Inflatable Aerodynamic Decelerator (IAD) was designed, developed and successfully test-flown by ISRO's Vikram Sarabhai Space Centre (VSSC) on a Rohini-300 (RH300 Mk II) sounding rocket from the Thumba Equatorial Rocket Launching Station (TERLS).

What is IAD?

- Inflatable Aerodynamic Decelerator or IAD in short is a technique used for an atmospheric entry payload.
- An inflatable envelope and an inflatant (anything that inflates the envelope, like air or helium) make up the inflatable aerodynamic decelerator.
- The inflatant is designed to fill the inflatable envelope to a condition such that it surrounds the payload meant to enter the atmosphere of a planet or satellite and causes aerodynamic forces to slow it down.
- In simpler words, IAD is designed to increase drag upon entering the atmosphere of any planetary body, like Earth, Mars, or even Moon. Its shape is maintained by a closed, gas-pressured body and the inflatant gas is also generated internally. Some versions also use ram air or both.
- Some space agencies, including NASA, have already successfully tested advanced versions of the technology, including the supersonic and hypersonic variants. However, for near future missions of ISRO, the current version that it tested is perfect.
- Its use was first proposed by NASA more than 50 years ago for planetary entries.

ISRO's IAD

- ISRO's latest IAD has been designed and developed at Vikram Sarabhai Space Centre. The IAD tested by ISRO was inflated at an altitude of around 84 km, they said and the sounding rocket's cargo dropped through the atmosphere on it. It is fitted with a booster motor.
- It also has a spin rocket that is ejectable. The inflatable structure is made out of Kevlar fabric, which is a very strong synthetic fibre and also heat resistant to withstand atmospheric pressure and temperature changes. On top of it, it's coated with polychloroprene, an oil and wax resistant rubber, which can also withstand extreme temperatures.
- The Liquid Propulsion Systems Centre (LPSC), an R&D wing of ISRO created the pneumatic inflation system for the IAD system. In the inflation system, it uses compressed nitrogen stored in a bottle, ISRO said.
- It has consistently decreased the payload's velocity through aerodynamic drag while maintaining the expected trajectory during the test flight.

Where does ISRO intend to use it?

- The IAD will help ISRO in performing many space tasks effectively including recovery of spent stages of rockets, for landing payloads on missions to other planetary bodies. This is the first instance where an IAD has been specially created for spent stage recovery.
- This demonstration opens a gateway for cost-effective spent stage recovery using the Inflatable Aerodynamics Decelerator technology and this IAD technology can also be used in ISRO's future missions to Venus and Mars.
- So inter-planetary missions are certainly one aspect that ISRO wishes to explore.

NANO UREA

- Nano-urea, a product developed by the Indian Farmers and Fertiliser Cooperative (IFFCO) and heavily advertised by government as panacea to reduce farmer dependence on packaged urea is yet to be fully tested despite having been fast tracked for commercial application.
- Nano urea is a patented and indigenously made liquid that contains nanoparticles of urea, the most crucial chemical fertiliser for farmers in India.
- A single half-litre bottle of the liquid can compensate for a 45kg sack of urea that farmers traditionally rely on, it is claimed.
- Nano-urea would together mean India would be "self-sufficient," in the manufacture of urea.
- The most important fertiliser for India's farmers and would no longer require the 90 lakh tons that it imported every year and would save the country close to ₹40,000 crore.
- Apart from significantly enhancing farmers' income by lowering input and storage costs, nano urea liquid promises to increase agricultural yield and productivity.
- Nano urea liquid also promises to give a long-term solution for plant nutrition by increasing crop nutrient efficiency while lowering soil, water, and air pollution.
- It is very efficient to use because there is no wastage in application of Nano urea. Therefore, its efficacy is more than 80 per cent, whereas the conventional urea efficacy is only 30 per cent to 40 percent.
- According to the Union Ministry of Chemicals and Fertilisers, by 2025, India's domestic urea production (conventional + nano-urea) would mean India would be self-sufficient in the manufacture of urea. This means, India would no longer require the 90 lakh tons that it imported every year and would save the country close to ₹40,000 crore.

Concerns

- Urea is highly water soluble and already reaches the lowest form of concentration when absorbed.
- It is uncertain how nanoparticles can improve nitrogen uptake efficiency by being even smaller.
- Moreover, scientists are still unclear if the product can on its own cut farmers' dependence on urea.

DARK SKY RESERVE

- By the end of 2022, India will establish the country's first Dark Sky Reserve in the cold desert regions of Ladakh.

What is a Dark Sky Reserve?

- A Dark Sky Reserve is public or private land with a distinguished nocturnal environment and starry nights that has been developed responsibly to prevent light pollution.
- According to the International Dark Sky Association (IDSA) website, these reserves "consist of a core area meeting minimum criteria for sky quality and natural darkness, and a peripheral area that supports dark sky preservation in the core."
- These reserves are formed through a "partnership of multiple land managers who have recognized the value of the natural nighttime environment through regulations and long-term planning".

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

- Individuals or groups can nominate a site for certification to the International Dark Sky Association (IDSA).
- There are five designated categories, namely International Dark Sky parks, communities, reserves, sanctuaries and Urban Night Sky Places.
- The certification process is similar to that of a site being awarded the UNESCO World Heritage Site tag or getting recognised as a Biosphere Reserve.
- Between 2001 and January 2022, there have been 195 sites recognised as International Dark Sky Places globally.
- The IDSA considers a piece of land suitable for dark sky place only if it is either publicly or privately owned; is accessible to the public partially or entirely during the year.
- The land is legally protected for scientific, natural, educational, cultural, heritage and/or public enjoyment purposes.
- The core area of the land provides an exceptional dark sky resource relative to the communities and cities that surround it and the land offers prescribed night sky brightness either for a reserve, park or sanctuary.

Who is developing India's first Dark Sky Reserve?

- The Ladakh Union Territory administration is leading the efforts in establishing the country's first Dark Sky Reserve.
- To be situated at a height of 4,500 metres above sea level, the Hanle Dark Sky Reserve (HDSR) will come up within the Changthang Wildlife Sanctuary.
- The Department of Science and Technology and experts from the Indian Institute of Astrophysics (IIA), Bengaluru, are providing scientific and technological support in developing this first-of-its-kind facility. The IIA already manages the Indian Astronomical Observatory (IAO) complex at Hanle, Ladakh.
- The formal decision to set up this Dark Sky Reserve was made through a Memorandum of Understanding (MoU) signed between officials from the IIA, Bengaluru, the Ladakh UT and the Ladakh Autonomous Hill Development Council in June this year.

Why was Ladakh chosen for the project?

- Ladakh is a unique cold desert located about 3,000 metres above sea level with high mountainous terrains.
- This aridity, limited vegetation, high elevation and large areas with sparse populations – all make it the perfect setting for long-term astronomical observatories and dark sky places.
- But the primary objective of the proposed Dark Sky Reserve is to promote astronomy tourism in a sustainable and environment-friendly manner.
- Scientific methods will be used here to preserve the night sky from ever-increasing light pollution.
- With metros, cities and peripheral areas experiencing light pollution and remaining constantly lit up, there are diminishing areas that offer a view of clear skies on cloudless nights.

Will this help boost tourism in Ladakh?

- The Ladakh Tourism Vision Document 2022 underlined the need for efforts to increase the use of green fuels and boost carbon-neutral activities.
- In the pilot phase, the IIA has procured ten small and easy-to-handle telescopes and light-reflecting shields.
- IIA's scientists and outreach experts will identify locals and train them to use these telescopes.

- This will include basic sky gazing, identification of constellations, and locating the pole star, among others.
- These telescopes will be installed at the homestays, which is a popular option for tourist accommodation in Ladakh.
- The 22-km radius around the Hanle observatory, where the core Dark Sky Reserve will stand, will have restrictions imposed on outdoor lighting.
- All vehicles will be barred from using high-beam headlights. Houses here will be encouraged to use curtains of darker shades, install light reflecting shields and switch off all unwanted illumination.

INTRANASAL COVID VACCINE

- The National drug regulator DGCI has given the green signal to the country's first intra-nasal Covid vaccine for emergency use in adults **Called iNCOVACC.**
- Manufactured by Bharat Biotech the company behind Covaxin.
- The new vaccine has been approved for primary immunisation.
- It can be administered only to the unimmunised.
- Those who have already received the first and second doses of other vaccines will not be eligible to get iNCOVACC as the "precaution" third dose.

The approval by the Central Drugs Standard Control Organisation (CDSCO) is significant:

- iNCOVACC will be delivered through the nasal route, which would potentially trigger an immune response in the mucosal membrane.
- It has been designed to not only protect against infection but also reduce transmission of the virus.
- The vaccine uses a modified chimpanzee adenovirus, which cannot replicate in the body, to carry the Covid spike protein to induce immunity.

Benefits of Intranasal Vaccine

- iNCOVACC has the double benefit of enabling faster development of variant specific vaccines and easy nasal delivery that enables mass immunization to protect from emerging variants of concern.
- Being an intranasal vaccine, BBV154 (iNCOVACC) may produce local antibodies in the upper respiratory tract, which may provide the potential to reduce infection and transmission."
- Stable at 2-8°C, which makes it easy to store and distribute, the vaccine will be manufactured at multiple sites in the country, including Gujarat, Karnataka, Maharashtra and Telangana.
- Delivered through a nasal drop, the vaccine will do away with the need for needles and syringes that are currently required for all available Covid vaccines.
- It will also reduce dependence on trained personnel to administer the shots

Drugs Controller General of India

- Drugs Controller General of India is the head of department of the Central Drugs Standard Control Organization of the Government of India.
- Responsible for approval of licences of specified categories of drugs such as blood and blood products, IV fluids, vaccines, and sera in India
- DCGI also sets standards for manufacturing, sales, import, and distribution of drugs in India.
- Comes under the Ministry of Health & Family Welfare.
- DCGI lays down the standard and quality of manufacturing, selling, import and distribution of drugs in India.
- Acting as appellate authority in case of any dispute regarding the quality of drugs
- Preparation and maintenance of national reference standard
- To bring about the uniformity in the enforcement of the Drugs and Cosmetics Act.
- DCGI also act as Central Licensing Authority (CLA) for the medical devices which fall under the purview of Medical Device Rules 2017.

CHINA'S FULLY SOLAR-POWERED SEMI SATELLITE DRONE

- China's first fully solar-powered unmanned aerial vehicle has successfully completed its maiden test flight with all onboard systems functioning optimally.

The New Machine

- With a wingspan of 164-ft, the drone is a large machine powered entirely by solar panels.
- The high-altitude, long-endurance (HALE) UAV can stay airborne for long durations.
- Named the Qimingxing-50, or Morning Star-50, this drone flies above 20-km altitude where there is stable airflow with no clouds.
- This helps these drones to make the maximum use of solar equipment to stay functional for extended durations.
- It can operate without a break for months, even years.

Cross Between Drone and Satellite

- The fact that the drone can operate in near-space 20 km to 100 km above the Earth's surface makes it capable of carrying out satellite like functions.
- If satellite services are not available for, say, time-sensitive operations or in case of wartime disruption, then near-space UAVs can step in to fill the operational gap.
- These drones are also referred to as **'High Altitude Platform Stations'** or pseudo-satellites.
- China already has this capacity, but the Qimingxing-50's long-endurance provides an added advantage to make this capability available over a longer period.
- In July this year, the US Army helped test a solar-powered, near-space Airbus Zephyr S drone that set a new record by being airborne for 42 days.
- Both these drones can undertake surveillance missions that require them to stay operational, watching over borders or oceans, for months.

Easy To Lock-and-Load

- Drones like the Morning Star-50 are cost-effective to build and are also easy to launch and operate.
- Being entirely powered by clean energy from the Sun, the present one can help boost China's capabilities to operate in near-space and over the ocean.
- This HALE UAV is capable of conducting high-altitude reconnaissance, apart from monitoring forest fires, providing communication and environment relay.

NEW I-STEM INITIATIVE

- Women in Engineering, Science, and Technology (WEST), a new I-STEM (Indian Science Technology and Engineering facilities Map) initiative called "Women in Engineering, Science, and Technology (WEST)" was launched.
- The WEST programme will cater to women with a STEM background and empower them to contribute to the science, technology, and innovation ecosystem.
- I-STEM is a national web portal for sharing research equipment/facilities and is the umbrella under which many programmes for promoting collaborations in R&D and technological innovation among and between academia and industry especially startups are underway.
- Through the WEST initiative, I-STEM shall provide a separate platform to scientifically inclined women researchers, scientists, and technologists for pursuing research in basic or applied sciences in frontier areas of science and engineering.
- Women may join the WEST program and explore opportunities to become stakeholders in various domains and pursue careers in R&D at various levels: technicians, technologists, scientists, and entrepreneurs.
- The Skill Development programmes under the WEST initiative will provide training for women with S&T backgrounds to brush up on their abilities and become engaged "in the field" as lab technicians and maintenance engineers, filling crucial gaps in the R&D infrastructure of the country.
- This initiative will also help bring women back into S&T domains after a career break.

- With this experience, women can become entrepreneurs to serve as consultants for the operation and maintenance of sophisticated equipment/instruments through the I-STEM platform.
- This would go a long way towards filling a "skills gap", and putting publicly-funded equipment to good use.

Indian Science, Technology and Engineering facilities Map (I-STEM)

- I-STEM is a National Web portal for sharing R&D (Research and Development) facilities.
- The portal facilitates researchers to access slots for the use of equipment, as well as to share the details of the outcomes, such as patents, publications and technologies.

Launch

- Launched in January 2020.
- It is an initiative of the Office of the Principal Scientific Adviser to the Government of India under the aegis of Prime Minister Science, Technology and Innovation Advisory Council (PM-STIAC) mission.
- PM-STIAC: It is an overarching Council that facilitates the Principal Scientific Adviser's Office to assess the status in specific science and technology domains, comprehend challenges in hand, formulate specific interventions, develop a futuristic roadmap and advise the Prime Minister accordingly.
- I-STEM shall provide a platform/forum for women researchers to deliberate on achievements, issues, and exchange ideas on taking the country forward through advances in science, technology, and innovation. In addition, a digital consortium "Connect Quickly" for online discussion and immediate support has also been established through the I-STEM WhatsApp and Telegram platforms.

QUICK REACTION SURFACE TO AIR MISSILE SYSTEM

- Defence Research and Development Organisation (DRDO) and Indian Army have successfully completed six flight-tests of Quick Reaction Surface to Air Missile (QRSAM) system from Integrated Test Range (ITR) Chandipur off the Odisha coast.
- The flight-tests were carried out against high-speed aerial targets mimicking various types of threats to evaluate the capability of the weapon systems under different scenarios, including long range medium altitude, short range, high altitude manoeuvring target, low radar signature with receding & crossing target and salvo launch with two missiles fired in quick succession.
- The system performance was also evaluated under day and night operation scenarios.

Objectives

- During these tests, all the mission objectives were met establishing pin-point accuracy of the weapon system with state-of-the-art guidance and control algorithms including warhead chain.
- The performance of the system has been confirmed from the data captured by a number of Range instruments like Telemetry, Radar and Electro Optical Tracking Systems (EOTS) deployed by ITR.

Quick Reaction Surface to Air Missile (QRSAM) System

- It is a short-range surface-to-air missile (SAM) system.
- Designed and developed by DRDO to provide a protective shield to moving armoured columns of the Army from enemy aerial attacks.
- QRSAM is a canister-based system stored and operated from specially designed compartments.
- The system is capable of detecting and tracking targets on the move and engaging targets with short halts.
- Missile can operate on the move with search and track capability & fire on short halt
- The entire weapon system has been configured on mobile and is capable of providing air defence on the move.
- It has a range of 25 to 30 km.
- It also consists of two radars – Active Array Battery Surveillance Radar and Active Array Battery Multifunction Radar – with one launcher.
- Both radars have 360-degree coverage with "search on move" and "track on move" capabilities.
- The system uses a single-stage solid propelled missile and has a mid-course inertial navigation system with two-way data link and terminal active seeker developed indigenously by DRDO.

RABIES VACCINE

- The death of a 12-year-old girl in Kerala from rabies, despite having multiple inoculations of the vaccine.

How does a rabies vaccine work?

- Rabies is a disease that is caused by a family of viruses called the lyssaviruses and found in a range of mammals.
- The virus targets the central nervous system and is nearly 100% fatal to the host animal if it succeeds in infecting it.
- Though many animals from cats to crocodiles can be transmitters of the virus, it is most likely to spread to people from the bite of an infected dog or a cat as they are the most common pets.

How is the vaccine made?

- The vaccine is made up of an inactivated virus that is expected to induce the body into producing antibodies that can neutralise the live virus in case of infection.
- There are also test vaccines that involve genetically modified viruses.
- There is no single-shot rabies vaccine or one that offers permanent immunity.
- Administering a vaccine, even after being bitten by a rabid animal, is effective because the virus is slow-moving and it can be several weeks before the disease manifests into a fatal encephalitis.
- A shot of rabies immunoglobulin (rabies-antibodies against the virus derived either from people or horses) followed by a four-week course of anti-rabies vaccine, is nearly guaranteed to prevent rabies.
- There are mainly two ways of administering the rabies vaccine – firstly, post-exposure prophylaxis (PEP) which is given to persons who have been exposed via a bite to an animal suspected to be infected. The vaccines are administered either into the muscles, or into the skin.
- Secondly, Pre-Exposure Prophylaxis (PrEP) which is given ahead of time to persons who have a high risk of being infected, such as veterinarians.
- The advantage of a PrEP is that if bitten, one doesn't need an immunoglobulin injection, and two subsequent shots of the vaccine will suffice for full protection, unlike the four-course prescription in the case of PEP.
- However, the WHO doesn't recommend PrEP as a general preventive.

Are rabies vaccines easily available in India?

- According to the Health Ministry, there are at least six rabies vaccines approved for India.
- They all contain inactivated virus made of duck, chicken or human cell cultures and are marked as safe, efficacious and with long immunity.
- Rabies vaccines are available for free in government dispensaries though vaccines administered in a private clinic can cost up to ₹500 per dose.

Vaccines for Animals

- Given that rabies treatment requires multiple shots of vaccine as well as immunoglobin, sticking to the schedule is challenging.
- Governments of countries where rabies is endemic have frequently set targets to eliminate the disease India has committed to do so by 2030.
- Vaccinating animals too doesn't guarantee lifelong immunity from the disease. Because dogs are deemed responsible for 99% of all rabies infections in people, the government in its 2021 plan, called the 'National Action for Plan — Rabies Elimination', aims to vaccinate at least 70% of all dogs in a defined geographical area annually for three consecutive years.

Concerns

- Hospitals running out of vaccines
- Knowledge about vaccines and treatment is still inadequate in India.
- No centralised database of vaccine availability is maintained.

- Requirement of multiple shots of vaccine as well as immunoglobin makes sticking to the schedule challenging.

STEALTH FRIGATE OF PROJECT 17A TARAGIRI

- Taragiri, the third stealth frigate of the Project 17A, was launched by Mazagon Dock Shipbuilders Ltd. (MDL).
- The second ship of P17A class Udaygiri was launched on May 17 this year and is expected to start the sea trials during the second half of 2024. The keel of the fourth and the final ship was laid on June 28.
- The ship has been built using integrated construction methodology which involves hull blocks construction in different geographical locations and integration/erection on slipway at MDL.

Features

- The steel used in the hull construction of P17A frigates is indigenously developed DMR 249A, which is a low carbon micro-alloy grade steel manufactured by the Steel Authority of India Limited.
- Indigenously designed Taragiri will have a state-of-the-art weapon, sensors, an advanced action information system, an integrated platform management system, world class modular living spaces, a sophisticated power distribution system and a host of other advanced features.
- It will be fitted with a supersonic surface-to-surface missile system and the ship's air defence capability is designed to counter the threat of the enemy aircraft and the anti-ship cruise missiles would revolve around the vertical launch and long-range surface to air missile system
- The vessel is being launched with an approximate launch weight of 3,510 tonnes and is designed by the Indian Navy's in-house design organisation the Bureau of Naval Design
- The ship, 149.02 metre long and 17.8 metre wide, is propelled by a CODOG combination of two gas turbines and two main diesel engines which are designed to achieve a speed of over 28 knots at a displacement of approximately 6,670 tonnes.

NATURAL RUBBER

- After a moderate post-pandemic revival, the price of natural rubber (NR) has crashed to a 16-month low of ₹150 per kg (RSS grade 4) in the Indian market.
- Under the aegis of the National Consortium of Regional Federations of Rubber Producer Societies India, a day-long sit-in protest was staged in front of the Rubber Board headquarters in Kottayam, Kerala.

What has caused the sharp fall in prices?

- The current fall in prices is attributed primarily to a weak Chinese demand and the European energy crisis, along with high inflation and an import glut, among other things.
- While the unremitting zero COVID strategy in China, which consumes about 42% of the global volume, has cost the industry dearly, analysts have also flagged the acceleration of imports.
- The domestic tyre industry, according to them, is sitting pretty on an ample inventory, especially in the form of block rubber from the Ivory Coast and compounded rubber from the Far East.

Where does India stand in terms of the production and consumption of natural rubber?

- India is currently the world's fifth largest producer of natural rubber while it also remains the second biggest consumer of the material globally. (About 40% of India's total natural rubber consumption is currently met through imports)
- On the demand side, the domestic consumption rose by 12.9%, to 12,38,000 tonnes in 2021-22 from 10,96,410 tonnes in the previous year.
- The auto-tyre manufacturing sector accounted for 73.1% of the total quantity of natural rubber consumption.
- Import of the material, meanwhile, increased to 5,46,369 tonnes from 4,10,478 tonnes.

How does the falling price affect the growers?

- The turnaround has exposed the growers mostly small and medium scale to a painful reckoning, contributing to wide-spread panic in Kerala, which accounts for nearly 75% of the total production.
- The impact of the price fall is felt more in the rural areas, where most people are solely dependent on rubber cultivation and have no other option but to cut expenses. This has caused a sluggishness in the respective local economies, which also coincided with the festive season in Kerala.
- If a reversal in prices seem distant, the trend may also trigger a crop switch or even a fragmentation of the rubber holdings in the long run.

What do the farmers demand?

- The key demands they have raised to the Union government include raising the import duties on latex products and compound rubber to make it on par with natural rubber, by either 25% or ₹30 per kg, whichever is lower.
- Its demands to the state government are to raise the replanting subsidy in Kerala, which remains at ₹25,000 per ha, and the support price of the crop under the price stabilisation scheme to ₹200 from ₹170.

How is the Rubber Board reacting?

- Amidst all the gloom, the Rubber Board professes to be relatively sanguine as it regards the price fluctuation as cyclical and rests its hopes on the projections of a remarkable shortage of rubber seven years from now due to slow replanting in place of old trees in existing plantations.
- The agency, for the time being, is said to be also working on a set of programmes to arrest the free-falling of prices.

NASA's DART

- NASA's DART (Double Asteroid Redirection Test) mission will be the first demonstration of a method that could be used to protect Earth from asteroids that could pose a threat to it in the future.
- NASA's DART (Double Asteroid Redirection Test) spacecraft is scheduled to crash into the asteroid Dimorphos at approximately 7.14 PM EDT on September 26 (4.44 AM IST on September 27).
- Using the impact of a massive object like a spacecraft to divert asteroids is called the "kinetic impact method" of asteroid impact avoidance.

DART Mission

- DART is the first technology demonstration of the kinetic impactor technique.
- This technique could be used to mitigate the threat in case an asteroid heads towards Earth in the future.
- The mission will test this newly developed technology by allowing a spacecraft to crash into an asteroid and change its course.
- After the spacecraft has collided with the asteroid, scientists will study its impact on the trajectory of the asteroid with a range of telescopes deployed on different regions of the planet.
- This study will help scientists understand whether the kinetic effect of a spacecraft impact could successfully deflect an asteroid on a collision course with Earth.

About Dimorphos:

- It is 160-metre-wide and orbits the much larger asteroid Didymos (about 780 metres wide). It poses no actual threat to Earth.
- Webb Telescope, Hubble and a CubeSat called LICIACube to take measurements of the changes in the system and transmit back images.
- DRACO, or Didymos Reconnaissance and Asteroid Camera for Optical navigation is a high-resolution camera to capture images of Didymos and Dimorphos while simultaneously supporting DART's autonomous guidance system. It takes 38 seconds for one-way communication.
- CubeSat, LICIACube is built by Italian space agency, has 2 cameras and operates autonomously.

Malaria Vaccine

- Malaria booster vaccine shows up to 80 per cent efficacy: Lancet study

About the vaccine:

- R21/Matrix M is a modified version of RTS, S.
- The vaccine trial began in 2014-15 on 450 children in Burkina Faso.
- R21/Matrix-M malaria vaccine is licensed to Serum Institute of India.
- In 2021, University of Oxford reported findings – the vaccine demonstrated efficacy of 77% over 12-months of follow-up.
- This vaccine is the first to meet the World Health Organization's Malaria Vaccine Technology Roadmap goal of a vaccine with at least 75% efficacy
- Study involved 450 participants aged 5 to 17 months and recently reported an efficacy of over 80%.

Malaria:

- Firstly, it is caused by the bite of the female Anopheles mosquito if the mosquito itself is infected with a malarial parasite.
- Secondly, there are five kinds of malarial parasites — Plasmodium falciparum, Plasmodium vivax (the commonest ones), Plasmodium malariae, Plasmodium ovale, and Plasmodium knowlesi.
- Thirdly, according to the World Malaria Report 2020, cases of Malaria in India dropped from about 20 million in 2000 to about 5.6 million in 2019.
- Fourthly, globally 39 countries have declared themselves Malaria free.
- As per WHO, a country can be declared malaria-free when it reports zero indigenous cases of malaria for 3 or more years.
- Symptoms include fever, tiredness, vomiting, and headaches. In severe cases, it can cause jaundice, seizures, coma, or death. Symptoms usually begin ten to fifteen days after being bitten by an infected mosquito.

USING 'SPOOKY ACTION AT A DISTANCE' TO LINK ATOMIC CLOCKS

- An experiment carried out by the University of Oxford researchers combines two unique and one can say even mind-boggling discoveries, namely, high-precision atomic clocks and quantum entanglement, to achieve two atomic clocks that are "entangled." This means the inherent uncertainty in measuring their frequencies simultaneously is highly reduced.

What is Quantum Entanglement?

- Quantum entanglement is a physical phenomenon that occurs when a group of particles are generated, interact, or share spatial proximity in a way such that the quantum state of each particle of the group cannot be described independently of the state of the others, including when the particles are separated by a large distance.
- In quantum physics, entanglement is a weird phenomenon described as a "spooky action at a distance" by Albert Einstein.
- It is a way of saying that the physical attributes of two independent systems, say spin or frequency, vary in tandem.

Atomic Clock

- An atomic clock is a clock that measures time by monitoring the resonant frequency of atoms. It is based on atoms having different energy levels.
- This phenomenon serves as the basis for the International System of Units' (SI) definition of a second – time taken by 9,19,26,31,770 oscillations of a caesium atom with accuracy of gaining or losing a second only once in about 20 million years.
- At the start of the 21st century, the cesium clocks that were available were so accurate that they would gain or lose a second only once in about 20 million years.
- At present, even this record has been broken and there are "optical lattice clocks" that are so precise that they lose a second only once in 15 billion years.
- To give some perspective, that is more than the age of the universe, which is 13.8 billion years.

Proof of Concept

- Quantum networks of this kind have been demonstrated earlier, but this is the first demonstration of quantum entanglement of optical atomic clocks.
- The key development here is that we could improve the fidelity and the rate of this remote entanglement to the point where it's actually useful for other applications, like in this clock experiment.
- For their demonstration, the researchers used strontium atoms for the ease in generating remote entanglement. They plan to try this with better clocks such as those that use calcium.
- We can now generate remote entanglement in a practical way. At some point, it might be useful for state-of-the art systems.

Applications

- Studying the space-time variation of the fundamental constants, probing dark matter, precision geodesy, accurate time keeping in GPS, or monitoring stuff remotely on Mars etc.

ISRO Hybrid Propulsion System

- The Indian Space Research Organisation (ISRO) has successfully demonstrated a hybrid propulsion system that used a solid fuel and liquid oxidiser.
- The hybrid motor was tested at the ISRO Propulsion Complex , Mahendragiri, on Tuesday evening.
- The hybrid system is more efficient, "greener" and safer to handle, and paves the way for new propulsion technologies for future missions, the Vikram Sarabhai Space Centre (VSSC), which tested it with support from the Liquid Propulsion Systems Centre (LPSC).

About:

- In the ground-based test, the flight equivalent 30 kN hybrid motor used HTPB-based (hydroxyl-terminated polybutadiene) aluminised solid fuel and liquid oxygen (LOX) as oxidiser.
- The test was performed for 15 seconds on a 300-mm sounding rocket motor.
- Conventional HTPB-based solid propellant motors used in rockets use ammonium perchlorate as oxidiser.
- In rocket engines, oxidisers supply the oxygen needed for combustion.
- While both HTPB and LOX are green, the cryogenic LOX is safer to handle. And unlike conventional solid motors, the hybrid technology permits restarting and throttling capabilities on the motor.
- The use of liquids facilitates throttling and control over the flow rate of LOX.

Benefits:

- While both HTPB and LOX are green, the cryogenic LOX is safer to handle.
- And unlike conventional solid motors, the hybrid technology permits restarting and throttling capabilities on the motor.
- The hybrid system is more efficient, "greener" and safer to handle and paves the way for new propulsion technologies for future missions.

LoRa (Long Range Radio)

- Institute for Development and Research in Banking Technology (IDRBT), an arm of the Reserve Bank of India (RBI) develops a new low-cost financial network called LoRa (Long Range Radio) technology to take banking to remote areas. They are the first in the world to develop this network.

About Long Range Radio (LoRa)

- LoRa technology is a wireless modulation technique in the physical layer, allowing long-range communication using chirp spread spectrum.
- LoRa technology uses dedicated radios, which are not usually present in end-user devices, limiting interferences from other devices.
- LoRa is ideal for applications that transmit small chunks of data with low bit rates.

- It is a new dedicated low cost financial network that can be used privately by banks to send encrypted texts to conduct financial transactions.
- Now, banks can use this technology as their own private network and send encrypted texts to conduct financial transactions.
- Connectivity to remote areas begins from where the last branch of a bank stands in a remote village or hilly region.
- A 30-mile connectivity for bank transactions can be achieved at a cost of ₹30,000 and the same is extendable.

Significance

- The last mile connectivity of the banking system can be expanded with the LoRa financial network. ``
- Connectivity to can begin from where the last branch of a bank stands in a remote village or hilly region by using this.
- A 30 mile connectivity to ensure bank transactions can be achieved with setting up of three nodes with a cost of ₹30,000.
- The cost of the LoRa financial network is estimated to be 20 per cent cheaper than alternative network technologies with an additional advantage of almost no maintenance and portability of devices.
- More secure, better safety from cyber attacks
- Easy recoverability and upgradation
- Almost no maintenance & ensures portability of devices.

About IDRBT:

- It is an engineering training institution exclusively focused on banking technology.
- Established by the RBI in 1996, the institution works at the intersection of banking and technology.
- Its foundations were laid by the Rangarajan Committee
- It is located in Hyderabad, India.

BrahMos Missiles

- The Ministry of Defence signed a Rs 1,700-crore deal with BrahMos Aerospace Private Limited (BAPL) for acquisition of dual-role capable surface-to-surface BrahMos missiles for deployment on warships of the Indian Navy.
- A combination of the names of Brahmaputra and Moskva rivers, BrahMos missiles are designed, developed and produced by BrahMos Aerospace, a joint venture company set up by Defence Research and Development Organisation (DRDO) and Mashinostroyenia of Russia.
- The first test launch of the initial version of Brahmos took place in 2001. Various types of the BrahMos, including those which can be fired from land, warships and the Sukhoi-30 fighter jets, have already been developed and successfully tested and inducted since then.

Strategic Significance

- BrahMos is a two-stage missile with a solid propellant booster engine.
- Its first stage brings the missile to supersonic speed and then gets separated.
- The liquid ramjet or the second stage then takes the missile closer to three times the speed of sound in cruise phase.
- The missile has a very low radar signature, making it stealthy, and can achieve a variety of trajectories.
- The ‘fire and forget’ type missile can achieve a cruising altitude of 15 km and a terminal altitude as low as 10m to hit the target.
- The enhanced range version of the missile has a range of 4,000km, as compared to the original range of 290km.
- Cruise missiles such as BrahMos, called “standoff range weapons”, are fired from a range far enough to allow the attacker to evade defensive counter-fire.
- The BrahMos has three times the speed, 2.5 times flight range and higher range compared to subsonic cruise missiles.

FLEX FUEL

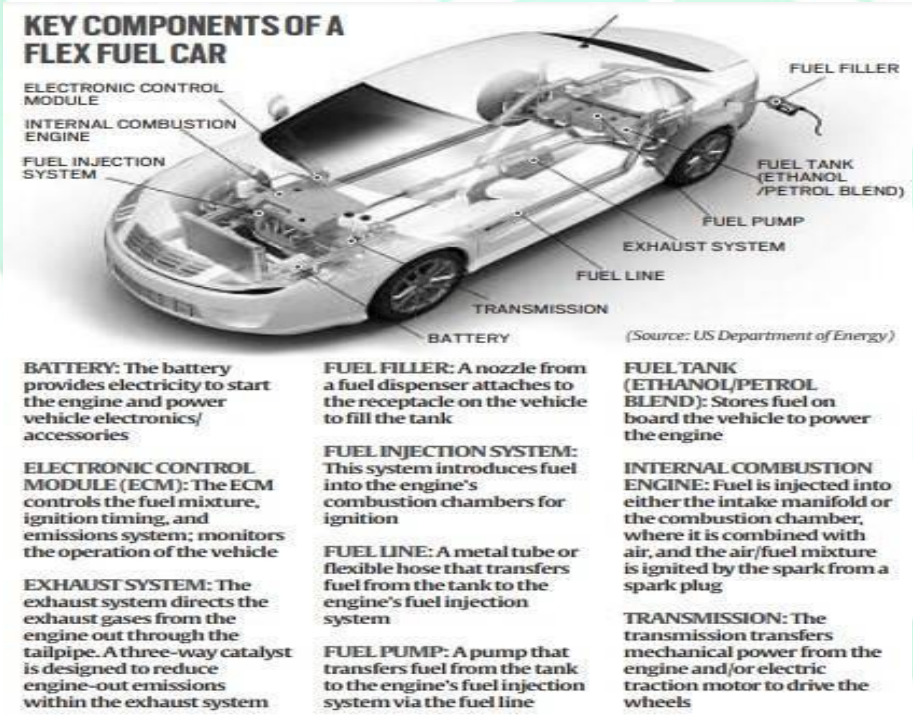
- India's first 'flex fuel' car, a Toyota sedan that can run on one or multiple fuel types and developed as part of a new pilot aimed at deleveraging the country's dependence on imported fossil fuels for transportation, is set for an unveiling later this month.
- A nationwide pilot that aims to replicate the commercial deployment of this particular technology in other markets such as Brazil, Canada and the US

Flex Fuel technology

- A flex fuel, or flexible fuel, vehicle has an internal combustion engine (ICE), but unlike a regular petrol or diesel vehicle, this can run on more than one type of fuel, or even a mixture of fuels.
- The most common versions use a blend of petrol and ethanol or methanol, but these engines are also equipped to run on 100 per cent petrol or ethanol as well.
- This is made possible by equipping the engine with a fuel mix sensor and an engine control module (ECM) programming that senses and automatically adjusts for any ratio of designated fuels.

How flex fuel cars technology work

- Flex fuel vehicles have one fuel system, and most components are the same as those found in a conventional petrol-only car.
- Some special ethanol-compatible components are required to adjust to the different chemical properties and energy content in ethanol or methanol, such as modifications to the fuel pump and fuel injection system.
- The ECM is also calibrated to accommodate the higher oxygen content of ethanol.
- Other than an ethanol-compatible fuel system and a different power train calibration, flex fuel vehicles are similar to their conventional petrol-only counterparts.



Significance:

- The use of ethanol blending sharply lowers harmful pollutants such as carbon monoxide, sulphur, and carbon and nitrogen oxides.
- It will deleverage the country's dependence on oil imports for transportation
- Many flex fuel vehicles have improved acceleration performance when operating on higher ethanol blends.

Concerns:

- It marginally decreases fuel efficiency when using ethanol for motive power.
- Over 90% of ethanol produced in the country, came from sugarcane alone and sugarcane production is usually very water-intensive.
- Further, since sugarcane is a politically important crop, there is a perceived political angle to the ethanol/methanol blending push.
- Currently, around 9.5 per cent ethanol blending with petrol has been achieved in fuel dispensed in pumps in most metros and it is likely that the targeted 10 per cent ethanol blending will be achieved by November 2022. But this is slated for a major bump up, with the government's 2025 target of 20 per cent blending of ethanol in petrol envisaged in its National Biofuel Policy 2018.

INDIGENOUSLY DEVELOPED NAVIGATION SYSTEM (NAVIC)

- The government is discussing with smartphone manufacturers about embedding the indigenously-developed navigation system NavIC in phones manufactured domestically.

Global standards body 3GPP has approved India's regional NavIC:

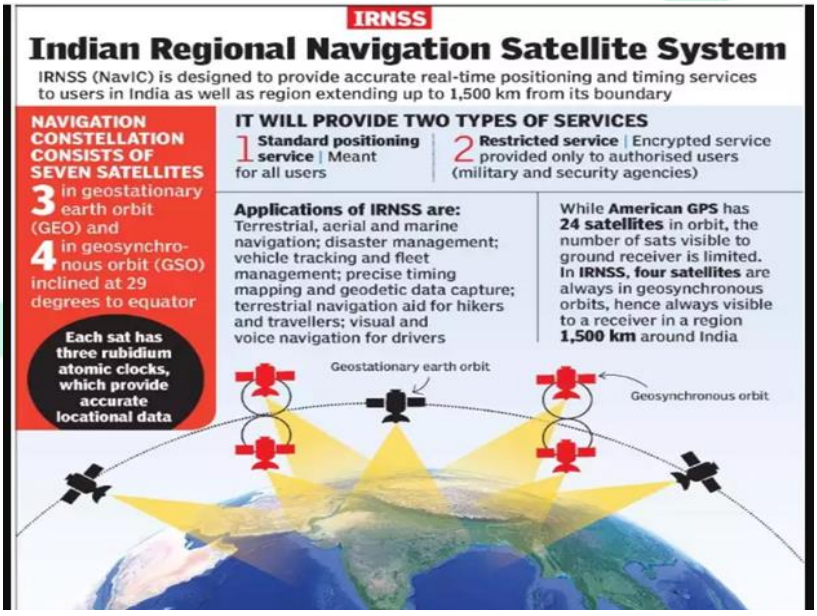
- Earlier, Global standards body 3GPP, which develops protocols for mobile telephony, approved India's regional navigation system NavIC, developed by Indian Space Research Organisation (ISRO).
- The specification approval will boost commercial use of NaVIC (Navigation with Indian Constellation) by international and domestic mobile device makers, which means such manufacturers can now mass-produce navigation devices compatible with NaVIC so that users of these devices can easily access desi GPS or NaVIC signals.
- The implications of NavIC acceptance by 3GPP would bring NavIC technology to the commercial market for its use in 4G, 5G and Internet of Things (IoT).
- Indian companies and startups will have an opportunity to design integrated circuits (ICs) and products based on NavIC

What is 3GPP:

- It comprises seven telecommunications standard development organisations (ARIB, ATIS, CCSA, ETSI, TSDSI, TTA, TTC) from across the world and provides their members with a stable environment to produce specifications that define 3GPP technologies.
- 3GPP currently has global navigation satellite system support from BDS (Chinese), Galileo (European), GLONASS (Russian) & GPS (US) for cellular positioning system.

Indian Regional Navigation Satellite System (IRNSS): NavIC

- IRNSS (NavIC) is an independent regional navigation satellite system developed by the Indian Space Research Organization (ISRO).
- It provides accurate position information service to users in India as well as the region extending up to 1500 km from its boundary which is its primary service area
- The space segment consists of the IRNSS constellation of eight satellites, NavIC



Types of Services:

- Standard Positioning Service (SPS): It will be provided to all the users.
- Restricted Service (RS): It is an encrypted service that will be provided only to authorized users (military and security agencies).

Applications:

- Terrestrial, Aerial and Marine Navigation
- Disaster Management
- Vehicle tracking and fleet management
- Integration with mobile phones
- Precise Timing
- Mapping and Geodetic data capture
- Terrestrial navigation aid for hikers and travelers
- Visual and voice navigation for drivers.

Additional Information:

- Global Positioning System (GPS): It is a U.S.-owned satellite-based radio navigation system that provides users with positioning, navigation, and timing (PNT) services
- Other global GNSS systems: GLONASS (Russia), Galileo (EU), BeiDou (China).

ENVIRONMENT

National Clean Air Programme

- An analysis by the environmental think tank, Centre for Science and Environment, reported "barely any difference" in trends in particulate matter pollution (PM2.5) between the group of cities under the National Clean Air Programme (NCAP) and those outside its ambit.
- The 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 launched in 2019 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.
- 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.
- The CSE in its national analysis of PM2.5 levels in cities for which data is available found that between 2019 and 2021, only 14 of 43 (NCAP) cities registered a 10% or more reduction in their PM2.5 level between 2019 and 2021.
- Only 43 cities, said the CSE, were considered as they had adequate data to scientifically establish a long-term trend.
- On the other hand, out of 46 non-NCAP cities with adequate data, 21 recorded significant improvement in their annual PM2.5 value with 5% or more decline between 2019 and 2021.
- There were 16 NCAP cities and 15 non-NCAP cities that registered a significant increase in their annual PM2.5 levels with near identical numbers.
- There is hardly any difference between the performance of NCAP and non-NCAP cities between 2019 and 2021.
- Cities in Punjab, Rajasthan and Maharashtra dominated the list of cities which registered a significant increase in PM2.5 levels between 2019 and 2021.
- Chennai, Varanasi and Pune show the most improvement among NCAP cities.
- But unlike cities with increasing pollution level which have a very clear regional pattern, there was no regional pattern seen among cities reporting significant improvement in their air quality, the CSE analysis noted.
- The cities of Haryana, Madhya Pradesh and Gujarat dominate the list of non-NCAP cities that have registered significant increase in air pollution levels.

National Clean Air Programme (NCAP)

- It was launched by the government to tackle the increasing air pollution problem across the country.
- Overall objective of the NCAP is comprehensive mitigation actions for prevention, control and abatement of air pollution besides augmenting the air quality monitoring network across the country and strengthening the awareness and capacity building activities.
- NCAP is the first ever effort in the country to frame a national framework for air quality management with a time-bound reduction target.
- NCAP's focus on 'city based plans' is a shift from earlier air pollution mitigation schemes which were based on national strategies.
- Also air pollution impact on health will be included in making plans, which is a novel feature of the scheme.

Features of the scheme:

- NCAP is a five-year action plan with 2019 as the first year. It aims at 20%–30% reduction of PM5and PM10 concentration by 2024, taking 2017 as the base year for the comparison of concentration. It targets 102 non-attainment cities.
- The NCAP will be institutionalized by respective ministries. At the Centre, Apex Committee at the Ministry of Environment Forest and Climate Change and at the State level, Chief Secretary Level Committee will be constituted.
- Sectoral working groups, national level Project Monitoring Unit and Project Implementation Unit.
- Existing programmes of government, in reference to climate change, including the National Action Plan on Climate Change (NAPCC) will be dovetailed while executing NCAP.
- Number of monitoring stations in the country will be increased including rural monitoring stations, technology support, emphasis on awareness and capacity building initiatives and trained manpower and regular inspection drives will be initiated.
- Collaboration between various levels of governments and civil society: The approach for NCAP includes coordination between:
- Relevant central ministries among themselves like Ministries of Road Transport and Highway, Petroleum and Natural Gas, New and Renewable Energy, NITI Aayog, CPCB and experts from the industry and civil society etc.
- Centre and state governments and local bodies.Partnership with international organizations, and leading technical and research institutions.

National Ambient Air Quality Standards

- National Ambient Air Quality Standards are the standards for ambient air quality set by the Central Pollution Control Board (CPCB)
- The CPCB has been conferred this power by the Air (Prevention and Control of Pollution) Act, 1981.
- Ambient Air Quality Standards contains 12 pollutants.

The pollutants that are covered under the National Ambient Air Quality Standards include:

- Sulphur dioxide (SO2),
- Nitrogen dioxide (NO2),
- The particulate matter having a size less than 10 microns (PM10),
- The particulate matter having a size less than 2.5 microns (PM2.5),
- Ozone
- Lead
- Carbon monoxide (CO)
- Arsenic
- Nickel
- Benzene
- Ammonia, and
- Benzopyrene

VEMBANAD LAKE SHRINKING

- Vembanad lake, the second largest wetland system in India after the Sunderbans in West Bengal, is shrinking and its unique biodiversity is under threat of ecological decay despite it being declared as a Ramsar site 20 years ago.
- The lake is a source of livelihood for farmers of Kuttanad and the fisherfolk community, continues to undergo ecological degradation due to pollution and unauthorised constructions on its banks.

Vembanad Lake

- It is the longest lake in India and the largest lake in the state of Kerala.
- The lake is situated at sea level and is separated from the Laccadive Sea by a narrow barrier island.
- The lake is also known as Punnamada Lake (in Kuttanad) and Kochi Lake (in Kochi).

- Vallam Kali (a.k.a Nehru Trophy Boat Race) is a Snake Boat Race held every year in the month of August in Vembanad Lake.
- In 2002, the lake was included in the list of wetlands of international importance, as defined by the Ramsar Convention.
- It is the second-largest Ramsar site in India, only after the Sunderbans in West Bengal.
- The Kumarakom Bird Sanctuary is located on the east coast of the lake.
- The unique characteristic of the lake is the Thanneermukkom saltwater barrier. It was constructed as a part of the Kuttanad Development Scheme to prevent tidal action and intrusion of saltwater into the Kuttanad low-lands.
- The Government of India has identified the Vembanad wetland under the **National Wetlands Conservation Programme.**
- In 2019, Willingdon Island, a seaport located in the city of Kochi, was carved out of Vembanad Lake.

Issues

- According to ecological experts and various studies conducted over the years, the lake is facing serious environmental degradation due to recurring floods, increased pollution, reduction in water spread area and increased weed growth.
- Bunds on the lake were crumbling at certain places, making fishing difficult and on top of that the lake requires regular dredging and desilting.
- Tourism poses a threat to the ecology and the water quality of the lake. Resorts and residences discharge their waste into the river and many houseboats do not have bio-toilets.

Solution

- The participation of local communities, including fisherfolk and farmers, in revival of the lake was essential.
- An inter-departmental committee has been set up to carry out a comprehensive study on checking the existing backwaters and to take further steps.
- The bund was constructed to regulate saline water intrusion into the freshwater lake.
- The Swaminathan Foundation report of 2011 and a subsequent joint study of 2012 by teams from IIT Madras and CWRDM recommendation must be implemented.
- Besides environmental concerns, pollution and recurring floods in the lake also paint a bleak picture regarding the livelihood of the fisherfolk in the area and farmers as Kuttanad, also known as the Rice Bowl of Kerala, lies on the southern portion of the water body.

BLENDED BIODIESEL

- As part of efforts to reduce its carbon footprint, the Indian Air Force (IAF) is looking to fly an AN-32 transport aircraft modified to operate on 10% blended biodiesel for 200 flight hours in the next six months.
- The global aviation industry, both civil and military, is one of the biggest emitter of greenhouse gases which cause global warming.
- It is imperative that the industry finds ways to reduce its carbon footprint for global efforts to achieve ‘net zero emissions’ to be successful.
- The annual fuel consumption of the IAF for 2021-22 was 6.2 lakh kilo litres, which contributed around 15 lakh tonnes of carbon dioxide.
- On the civil aviation front, an official from aircraft manufacturer Airbus said it had plans to offer 100% sustainable aviation fuel (SAF) compatibility on its commercial aircraft latest by 2030. The aircraft took flight on biodiesel blended with aviation turbine fuel (ATF) for the first time in December 2018.
- So far, an AN-32 has flown 65 hours with a 10% blend of biofuel and the performance has been very satisfactory.
- A second aircraft, a Dornier, was now undergoing ground tests after it had been cleared by the original manufacturer of the engine, Honeywell, for use of 50% biofuel.
- The biofuel was extracted from Jatropha plant seeds using a technology patented by the Council of Scientific and Industrial Research (CSIR) and the Indian Institute of Petroleum, Dehradun.

About Ethanol

- Ethanol is one of the principal biofuels. It is naturally produced by the fermentation of sugars by yeasts or via petrochemical processes such as ethylene hydration.
- Ethanol has medical applications as an antiseptic and disinfectant.
- It is used as a chemical solvent and in the synthesis of organic compounds, apart from being an alternative fuel source.

Ethanol Blended Petrol programme

- It was launched in 2003 on a pilot basis and has been subsequently extended to 21 states and 4 Union Territories.
- The programme sought to promote the use of alternative and environment friendly fuels and to reduce import dependency for energy requirements.
- The government has been notifying the administered price of ethanol since 2014.
- India has set a target of 10 percent ethanol blending in petrol by 2022.

ECOLOGICAL NICHE MODELLING

- An ecological niche is the right set of environmental conditions under which an animal or plant species will thrive. A range of ecological niches can occur within an ecosystem. Biodiversity is the result of these niches being occupied by species that are uniquely suited to them. Desert plants, for example, are suited for dry, arid ecological niches because they have the ability to store water in their leaves.
- As the world's climate undergoes change, the ability of existing species to hold on to their biogeographic niches may be altered.
- This has an important bearing on agriculture, as practices and crop choices that have worked well for centuries may no longer be ideal.
- Factors that are altered by such changes include the availability of food and nutrients, occurrence of predators and competing species. Non-living, or abiotic factors also affect ecological niches.
- These include temperature, amount of available light, soil moisture, and so on.

Niche Modelling

- Ecologists use such information for conservation efforts as well as for future developments.
- Ecological niche modelling is a predictive tool for identifying new possibilities — new inhabitants for an existing habitat, or new geographical locations where a desirable plant may grow well.
- The modelling involves the use of computer algorithms to compare data about the environment and to make forecasts about what would be ideal for a given ecological niche.

Where to grow

- Researchers at the Institute of Himalayan Bioresource Technology, Palampur, Himachal Pradesh used modelling strategies to examine the economically important spice, saffron.
- Crocus sativus, the saffron plant, is propagated through underground stems called corms.
- It is thought to be a native of Greece, and grows best under mediterranean climate conditions.
- Today, Iran grows nearly 90% of the world's saffron.
- The flower of the plant has three bright crimson stigmata, which are handpicked when ready and carefully dried for the commercial saffron.
- Besides adding flavour to food, saffron has many other uses.
- Ancient Indian medical texts prescribed it for disorders of the nervous system.
- More recent clinical trials have shown that the administration of 30 mg saffron every day had a significant anti-depressant effect.
- India produces 5% of the world's saffron and historically, some of the world's most prized saffron has been grown in old lake beds of Kashmir.
- The temperate climate of Jammu and Kashmir is well-suited with a well-drained soil of high pH value (6.3 to 8.3), summer temperatures (when flowers develop) of around 25°C and good soil nutrient availability.

Need Niche Modelling:

- To bridge ecological considerations and economic realities and to examine economic feasibilities within the context of changing ecological scenarios.
- The study identified 4,200 sq. km. of new areas suitable for saffron cultivation in places in Jammu and Kashmir, Himachal Pradesh, North Sikkim, Imphal, Manipur and Tamil Nadu.

Using big data

- It refers to extremely large data sets that may be analysed computationally to reveal patterns, trends, and associations, especially relating to human behaviour and interactions.
- It is characterised by 3Vs – Variety, Volume, Velocity

INDIA'S FIRST DUGONG CONSERVATION RESERVE

- The country's first 'Dugong Conservation Reserve' has been notified in Tamil Nadu. The move was aimed at conserving the endangered species as it would help protect and improve marine fauna.
- In order to protect the Dugong species and its marine habitats, a conservation reserve would be established in the Palk Bay region off the coast of Tamil Nadu.
- It facilitates India to act as the leading nation in the South Asia Sub-region with respect to dugong conservation.

Dugongs

- Also called the sea cow, they are herbivorous mammal. This is the only herbivorous marine mammals and the only member of the family Dugongidae.
- It is one of four living species of the order Sirenia, which also includes three species of manatees.
- They can grow up to three meters long, weigh about 300 kilograms and live for about 65 to 70 years grazing on seagrass and coming to the surface to breathe.

Conservation Status

- **IUCN** Status: Vulnerable
- **Wild (Life) Protection Act, 1972**: Schedule I
- **CITES**: Appendix I
- They are found in over 30 countries and in India are seen in the Gulf of Mannar, Gulf of Kutch, Palk Bay, and the Andaman and Nicobar Islands.
- They are mainly found in shallow areas since they survive mainly on seagrass.

Steps Taken for Conservation:

- In February 2020, India hosted the 13th Conference of Parties (CoP) of the Convention on the Conservation of Migratory Species of Wild Animals (CMS), an environmental treaty under the aegis of the United Nations Environment Programme (UNEP).
- The Government of India has been a signatory to the CMS since 1983.
- India has signed non-legally binding Memorandums of Understanding (MoU) with CMS on the conservation and management of Siberian Cranes (1998), Marine Turtles (2007), Dugongs (2008) and Raptors (2016).
- The Ministry of Environment, Forests and Climate Change constituted a 'Task Force for Conservation of Dugongs' to look into issues related to conservation of dugongs and implementation of the 'UNEP/CMS Dugong MoU' in India.

PLASTIC POLLUTION

- The National Cadet Corps (NCC) and United Nations Environment Programme (UNEP) signed a Memorandum of Understanding (MoU) to tackle the issue of plastic pollution and achieve the universal goal of clean water bodies through ' **Puneet Sagar Abhiyan**' and '**Tide Turners Plastic Challenge programme**'.

Objectives

- To synergise and collate efforts towards engaging youth for promoting clean water bodies.
- To engage in capacity building and awareness on environmental sustainability through information sharing and training initiatives.
- Promote opportunities for NCC cadets to participate in appropriate national and international platforms related to environment and climate change.

'Puneet Sagar' Campaign

- Puneet Sagar is a nationwide campaign to free seashores/beaches from plastic & other waste materials and increase awareness about the importance of keeping these clean.
- **Aim:** To propagate the message of 'Importance of Clean Seashores/Beaches' amongst the local population and future generation.
- Under the campaign, cadets will generate awareness about the conservation and impact of plastic pollution along the sea beaches through nukkad nataks, poetry recitation, signature campaigns, pamphlet distribution amongst others.
- It is a nationwide campaign to clean sea shores of plastic and other waste material and to raise awareness about the importance of cleanliness
- It was started initially for one month and was subsequently extended as a pan-India round-the-year campaign
- It covers rivers and other water bodies as well.

National Cadet Corps (NCC)

- The NCC was formed in 1948 on the recommendation of H. N. Kunzru Committee [1946]. NCC is the world's largest uniformed youth volunteer service organization.
- The NCC cadets undergo basic military training at various levels and as well as academic curriculum basics related to the Armed forces and their functioning.
- **Nodal Ministry:** The NCC falls under the purview of the Ministry of Defence and is headed by a Director-General of three-star military rank.
- The emblem of the NCC consists of 3 colours; red, dark blue and light blue representing the Indian Army, Indian Navy and Indian Air Force respectively. The 17 lotuses indicate the 17 directories of India.

The United Nations Environment Programme (UNEP)

- It is the leading global environmental authority that sets the global environmental agenda, promotes the coherent implementation of the environmental dimension of sustainable development within the United Nations system, and serves as an authoritative advocate for the global environment.
- **Objective:** To provide leadership and encourage partnership in caring for the environment by inspiring, informing, and enabling nations and peoples to improve their quality of life without compromising that of future generations.
- **Major Reports:** Emission Gap Report, Global Environment Outlook, Frontiers, Invest into Healthy Planet.
- **Major Campaigns:** Beat Pollution, UN75, World Environment Day, Wild for Life.
- **Headquarters:** Nairobi, Kenya.

CARBON DATING

- A district court in Varanasi allowed a petition seeking carbon dating of the structure inside the Gyanvapi mosque that the Hindu side has claimed is a 'Shivling'.

What is carbon dating?

- Carbon dating is a widely-used method applied to establish the age of organic material, things that were once living.
- Living things have carbon in them in various forms.
- The dating method makes use of the fact that a particular isotope of carbon called C-14, with an atomic mass of 14, is radioactive, and decays at a rate that is well known.

- The most abundant isotope of carbon in the atmosphere is carbon-12 or a carbon atom whose atomic mass is 12.
- A very small amount of carbon-14 is also present.
- The ratio of carbon-12 to carbon-14 in the atmosphere is almost static, and is known.
- This method was developed by the American physicist Willard F. Libby about 1946.
- Carbon-14 is continually formed in nature by the interaction of neutrons with nitrogen-14 in the Earth's atmosphere.
- Plants get their carbon through the process of photosynthesis, while animals get it mainly through food. Because plants and animals get their carbon from the atmosphere, they too acquire carbon-12 and carbon-14 isotopes in roughly the same proportion as is available in the atmosphere.

The half-life concepts:

- Carbon-14 has a half-life of 5,730 ± 40 years—i.e., half the amount of the radioisotope present at any given time will undergo spontaneous disintegration during the succeeding 5,730 years.
- Because carbon-14 decays at this constant rate, an estimate of the date at which an organism died can be made by measuring the amount of its residual radiocarbon.

Its uses:

- It has proved to be a versatile technique of dating fossils and archaeological specimens from 500 to 50,000 years old.
- The method is widely used by geologists, anthropologists, archaeologists, and investigators in related fields.

THE BREAKTHROUGH AGENDA REPORT 2022

- The Breakthrough Agenda Report 2022 is a new report by the International Energy Agency (IEA), the International Renewable Energy Agency (IRENA) and the UN Climate Change High-Level Champions, focused on supporting stronger international collaboration to drive faster reductions in global greenhouse gas emissions.
- The first annual Breakthrough Agenda Report, delivers a progress report on the actions needed to deliver on the historic clean technology commitment by governments.
- The report puts forward 25 recommendations for leaders to discuss at the Global Clean Energy Action Forum and the 13th Clean Energy Ministerial to be held in Pittsburgh, the US.

Key Highlights of Report

- The Breakthrough Agenda currently covers more than two-thirds of the global economy, with endorsement from 45 world leaders. The G7 countries, China and India are also part of the Agenda.
- The Breakthrough Agenda aims to align the actions of countries and coordinate investment to scale up deployment and drive down costs across five key sectors i.e. power, road transport, steel, hydrogen and agriculture.
- All these sectors account for nearly 60 percent of global greenhouse gas (GHG) emissions and they deliver the bulk of the emission reductions needed by 2030 in a way that makes a significant contribution to limit global warming to a maximum of 1.5 degrees Celsius, in line with the Paris Agreement goals.It aims at supporting stronger international collaboration to amplify ambition, accelerate progress and drive faster reductions in global greenhouse gas (GHG) emissions. To align countries' actions and coordinate investment to scale up deployment and drive do down costs across five key sectors power, road transport, steel, hydrogen and agriculture
- Together, these sectors account for nearly 60% of global greenhouse gas (GHG) emissions and could deliver the bulk of emissions reductions needed by 2030 in a pathway that would make a significant contribution to limiting global warming to a maximum of 1.5 degrees Celsius, in line with the Paris Agreement goals.

Key Findings

- The report notes an increase in practical international cooperation in recent years such as doubling of EV sales, increase in global renewable capacity of eight per cent in 2022 — pushing through the 300GW mark for the first time.
- The report also warns that far greater international cooperation is needed to get the world on track to meet its climate commitment.
- The world is undergoing the midst of the first of its kind global energy crisis, with devastating knock-on consequences across the world economy, especially in developing countries.
- The energy crisis has been witnessed in oil, gas and electricity markets and aggravated by Pandemic, Oil Prices and Russia-Ukraine conflict.
- The consequent climate crisis has exposed the weaknesses and vulnerabilities of a system heavily reliant on fuels of the 20th century

International Energy Agency

- It was established in the framework of the Organisation for Economic Co-operation and Development (OECD) in 1974 in the wake of the 1973 oil crisis.
- IEA is an autonomous intergovernmental organisation.
- Its mission is guided by four main areas of focus: energy security, economic development, environmental awareness, and engagement worldwide.
- Headquarters: Paris, France.
- The IEA's role was to help countries co-ordinate a collective response to major disruptions to oil supply primarily through the release of emergency oil stocks onto the markets.
- While this continues to be a key aspect of its work, the IEA has evolved and expanded.
- The IEA is at the heart of global energy dialogue, and works closely with its member and non-member countries to find solutions to shared energy and environmental concerns.
- It is one of the world's most authoritative sources for energy statistics, and produces annual studies and forecasts on oil, natural gas, coal, electricity and renewables.

Reports by IEA

- Global Energy & CO2 Status Report.
- World Energy Outlook.
- World Energy Statistics.
- World Energy Balances.
- Energy Technology Perspectives.

Membership

- The IEA family is made up of 31 member countries, 11 association countries, and 3 accession countries.
- Three countries are seeking accession to full membership, Chile, Colombia and Israel.

ANCIENT PLANT SILPHION

- A Mediterranean medicinal plant considered a cure-all that mysteriously vanished 2,000 years ago may still be around.
- A researcher from Istanbul University found a plant species in 2021 at three locations in Anatolia — modern-day Turkey — that resembled the ancient plant silphion.

Use of Silphion

- The resin of the silphion was extensively used as a spice, perfume, aphrodisiac, contraceptive and medicine.
- It occupied an important place in the export economy of ancient Cyrene, an old Greek and later Roman colony near north-eastern Libya.

Use to cure health problems

- Silphion was used to treat various health problems, including goiter, sciatica (nerve pain), toothache, intestinal disorders, hormonal disorders, epilepsy, tetanus, polyps (abnormal growth of tissues) and malignant tumours.
- Its stalks were eaten as a vegetable, while the roots were consumed raw.
- The plant was also used to preserve lentils.

Extinction

- Widespread deforestation and desertification made Cyrenaica (modern-day eastern Libya) may have led to Silphium's disappearance.
- Overharvesting
- Human-induced environmental changes.

Environmental conditions:

- These plants may need cold and moist conditions for seed germination.
- This is because the plants related to Silphion, such as Ferula drudeana and Ferula asafoetida, also need similar environmental conditions for seeds to germinate
- An increase in temperature might have increased evaporation, leading to unfavourable conditions.

DIBANG HYDEL PROJECT

- The National Green Tribunal (NGT) has dismissed the case it took up suo motu on the grant of forest clearance for the 3000-MW Dibang hydel project without meeting the precondition of declaring a national park.
- The National Green Tribunal(NGT) is a dedicated tribunal to deal with matters relating to the environment. The NGT website even mentions that the tribunal has cleared 90% of the cases. But a close look will reveal the tribunal's mandate to protect the environment is not yet fulfilled.

About Dihang-Dibang Biosphere Reserve

- The Biosphere Reserve constitutes an area of 5112 Sq. Km in the district of West Siang, Upper Siang and Dibang valley of Arunachal Pradesh.
- Due to the steep terrain combined with difficult weather as well as the lack of communication, the area has a very sparse human population.
- The approximately 10,000 people who live here are primarily of the Adi, Buddhist and Mishmi tribes with ten sub tribes including the Paris, Padams, Karkos, Pangis, Simongs, Ashings, Tangrams.

Flora

- The vegetation varies according to habitat.
- Various factors like climatic, edaphic and biotic factors attribute the condition of forming such habitat.he BR has an altitude range from 500 to 6000 mtr and a major factor in determining the plant community.

The type of vegetation can such be grouped as

- Subtropical broad leafed forests.
- Subtropical pine forest.
- Temperate broad leaved forests.
- Temperate conifer.
- Sub-alpine woody shrub.
- Alpine meadow (Mountain tundra)

Endemic Flora: Tree fern, Begonia, Lady's slipper orchid
Fauna: Endemic Fauna: Red panda, Himalayan black bear, Green pit viper, Takin
Protected areas:

- Mouling National Park
- Dibang Wildlife Sanctuary

About the National Green Tribunal (NGT)

- National Green Tribunal (NGT) is a quasi-judicial body established on October 18, 2010.
- It was established under the National Green Tribunal Act 2010 to handle environment-related disputes.
- India is the third country following Australia and New Zealand to have such a system.
- The Mandate of NGT is to dispose of the cases related to the environment in an effective and efficient manner.
- New Delhi is the Principal Place of Sitting of the Tribunal and Bhopal, Pune, Kolkata, and Chennai shall be the other four place of sitting of the Tribunal.

The NGT handles cases related to,

- Environmental protection
- Environmental clearances for projects by the government are covered under the jurisdiction of NGT.
- Conservation of forests and other natural resources.
- Enforcement of any legal right relating to the environment.
- Relief and compensation for damages to persons and properties.

NEELAKURINJI BLOOMS

- The Neelakurinji flowers that blossom once in many years have turned the green patches of hill stations in Chikkamagaluru into purple-blue, thus attracting hundreds of visitors.
- For over 20 days, thousands of people have visited Seethalayyana Giri, Mullayyanagiri, and Bababudangiri in the Chandradrona Range of the hills.
- Neelakurinji, a shrub, is found in shola forests of the Western Ghats. Taxonomists, who visited the site, identified it as Strobilanthes sessilis.
- The one normally found in Munnar is Strobilanthes kunthiana.
- The shrub is endemic to the Western Ghats.
- There are many varieties of the plant and a few varieties are seen in Karnataka.

Neelakurinji Flower

- Strobilanthesis a genus of about 350 species of flowering plants in the family Acanthaceae, mostly native to tropical Asia and Madagascar.
- The Topli Karvy (Strobilanthes sessilis), the Karvy (Strobilanthes callosa) and the Kurinji (Strobilanthes kunthiana), all belong to the Strobilanthesgenus
- The Topli Karvyis found more in the northern section of the Western Ghats in Maharashtra. It is called so since it resembles and inverted basket
- The Karvy(Strobilanthes callosa) grows on the steepest cliffs where trees can’t grow.
- The Topli Karvygrows on the plateaus of the northern Western Ghats on the other hand.
- The Neelakurinji on the other hand grows in the shola grasslands of the southern Western Ghats, which are not found in Maharashtra
- Neelakurinji was endemic to the southern Western Ghats and higher reaches of the Eastern Ghats.
- The shola forests are patches of stunted tropical montane forests surrounded by grasslands in the high elevations of southern India spread over the states of Kerala, Karnataka and Tamil Nadu.
- These shrubs expend a lot of energy to flower once in 12 years (or in the case of the Topli Karvyonce in 11 years). These shrubs die after that.
- The shola forests and grasslands were facing grave threats at the moment largely from anthropogenic activity as well as invasive species and climate change
- Be it any of these shrubs, they are very important for pollinators such as honey bees.

CivilsTap Himachal

INITIATIVES