# ASTRA

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IGNITING INTELLECTUALISM IN YOUNG MINDS

## COMPLETE COVERAGE OF MONTHLY CURRENT AFFAIRS

### OCTOBER 2021

- Kunming Declaration on Biodiversity Conservation
- Earth Guardian Award
- A Clean, Healthy and Sustainable Environment is a 'Universal Right'
- Disappearing African rare Glaciers
- Plastic Eating Algae

Biodiversity Conservation

## HISTORY AND CULTURE

## GEOGRAPHY

## ENVIRONMENT

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## SCIENCE & TECHNOLOGY

## DEFENSE & SECURITY

## Shyamji Krishna Varma

**Why in the news?**
- Recently Prime Minister paid tribute to freedom fighter Shyamji Krishna Varma on his 164th birth anniversary.

**About Shyamji Krishna Varma**
- Shyamji Krishna Varma was born in 1857 in Gujarat.
- He was an Indian freedom fighter, lawyer and journalist.
- He was an **admirer of Dayanand Saraswati**, because of that he became the **first President of Bombay Arya Samaj.**

**Major organizations founded by Shyamji Krishna Varma**
- **Indian Home Rule Society (IHRS):** The organisation was **founded by Shyamji Krishna Varma,** with support **from Bhikaji Cama, Dadabhai Naoroji and S.R. Rana in London in 1905.**
- It was an Indian organisation that promoted the cause of self-rule in British India.
- **India House:** Indian House was a student residence that existed between 1905 and 1910 which was opened to promote nationalist views among Indian students in Britain.
- Shyamji inspired Veer Savarkar who was a member of India House in London
- **Indian Sociologist:** The Indian Sociologist in London became an outlet for nationalist ideas.

## Nobel Prize For Literature

**Why in the news?**
- **Abdulrazak Gurnah** became the fifth African writer to win the **Nobel Prize** for **Literature** on 7th October 2021.

**Key Highlights**
- He was awarded for his Contribution "in a non-judgmental sympathy for the effects of colonialism and the fate of the fugitive in the gap between cultures and continents."
- It was taken from his novel famous the premise of 'Paradise' 1994.
- It examines the fate of young African Arabs enlisted for the German occupation in World War I.
- **Some of his famous writings:** His writing explores the immigrant experience and how exile and loss shape identities and cultures.
  - Memory of Departure (1987)
  - Pilgrims Way (1988)
  - Paradise (1994)
  - By the Sea (2001)
  - Desertion (2005)
  - Gravel Heart (2017)
  - Afterlives (2020)
- His books contain African characters who are trying to embrace segregation, looking at societies and cultures.
- His work draws attention to the extent to which prejudice and discrimination against communities and religions perpetuate oppressive cultures.
- In **1994,** he won the **Booker Prize for his fiction 'Paradise'.**
- In **2001,** He was awarded th**e Los Angeles Times Book Prize for 'Desertion' and 'By the Sea'.**

## Bhaskarabda

**Why in the news?**
- Assam government has approved **Bhaskarabda, a period counted from the date of ascension by the great Kamrup king Kumar Bhaskar Varma as an official calendar and the Saka and Gregorian charts.**

**What is Bhaskarabda?**
- Bhaskarabda can be understood as a period calculated from the date of the ascension of the 7th-century local ruler Bhaskar Varman.

- It is **based on both phases of the moon and the solar year.**
- The **gap between Basaskarabda and Gregorian is 593 years.**
- It all started when Baskaravarman was crowned ruler of the Kamrupa kingdom.

### Kamrup king Kumar Bhaskar Varma
- Kamrup, which was also known as **Pragjyotish** in the mythological era, has been recognised as the **first historical kingdom of Assam and was the most advanced territory under his reign.**
- **Bhaskar Varma was a contemporary to the north Indian emperor Harshavardhan,** another celebrated ruler of Bharatvarsa.
- Both enjoyed political ties with mutual respect.

> **Kamrupa kingdom**
> - **Kamarupa** was a typical Hindu kingdom of old.
> - It now designates a district of Assam, was formerly applied to the whole of the eastern province of the ancient Bharatavarsha.
> - It is synonymous with **Pragjyotish** which, however, seems to have been the older appellation for the country.
> - In the Ramayana and Mahabharata the country is called **Pragjyotish, and its ruler, the Pragjyotisheswara**.
> - The term Kamarupa is first made use of in some of the Puranas and Tantras, which are admittedly of a later date than the great epics.

## Nihangs      History & Culture

### Why in the news?
- Recently, Nihangs (Sikh warriors) were in news after a man was found murdered, allegedly for desecration of a Sikh holy book.

### About Nihangs
- Nihang (originally known as Akalis or Akali Nihangs) is an order of Sikh warriors, characterised by blue robes, arms such as swords and spears and turbans with steel quoits (rings).
- The word Nihang in Persian means an alligator, sword and pen but the characteristics of Nihangs seem to originate more from the Sanskrit word nihshank which means pure, carefree and indifferent to worldly gains and comfort.
- The word Nihang, also occurs in a hymn in the Guru Granth Sahib, where it refers to a fearless person.
- The order can be traced back to the creation of the Khalsa by Guru Gobind Singh in 1699. However, there are some sources which trace their origin to Guru Gobind Singh's younger son, Fateh Singh (1699-1705).
- Nihangs observe the Khalsa code of conduct in its strictest sense. Instead of saffron they hoist a blue Nishan Sahib (flag) atop their shrines.
- Any person irrespective of caste, creed or religion can become a Nihang if he has unshorn hair as per the Sikh traditions at the time of entering the sect.
- Nihangs are today divided into several groups, each with its own "chhaoni" (cantonment) but are loosely organised into two "dals" (forces) — Buddha Dal and Taruna Dal, names initially given to the two sections into which the 'Khalsa' army was divided in 1733.

## Mount Harriet      History & Culture

### Why in the news?
- Union government recently renamed Mount Harriet, a historical tourist spot in Andaman and Nicobar Islands, as Mount Manipur.

### About Mount Harriet
- Mount Harriet is the 3rd highest peak in the Andaman and Nicobar Islands, and served as the summer headquarters of the Chief Commissioner during British Raj.

- It is believed to be named after British artist and photographer, Harriet Christina Tytler, who was the wife of a British Indian Army Soldier.
- It has now been renamed to honour the contributions of Manipur fighters in the 1891

## Langa-Manganiyar

**Why in the news?**
- Recently an initiative has begun to document and digitise the folklore and songs of Langa-Manganiyar artistes. The project is aimed at saving the rapidly disappearing narrative traditions of these communities.

**About Manganiyars**
- The Langas and Manganiyars are hereditary communities of Muslim musicians residing mostly in western Rajasthan's Jaisalmer and Barmer districts and in Pakistan's Tharparkar and Sanghar districts in Sindh.
- The music of the two marginalised communities, who were supported by wealthy landlords and merchants before Independence, forms a vital part of Thar desert's cultural landscape.
- The performances are in multiple languages and dialects including Marwari, Sindhi, Saraiki, Dhatti and Thareli.
- The romantic tales revolving around legendary lovers such as Umar-Marvi, Heer-Ranjha, Sohni-Mahiwal, Moomal-Rana and Sorath-Rao Khangar have traditionally captivated audiences.

**Instruments used**
- The Langa's main traditional instrument is the sindhi sarangi; Manganiyar's is the kamaicha.
- Both are bowed stringed instruments with skin membrane sounding boards and many sympathetic strings.
- Both Langas and Manganiyars sing and play the dholak (double-headed barrel drum), the kartal(wooded clappers), the morchan (jaws harp), and the ubiquitous harmonium.

## The Atlantic Niño's Role in India's Erratic Monsoon

**Why in the news?**

- Once again the deficiency in the monsoon prediction has made life difficult for the Indian Meteorological Department (IMD).

**Atlantic Niño:**

- The warming or cooling of the Atlantic Ocean which is also known as Atlantic Zonal Mode or Atlantic Nino influences the Kelvin waves in the atmosphere. These waves are nothing but eastward-moving disturbances in the troposphere. Every year from June to August, the warming of the eastern equatorial Atlantic region is observed. But this phenomenon hardly makes the headlines unlike its elder brother, the El Niño.
- In 2014, a study by Indian National Centre for Ocean Information Services (INCOIS) had tried to establish its impact on the Indian monsoon. The study had shown that there is a sharp decline in the number of low-pressure systems due to **Atlantic Niño**, leading to deficit monsoon.
- Despite the Atlantic and Indian Oceans are not directly connected in the tropics via the ocean, the Atlantic Niño affects the monsoon by producing atmospheric waves, which propagate into the Indian Ocean.
- These waves are eastward-moving disturbances in the troposphere. These disturbances then start moving towards the tropical Indian Ocean and either increase or decrease the atmospheric temperature. It results in establishing a temperature gradient between the Indian Ocean and subcontinent and thereby affecting the monsoon.

The above-mentioned **atmospheric waves** affect air temperatures over the Indian Ocean and influence the land-ocean thermal contrast as well as any low-pressure system. It is known to us that there is an inverse relationship between the Indian summer monsoon rainfall and the changes occurring in the Equatorial Atlantic Ocean. **To sum up, if there is a cold phase in the Atlantic, it can bring more rainfall to India and vice versa.**

## Cyclone Gulab

**Why in the news?**

- **Recently, Cyclone Gulab made landfall on the eastern coast of India.**

**About cyclone Gulab**

- This name gulab is proposed by Pakistan which means (pronounced as Gul-Aab) Rose.
- The Gulab cyclone is formed in the Bay of Bengal.
- In the 22 years of the 21st century, Cyclone Gulab is only the third Bay of Bengal cyclone to make landfall in September, during the active monsoon season.

## Climate Condition go in for 'double-dip'

**Why in the news?**

- **As per the update from NOAA's Climate Prediction Center, it appears a La Niña has developed for the second year in a row. The latest La Nina is expected to last through the early spring of 2022 (February).**

**About Double-dip**

- Two La Ninas happening one after the other (with a transition through ENSO neutral conditions in between) is not uncommon.
- It is usually referred to as a 'double-dip'. In 2020, La Nina developed during the month of August and then dissipated in April 2021 as ENSO-neutral conditions returned.

Previous La Ninas occurred during the winter of 2020-2021 and 2017-2018. An El Nino developed in 2018-2019.

## Mount Aso Volcano Erupt

**About the Volcano**

- It is the largest active volcano in Japan. The volcano stands on the **island of Kyushu**.
- Its peak is 1,592 meters above sea level. It has a fairly large caldera, having a circumference of about 120 km.
- Japan is among the world's most volcanically active countries. It is located on the Pacific "Ring of Fire" where a large proportion earthquakes and volcanic eruptions are recorded. Volcanoes are categorized into three main categories:

## Lukha River

**Why in the news?**
- Recently, the detoxing pilot *project of the Meghalaya state* has brought a *Lukha river* back from the dead. *Acid mine drainage, run-off from coal mines* led to contamination of the Lukha river.

**About the project**
- The *phytoremediation method* was used to detoxify the river, where algae were used to *remove major toxic contents from the water*.
- The pilot project was undertaken under the *District Mineral Fund* after reports of low pH levels affecting the aquatic life in the river.
- *pH is a measure of how acidic/basic water is*. The range goes from 0 to 14, with 7 being neutral. pHs of less than 7 indicate acidity, whereas a pH of greater than 7 indicates a base. The pH of water is a very important measurement concerning water quality.

**Lukha River**
- It is located in the *southern part of East Jaintia Hills of Meghalaya*.
- It receives water from the Lunar river (Wah Lunar) and small streams draining from the Narpuh Reserve Forest and the undulating hills of the area while flowing down.
- The river is mainly fed by *monsoon rain and flows in the southwest direction* and later takes a southern path after joining the Lunar river near the Khaddum village.
- The river *passes via the Sonapur village* and then into the Surma valley and ultimately ends up in the flood plains of Bangladesh.

## Air Quality Early Warning System (AQ-EWS)

**Why in the news?**
- Recently Air Quality Early Warning System (AQ-EWS) has been launched for Delhi to combat worsening air pollution. It was launched on the occasion of **Azadi ka Amrit Mahotsav** week organized by the Ministry of Earth Sciences.
- **About AQ-EWS**
- It is designed to **predict air pollution events** and give alerts to take necessary steps for its control.
- It has been developed under the aegis of Ministry of Earth Sciences, jointly by Indian Institute of Tropical Meteorology (IITM), Pune, India Meteorological Department, and National Centre for Medium-Range Weather Forecasting (NCMRWF).
- This system uses data of stubble burning incidents from **last 15 years** for predicting date and place of next burning. This data is then
- correlated with wind speed for predicting air pollution level for next 72 hours.
- It can also forecast the level of pollutants such as particulate matter (PM) 2.5, PM10 and dust which come from sources other than stubble burning.

**Significance of AQ-EWS**
- It will help in proactive giving early warning about any large-scale air pollution incidents occurring in different areas three-four days in advance.
- The timely information will help the authorities to make better preparations to reduce the adverse effects.
- Due to real time data related to air pollution, people can avoid stepping out of the house.

## Edayur Chilli and Kuttiattoor Mango of Kerala receives the GI Tag

**Why in the news?**
- Edayur Chilli and Kuttiattoor Mango are the latest to receive the Geographical Indication status from Kerala.
- About Edayur Chilli and Kuttiattoor Mango

**Edayur Chilli**
- Edayur chilli is a local cultivar of Edayur, Athavanad, Marakkara, Irimbiliyam, Kalpakanchery and Valanchery panchayats in Valanchery block and Moorkanad and Kuruva panchayats in Angadippuram block of Malappuram district.
- It has been cultivated in the area for at least 150 years.

- Large quantity of Edayur chilli has been sold to nearby markets for making "Kondattom" (sun-dried-curd-chillies).
- Edayur chilli is a unique cultivar of this area with very low pungency.
- The distinctiveness can be attributed to its genetic makeup, the specific environmental and soil conditions of the area and the traditional methods of cultivation.

**Kuttiattoor Mango**
- Kuttiattoor mango is a popular and tasty traditional mango cultivar of Kuttiattoor and the nearby gram panchayats of Kannur district.
- This mango has maximum spread in Kuttiattoor panchayath.
- It will not be an exaggeration to call Kuttiattoor as the 'mango village' of Kannur. Even though this cultivar is most popularly known as Kuttiattoor mango, it is also known as 'Nambiar manga', 'Kannapuram manga', 'Kunjimangalam manga' and 'Vadakkumbhagam manga' in small pockets of Kannur district.
- This mango is famous for its appealing orange-yellow colour in addition to its excellent taste and flavour.
- The distinctiveness of Kuttiattoor mango is aided by the combination of specific environmental conditions of the area of its cultivation and varietal characters.

## State of Climate Services Report 2021

**Why in the news?**
- The World Meteorological Organization (WMO) releases a new 2021 State of the Climate Services report for 2021.

**About the report**
- In 2018, an estimated 3.6 million people worldwide had less than one month of water a year, expected to exceed five billion by 2050.
- Rising temperatures are causing global and regional rainfall changes, leading to changes in rainfall patterns and agricultural seasons, which have a significant impact on food security and human health and well-being.
- Water-related disasters: Water-related disasters have increased dramatically since 2000
  - Flood-related disasters have increased by 134 percent over the past two decades.
- Terrestrial water storage (TWS): TWS decreased by 1 cm per year for 20 years (2002- 2021).
  - The biggest losses have occurred in Antarctica and Greenland.
- Over the past year, heavy rains across the continent caused severe flooding in Japan, China, Indonesia, Nepal, Pakistan and India. Millions were displaced and hundreds were killed.

**Scenario in India**
- India has recorded the highest losses in groundwater storage if the loss of water storage in Antarctica and Greenland is not included.
  - According to the report, India has the highest loss rate for TWS.
  - The northern part of India has suffered the highest losses in the country.
- The average annual water supply was reduced to 1,545 cubic meters in 2011, from 1,816 cubic meters in 2001.
  - It is expected to drop further to 1,367 cubic meters by 2031.
- Five basins of 21 rivers are 'water shortages' (water supply per person less than 1,000 cubic meters) and three 'water pressures' (water supply per person below 1,700 cubic meters).

**About WMO**
- It is an intergovernmental organisation
- 191 members
- Established in 1950
- It originated from the International Meteorological Organization (IMO), which was founded in 1873.
- WMO is the specialised agency of the UN for meteorology (weather and climate), operational hydrology and related geophysical sciences
- HQ : Geneva, Switzerland
- India is a member of WMO
- Its mandate covers weather, climate and water resources.
- It is dedicated to international cooperation and coordination on state and behaviour of Earth's atmosphere, its interaction with land and oceans, the weather and climate and distribution of water resources.

## A Clean, Healthy and Sustainable Environment is a 'Universal Right'

**Why in the news?**
- The UN Human Rights Council (UNHRC) has recognized access to a clean and healthy environment as a 'fundamental right' in Geneva, Switzerland.

**About 'right to clean environment'**
- A clean, healthy, and sustainable environment was recently recognised as a Universal Human Right by the United Nations Human Rights Council (UNHRC).
- If universally recognised, the right will be the first of its kind in more than 70 years since the United Nations General Assembly established the Universal Declaration of Human Rights (UDHR) in 1948.

- The Universal Declaration of Human Rights (UDHR) lists 30 civil and political rights, such as the right to life, liberty, free speech, and privacy, as well as economic, social, and cultural rights, such as the right to social security, health, and education etc.

## Fundamental Environmental Principles

- Intergenerational Equity: It asserts that because every generation shares Earth, its resources should be managed judiciously and for the common good of everyone.
- The Polluter Pays Principle asserts that the polluter should pay for any damage to the environment.
- The Precautionary principle asserts that, even in the absence of scientific evidence, steps must be taken to predict and prevent environmental degradation's causes. It is the state's social responsibility to safeguard the people from every possible danger.
- The public trust doctrine holds that resources such as water, air, sea, and forest are so important to the broad public that making them private property would be unjustified. It imposes an obligation on the government to safeguard such resources for the benefit of all citizens and to prohibit commercial use of them.
- The principle of sustainable development holds that the government should strive for a balance between development and the environment.

Constitutional framework and environment
- In India, the right to life (Article 21) has been used in a variety of ways. It involves, among other things, the right to continue to exist as a species, the right to life with dignity, and the right to a livelihood.
- 'No person should be deprived of his life or personal liberty except according to procedures established by law,' says Article 21 of the Indian Constitution.
- Furthermore, the Constitutional (Forty-second Amendment) Act, 1976contained two major sections, namely Article 48-A and 51A (g), making the Indian Constitution the first in the world to grant environmental protection constitutional significance.
- Article 48-A: The state shall make every effort to maintain and improve the environment, as well as the country's forests and wildlife.
- Article 51A(g): Every citizen has a responsibility to protect and preserve the environment.

**Various India's Environmental Protection Laws**
- Wildlife (Protection) Act,1972
- Water (Prevention and Control of Pollution) Act of 1974.
- The Forest (Conservation) Act,1989
- The Air (Prevention and Control of Pollution) Act,1981
- Environment (Protection) Act,1986
- The National Green Tribunal Act,2010

## New Cicada Varieties: Nagaland — Environment

### Why in the news?
- Recently, a new species of cicada (Platyomia kohimaensis) was discovered in Naga Hills, Nagaland.

### About cicada species
- Cicadas are hemipteran insects known for their loud, complex and species-specific acoustic signals or songs.
  - Hemipteran insects, also called true bugs, have mouthparts used for piercing and sucking and have two pairs of wings.
- The new species of cicada belong to the Platylomia radha group described in the Naga Hills east of the Himalayas.
- These species have been found near the village of Mitelphe in the Kohima region.
- It is a dusk singing, large-sized cicada that calls for a short window during the evening twilight hours.
- It timbalises in the form of a continuous and regular cackling.
  - Timbal is a membrane that produces sound for various insects.

### Habitat
- Most cicadas are canopy dwellers and are found in natural forests with large trees.
- The typical variety of cicadas in India and Bangladesh is ranked high in the world, followed by China.

### Threat
- Large-scale clearing of natural forest land into human settlement and agricultural fields, along with burning of forests is behind the shrinking distribution of Cicada.
- Considered as a delicacy and fetching at a good price, its uncontrollable photography and killing during its massive emergence poses a serious threat to its survival.

## E-WASTE Day                                                                   Environment

### Why in the news ?
- Recently, International E-Waste Day has been observed on October 14 and it has been observed every year since 2018.

### About E-Waste
- Waste electronic and electrical equipment (WEEE), a Brussels-based non-profit gave some shocking statistics about the rising tide of e-waste.
- This year's WEEE will total about 57.4 million tonnes (MT). This will be greater than the weight of the Great Wall of China, Earth's heaviest artificial object.
- Last year's Global E-waste Monitor reported that 53.6 MT of WEEE were generated in 2019. That represented a 21 per cent jump in the five years since 2014 (with e-waste predicted to reach 74 MT by 2030).

### About E-waste management
- E-Waste is short for Electronic-Waste and the term is used to describe old, end-of-life or discarded electronic appliances. It includes their components, consumables, parts and spares.
- It is categorised into 21 types under two broad categories:
    - Information technology and communication equipment.
    - Consumer electrical and electronics.
- Laws to manage e-waste have been in place in India since 2011, mandating that only authorised dismantlers and recyclers collect e-waste. E-waste (Management) Rules, 2016 was enacted in 2017.
- India's first e-waste clinic for segregating, processing and disposal of waste from household and commercial units has been be set-up in Bhopal, Madhya Pradesh.

### E-waste  Threat
- Out of the 44 Million tonnes (Mt) of e-waste, only 20 % of total global e-waste was collected and recycled sustainably, there is also environmental and health hazard as e-waste contains over 1,000 harmful substances, including lead, mercury, nickel, brominated flame retardants and polycyclic aromatic hydrocarbons (PAHs).Mercury for example damages the human brain and or coordination system.
- E-waste is particularly hazardous as the extraction and recycling of e-waste is largely manually done and the sector is majorly dependent on informal workforce especially in developing or middle income countries. More than 18 million children and adolescents are actively engaged in the informal industrial sector, of which waste processing is a sub-sector, exposing themselves to toxic e-waste risk.

### E-waste Generation in India:
- Asia generated the greatest volume i.e. 24.9 million tonnes (Mt) of e-waste in 2019 with China and India being the two largest contributors ranking first and third globally. India alone generated 3 Mt of e-waste in 2019 and about 95 per cent of India's e-waste is recycled in the informal sector and in a crude manner.
- In 2018, the Ministry of Environment had told the tribunal that 95% of e-waste in India is recycled by the informal sector and scrap dealers unscientifically dispose of it by burning or dissolving it in acids.

### Challenges associated with  managing e- waste in India
- The producers/manufacturers do not have adequate information on their website regarding e waste management.

- Customer care representatives do not have inkling about any take back or recycling programme and even if they have set up collection centres, they are simply not enough for a geographically vast country like India.
- India being a vast country, setting up collection mechanism is a big challenge. If any of the brands try individually to reach out to all corners of the country, it will economically not be sustainable or feasible.
- Improper enforcement of the existing laws is another hurdle.

### Government efforts in this regard
- NITI Aayog India's public policy think tank has put prominent emphasis on e-waste among 11 end- of-life products, recyclable materials, wastes that continue to pose considerable challenges.
- They have formed 11 committees to be led by the concerned line ministries and comprising officials from MoEFCC and NITI Aayog, domain experts, academics and industry representatives.
- Greens cape Eco Management is one such company that has been involved in NITI Aayog's Committee for E-Waste Management Rules and Regulation. They provide end of Life IT asset solutions ranging from collection and disposal to reintegration solutions including re-use, de-manufacturing, brand security and e-waste recycling.
- The organization actively pursues projects and initiatives that benefit the e-waste industry and the communities that serve the environment.
- As of now they're ongoing projects over 427 locations across India. Currently they have collaborated with partners in all parts of India, Singapore and Australia.

### E-Waste Management Rules, 2016
- The Ministry of Environment, Forest and Climate Change notified the E-Waste Management Rules, 2016 in supersession of the E-waste (Management & Handling) Rules, 2011.
- Over 21 products (Schedule-I) were included under the purview of the rule. It included Compact Fluorescent Lamp (CFL) and other mercury containing lamps, as well as other such equipment.
- For the first time, the rules brought the producers under Extended Producer Responsibility (EPR), along with targets. Producers have been made responsible for the collection of E-waste and for its exchange.
- Various producers can have a separate Producer Responsibility Organisation (PRO) and ensure collection of E-waste, as well as its disposal in an environmentally sound manner.
- Deposit Refund Scheme has been introduced as an additional economic instrument wherein the producer charges an additional amount as a deposit at the time of sale of the electrical and electronic equipment and returns it to the consumer along with interest when the end- of-life electrical and electronic equipment is returned.
- The role of State Governments has been also introduced to ensure safety, health and skill development of the workers involved in dismantling and recycling operations.
- A provision of penalty for violation of rules has also been introduced.
- Urban Local Bodies (Municipal Committee/ Council/Corporation) have been assigned the duty to collect and channelize the orphan products to authorized dismantlers or recyclers.
- Allocation of proper space to existing and upcoming industrial units for e-waste dismantling and recycling.

## Kunming Declaration on Biodiversity Conservation — Environment

### Why in the news?
- The "Kunming Declaration" was adopted by more than 100 countries at the 15th annual COP Summit of the Parties to the United Nations Convention on Biological Diversity (UNCBD).

### About the declaration
- The adoption of this declaration will create the impetus for a new global environmental agreement.
- In a previous agreement, the Strategic Plan for Biodiversity 2011-2020, signed in Aichi, Japan, in 2010, governments agreed on 20 goals to try to reduce biodiversity loss and protect habitats by 2020.

### About Kunming Declaration
- It requires urgent and integrated action to address biodiversity concerns in all sectors of the global economy but important issues - such as savings in poor countries and commitment to chains of friendly biodiversity supply have been left to discuss over time.
- It is not an international agreement that is binding.

- It calls on the parties to play their part in protecting biodiversity in decision-making and recognizing the importance of conservation in protecting human health.
- The theme of the proclamation is Civilization: Building a Shared Future for Life on Earth.
- In recognition of this, nations are committed to supporting the development, adoption and implementation of a post-2020 operational plan, a capacity building program for the Cartagena Protocol on biosafety.
- The Protocol aims to protect biological diversity from the potential dangers of genetically modified organisms from modern biotechnology.
- As the declaration states the signatory states shall ensure that the policies, programs and programs of the epidemic return contribute to the conservation and sustainable use of biodiversity, to promote sustainable and inclusive development.

### Kunming Biodiversity Fund
- China has also promised to invest USD 233 million in a new biodiversity conservation fund for developing countries. The fund is called China's Kunming Biodiversity Fund.
- It is a step in the right direction. However, some countries are skeptical about the fund.
- Some countries have called the fund a "bucket drop" as China is the world's largest polluter.
- In addition, some wealthy country donors say a new conservation fund is not needed because the United Nations' Global Environment Facility is already helping developing countries finance green projects.

### Convention on Biological Diversity, 1992
- The Convention on Biological Diversity (CBD) came into force on 29 December 1993. It has three main objectives:
  - Biodiversity conservation.
  - Sustainable use of biodiversity components.
  - Equitable and equitable distribution of benefits from the use of genetic resources.
- The Convention was unveiled on June 5, 1992 at the Rio "Earth Summit".
- This agreement is a legally binding agreement approved by 180 countries.
- The CBD Secretariat is based in Montreal, Canada and operates under the auspices of the United Nations Environment Program.
- Areas of legal responsibility are biodiversity conservation, sustainable use of natural resources and equal sharing of benefits from their sustainable use.
- The conference came into effect in 1993. Many biological problems are being addressed, including the conservation of habitats, intellectual property rights, environmental safety and the rights of indigenous peoples.
- It has two supplementary agreements, the Cartagena Protocol and Nagoya Protocol.
  - **Cartagena Protocol:** It is an international treaty governing the movements of living modified organisms (LMOs) resulting from modern biotechnology from one country to another.
  - **Nagoya Protocol:** It deals with Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (ABS).

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**Convention on Biological Diversity (CBD)**
- It is a legally binding treaty that has been in place since 1993 with the goal of conserving biodiversity.
- The convention includes India as a party.

**Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES):**
- It equips public, private, and non-governmental organisations with the information and tools necessary for the coexistence of human advancement, economic development, and natural conservation.
- India is a participant in the convention.

**World Wildlife Fund for Nature (WWF):**
- It is a non-governmental organisation dedicated to the conservation, research, and restoration of the natural environment on a global scale.

**Global Biodiversity Assessment:**
- It is an independent, peer-reviewed scientific study of contemporary concerns, theories, and perspectives on the major facets of biodiversity.
- Man and the Biosphere Program:
- It was founded in 1970 and has since then undertaken programmes and activities focusing on nature's diversity and resources, human impact on biodiversity, and how biodiversity affects human activity.

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**Why in the news ?**

- Recently, a report from the World Meteorological Organization (WMO) stated that Africa's rare glaciers will disappear in the next two decades due to climate change.

**About the Report**

- The WMO made the findings in **The State of the Climate in Africa 2020 report.**
- It details how Africa is disproportionately vulnerable to the consequences of climate change.
- The report was done in collaboration with the African Union Commission, the Economic Commission for Africa (ECA) through the Africa Climate Policy Centre (ACPC), and other international and regional scientific organizations.

**Findings of the Report**

- Africa is the continent that contributes least to global warming yet it is going to suffer the most. While African countries contribute less than **4% of greenhouse gas emissions,** the report highlighted the major impact of climate change on 1.3 billion people on the continent.
- The last three glaciers in Africa are **Mount Kilimanjaro (Tanzania), Mount Kenya (Kenya),** and the **Ruwenzori Mountains (Uganda)** receding so fast that they can disappear within two decades.
- **In sub-Saharan Africa**, climate change could once again reduce domestic production by **3% by 2050.** The cost of adapting to climate change in Africa will rise to **$ 50 billion a year by 2050.**
- The Indian Ocean island nation of Madagascar is one where "famine-like conditions" are driven by climate change.
- **Parts of South Sudan** have experienced severe flooding in about 60 years.
- Further, **massive displacement, hunger, and increasing climate shocks such as droughts and flooding** are expected to increase in the future. This is a major factor in the warnings of disasters for millions of people in Africa.

## Plastic Waste Management & EPR Rules, 2021

**Environment**

**Why in the news ?**

- Recently, Plastic Waste Management (2$^{nd}$ Amendment) Rules, 2021was notified.

### Plastic Waste Management (1$^{st}$ Amendment) Rules, 2021

**Single-use plastic**

- Manufacture, import, stocking, distribution, sale and use of 12 single-use plastic , shall
- be prohibited with effect from the 1st July 2022 . The ban will not apply to commodities made of compostable plastic.

**Increase thickness of plastic bags**

- Polythene bags with thickness less than 50 microns were already banned. Government chalked out a phased manner of banning-single use carry bags.
- From September 30, polythene bags under 75 microns will not be allowed.
- From December 31 2022, polythene bags under 120 microns will be banned.
- This will also allow the reuse of plastic carry due to an increase in thickness.

**Plastic packaging waste**

- Not covered under the phase-out of identified single-use plastic items, shall be collected and managed in an environmentally sustainable way through Extended Producer Responsibility(EPR) of the Producer, importer and Brand owner (PIBO), as per Plastic Waste Management Rules, 2016.
- Guidelines for EPR have been given legal force through Plastic Waste Management 1$^{st}$ Amendment Rules, 2021

### Implementation

- Plastic Waste Management (1ˢᵗ Amendment) Rules, 2021 is to be implemented in three stages starting this year and culminating in mid-2022.
- States/UTs have been requested to constitute a Special Task Force for the elimination of single-use plastics and effective implementation of Plastic Waste Management Rules, 2016.
- National Level Taskforce has also been constituted for taking coordinated efforts to eliminate identified single-use plastic items and effective implementation of Plastic Waste Management Rules, 2016.
- 
- New Draft Rules for Extended Producer Responsibility (EPR)
- Environment Ministry has issued draft rules that mandate producers of plastic packaging material to collect all of their produce by 2024 and ensure that a minimum percentage of it be recycled as well as used in subsequent supply.
- It has also specified a system whereby makers and users of plastic packaging can collect certificates — called
- Extended Producer Responsibility (EPR) certificates — and trade in them.

## Toxic Firecrackers                                                          Environment

### Why in the news ?

- Supreme Court observed that six major fireworks manufacturers had violated orders requiring them not to use prohibited chemicals such as Barium salts and to label the firecrackers in compliance with the law.

### Issues with firecrackers

- Firecrackers use fuel and oxidisers to produce a combustion reaction, and the resulting explosion spreads the material in a superheated state.
- The metal salts in the explosive mix get 'excited' and emit light.
- Metals in the mix, which have a varying arrangement of electrons in shells outside their nucleus, produce different wavelengths of light in this reaction, generating spectacular colours.
- Barium compounds, for example, produce green light and Strontium and Lithium salts, red.
- But as many studies show, the burning of firecrackers is an unusual and peak source of pollution, made up of particles and gases.
- The Central Pollution Control Board conducted a study in Delhi in 2016, and found that the levels of Aluminium, Barium, Potassium, Sulphur, Iron and Strontium rose sharply on Deepavali night, from low to extremely high.
- This has resulted in litigation calling for a total ban on firecrackers, and court orders to restrict the type of chemicals used as well as their volume. Many crackers also violate legal limits on sound.

### Significance of green crackers

- The Central government says the Council of Scientific and Industrial Research, through its National Environmental Engineering Research Institute (CSIR-NEERI), Nagpur, has come out with firecrackers that have "reduced emission light and sound" and 30% less particulate matter using Potassium Nitrate as oxidant.
- These crackers are named Safe Water Releaser, which minimises Potassium Nitrate and Sulphur use, but matches the sound intensity of conventional crackers, Safe Minimal Aluminium , where Aluminium use is low and Safe Thermite Crackers with low Sulphur and Potassium Nitrate.
- These crackers are to be identified using unique QR codes to guide consumers.
- The Supreme Court had also previously ordered that the Petroleum and Explosives Safety Organisation should certify the composition of fireworks only after being assured that they were not made of banned chemicals.

### State of the industry

- The petitioners argue that out of about 2,000 manufacturers, only 120 had the capacity and inclination to work with the court to green the crackers.
- Firecrackers are not labelled with information on the person responsible for legal compliance, as ordered by the court.

### Types Of Green Crackers

- There are three types of green crackers available in India - SWAS, STAR and SAFAL.
- SWAS (Safe Water Releaser)
  - They will release water vapour in the air which will suppress the dust released
  - eliminates use of Potassium Nitrate (KNO3) and Sulphur (S).
- STAR (Safe Thermite Cracker)
  - Does not comprise potassium nitrate and sulphur
  - Reduce particulate matter including sulphur dioxide and nitrogen oxide by at least 30%
- SAFAL (Safe Minimal Aluminium)
  - Minimum usage of aluminium

## CSIR's Landslide and Flood Early Warning System | Environment

- **Why in the news?**
- CSIR-National Geophysical Research Institute (NGRI) has launched an 'Environmental Seismology' group to develop a 'Landslide and Flood Early Warning System' for the Himalayan region based on real-time monitoring with dense seismological networks, coupled with satellite data, numerical modelling and geomorphic analysis.

### About Early Warning System

- It will be based on real-time seismological network monitoring, as well as satellite data, numerical modelling, and geomorphic analysis.
- The broadband seismic network's main strength is that it allows for comprehensive spatiotemporal tracking of the whole disaster sequence utilising polarisation and back-tracing techniques.
- By providing information that allows people and communities to protect their lives and property, early warning systems assist in decreasing economic losses and the number of injuries or deaths caused by disasters.

## Proposed Amendments to Forest Conservation Act, 1980 | Environment

### Why in the news?

- Union Ministry of Environment, Forest and Climate Change has proposed several amendments to the Forest (Conservation) Act, 1980 (FCA), which may enable infrastructure projects to come up in the forest areas more easily.

### Aims of the amendment

- To facilitate private plantations for harvesting and exploration or extraction of oil and natural gas deep beneath forest land by drilling holes from outside the forest areas.

### Need of Amendment

- Considering any private area as forest would restrict the right of an individual to use his/her own land for any non-forestry activity. This has led to the tendency to keep most of the private lands devoid of vegetation even if there's scope for planting activities.

### Key Highlights of the Proposal

- Deemed forests listed by state governments up to 1996 will continue to be considered forest land.
- Land that was acquired by the Railways and the Road Ministries before 1980 (day on which FCA was passed) but on which forests came up, will no longer be considered forests. These lands would be exempted from seeking a forest clearance — if they put the land to the same use for which it was acquired.
- It proposes to exempt plantation of native species of palm and oil-bearing trees from the definition of "non- forest purpose".
- The forest land for strategic (border infrastructure) and security projects of national importance should be exempted from the need to obtain prior approval from the Central government. Doing this will allow states to permit diversion of forest land for strategic and security projects that are to be completed in a given time frame.
- New section 1A - Oil and Natural Gas Extraction: Facilitate new technologies such as Extended Reach Drilling (ERD) for extraction of oil and natural gas found deep beneath the forest land by drilling holes from outside the

forest areas. The use of such technology is quite environment-friendly and as such should be kept outside the purview of Act.
- New explanation added to Section 2: It states that "survey, reconnaissance, prospecting, exploration or investigation" for future activity in the forest will not be classified as a "non-forestry activity". This means such survey works would not require any prior permission from the government.
- Only exception is if the activity falls within a wildlife sanctuary, national park or tiger reserve.
- Removal of Clause: Section 2(iii) of the FCA requires the central government's approval before assigning forest lands on lease to any private person/corporation/organisation not owned or controlled by the central government. This clause has purportedly been deleted in the proposed amendment which means state governments can issue leases for the use of forest land without the Centre's prior approval.
- Building in Forests: To ease the grievances of the individuals whose land falls in state specific private forests act or within the purview of dictionary meaning of forest. The proposal allows them the right to construct structures for bonafide purposes including forest protection measures and residential units up to an area of 250 sq mtr as one time relaxation.

### Effects of the Proposal
- The proposed amendment purportedly seeks to reduce the scope of this judgment by limiting the applicability of the FCA to only such land that has been:
  - Declared or notified as forest under the Indian Forest Act, 1927
  - Recorded as forest land in the government record prior to 25 October 1980, with the exception of such land if its use has been changed from forest to non-forest purpose prior to 12 December 1996
  - Identified as "forest" by a state government expert committee up to one year from the date of the amendment.
  - It also puts in place stringent norms for forest conservation by increasing penal provisions for offenses and maintaining "pristine forests" where no non-forestry activity will be allowed under any circumstances.
  - The proposed amendment would "reduce the flow from foreign exchange for import of wood and wood derivatives by encouraging plantations and afforestation.

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**Forest (Conservation) Act, 1980**
- FCA is the principal legislation that regulates deforestation in the country.
- It prohibits felling of forests for any "non-forestry" use without prior clearance by the central government.
- The clearance process includes seeking consent from local forest rights-holders and from wildlife authorities.
- The Centre is empowered to reject such requests or allow them with legally binding conditions Supreme Court judgement in TN Godavarman Thirumulpad v/s Union of India & Others 1996.
- Before 1996, forest land was only that as was defined by 1927 Forest Act.
- But in the 1996 judgement, court included all areas in definition of forest which are recorded as 'forest' in any government record, irrespective of ownership, recognition and classification.
- To achieve the Nationally Determined Contribution (NDC), extensive plantations in all possible available lands outside the government forests was necessary.

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## Earth Guardian Award                                      Environment

### Why in the news?
**Parambikulam Tiger Conservation Foundation** has won the Earth Guardian Award for its Parambikulam Tiger Conservation Foundation has won the Earth Guardian Award for its efforts in supporting the conservation of tigers and biodiversity.
- The award was instituted by NatWest Group India (formerly RBS India) at the 11th edition of the NatWest Group Earth Heroes Awards.
- Parambikulam Tiger Conservation Foundation, located in the Western Ghats, is one of the premier tiger reserves of India and is endowed by nature in terms of species, habitat, and ecosystem diversity, characterised by functional human-ecological affinities.
- The wildlife sanctuary also considers the role that local communities play in conservation efforts to be vital.
- The Foundation's long-term vision is to facilitate and support the conservation of tigers and biodiversity through multi-stakeholder participation consistent with the national and State Policies, Acts, Rules and Legislations, and also as per approved Tiger Conservation Plan to support similar initiatives in adjoining landscapes.

**Parambikulam Tiger Reserve**
- Parambikulam Tiger Reserve, which also includes the erstwhile Parambikulam Wildlife Sanctuary, is located in Palakkad district of Kerala state, South India.
- The wildlife sanctuary was established in 1973.
- Tiger Reserve has been recognized as a UNESCO World Heritage Site for its immeasurable ecological value to the world.
- The Reserve supports diverse habitat types viz., evergreen forests, moist and dry deciduous forests and grasslands.
- Other unique habitats like montane grasslands and marshy grasslands (locally known as 'vayals') are extensively found.
- According to the 2010 census, Parambikulam and surrounding sanctuaries are home to 32-36 tigers. About 39 species of mammals, 16 species of amphibians, 61 species of reptiles, 47 species of fish, over 1000 species of insects and 124 species of butterflies have been reported from the region.

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# Climate Vulnerability Index (CVI)     Environment

### Why in the news?
- Recently, environmental think tank 'Energy, Environment and Water Council' has released the first of its kind district-level 'Climate Vulnerability Index'. It presents a climate vulnerability index (CVI) of states and union territories by mapping exposure, sensitivity, and adaptive capacity.

### Key Finding of this Report
- More than 80 % of India's population lives in districts highly vulnerable to extreme hydro-met disasters
- The southern zone of India is the most vulnerable to extreme climate events and their compounding impacts, followed by eastern, western, northern, north-eastern and central zones.
- 59 and 41 % of the total districts in the eastern and western zones respectively are highly vulnerable to extreme cyclone events.
- The states located in northeast are more vulnerable to floods, while the states in the southern and central parts are more vulnerable to extreme droughts.
- Five out of six zones in India, i.e., South, North, North-East, West and Central have a low adaptive capacity to extreme hydro-met disasters. However, the Eastern Zone has a medium-range adaptive capacity to extreme hydro met disasters.
- Assam, Andhra Pradesh, Maharashtra, Karnataka and Bihar are highly vulnerable to extreme climate events such as floods, droughts and cyclones.
- Unsustainable landscape, lack of infrastructure planning and human-induced microclimate change are the key drivers of this high vulnerability.

### Need for a Climate Vulnerability Index
- India is the seventh-most vulnerable country with respect to climate extremes according to the Germen watch finding 2020.
- Climate action needs to be scaled up both at the sub-national and district levels to mitigate the impact of extreme events.
- Three out of four districts in India are extreme event hotspots, with 40% of the districts exhibiting a swapping trend, i.e., traditionally flood-prone areas are witnessing more frequent and intense droughts and vice-versa.
- The IPCC states that every degree rise in temperature will lead to a 3% increase in precipitation, causing increased intensification of cyclones and floods.

### Why in the news?
- The Ministry of Textiles has approved continuation of Comprehensive Handicrafts Cluster Development Scheme (CHCDS) with a total outlay of ₹160 crore up to March 2026.

### Key-points
- **Presented by:** The program was launched by the Ministry of Textiles.
- **Fund allocation:** The CHCDS scheme has been approved for an amount of Rs 160 crore.
- *Aim:*
  - CHCDS schemes were set up to build a world-class infrastructure that would cater to the business needs of local artisans and SMEs to increase production and exports.
  - These collections were set up to assist professionals, adequate training, state-of-the- art technology, and the inclusion of human resource development. It is also coupled with market linkages and production diversification.

### Objective:
- To raise the living standards of millions of poor artisans located in far flung areas of the country as well as employment generation.
- To provide requisite support in terms of infrastructure, technology, product diversification, design development, marketing and promotion, social security and other components that are necessary for the sustainability of craftsmen/artisans engaged in the Handicrafts sector.
- To create more livelihood opportunities for people through interventions in the industry and to increase the income of professionals / professionals involved in the field.

### Significance of the Scheme
- This scheme can also help boost exports of textile handicrafts as the demand for such products from India is worldwide.
- These projects will focus on bringing together scattered professionals, building businesses at grassroots level and linking them with SMEs in the handicraft sector to ensure a quality economy.
- 10,000 artisans will be selected to improve everything under the program.

### Why in the news?
- On the occasion of World Teacher's Day, "State of the Education Report (SOER) -2021 of India-" No Teachers, No Class" has been released by UNESCO.

### About the findings of the report
- **Single-teacher schools in the country**: There are nearly 1.2 lakh single-teacher schools in the country, of which an overwhelming 89 per cent are in rural areas. States with a high percentage of single-teacher schools include Arunachal Pradesh (18.22 per cent), Goa (16.08 per cent), Telangana (15.71 per cent), Andhra Pradesh (14.4 per cent), Jharkhand (13.81 per cent), Uttarakhand (13.64 per cent),The gender ratio in professions is "overall balanced", with women teachers accounting for 50 per cent of the total.
- **Inter-state, urban-rural imbalances:**The proportion of women teachers in rural locations is less than that in urban locations. In rural areas, 28 per cent of primary school teachers are women versus 63 per cent in urban areas. However, early childhood education teachers are predominantly women, and 88 per cent of them are in rural areas. At the secondary school level, 24 per cent of teachers in rural areas are women, versus 53 per cent in urban locations."
- **Average salary:** Based on PLFS data, the researchers also calculated that the average salary of private school teachers in the country (primary and secondary) is Rs 13,564, with rural private school teachers earning less at Rs 11,584. Women teachers in rural private schools earn an average of Rs 8212 per month.
- **Pandemic impact:** The ongoing pandemic has drawn attention to the centrality of the profession and the importance of the quality of teaching. During this unprecedented health crisis, most teachers were found to have positive attitudes and beliefs about integrating technology in education, even though they perceived a lack of professional skills.

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## Fixing the Income Limit in EWS Category | Polity & Governance

**Why in the news?**

- **The Supreme Court questioned the Centre's rationale for fixing the income limit for inclusion in the Economically Weaker Sections category at Rs 8 lakh per year.**

### About EWS quota

- In 2019, the Central government had extended EWS reservation in education and jobs to poorer sections with an annual income of less than Rs 8 lakh.
- This is meant for sections of society not covered by any reservation.
- In the latest development, SC was hearing a group of petitions challenging the:
  - **27%** reservation for Other Backward Classes
  - **10%** reservation for the EWS category in all- India quota seats in post-graduate medical courses.
- From among the candidates who clear the National Eligibility Entrance Test, 15% seats in MBBS courses and 50% seats in MS and MD courses are filled through the all-India quota.
- The petitioners, who are NEET aspirants, also questioned whether an annual income of Rs 8 lakh was a valid criterion for being included in the EWS category.

### Questions posed by SC

- Have the government done any exercise?
- Have the government checked the GDP per capita for every State?'
- Whether the government, without application of mind, had simply decided to extend the 'creamy layer' cap of Rs 8 lakh for Other Backward Classes (OBC) to the EWS quota also.

### Centre's reply

- The Centre said fixing a limit of Rs 8 lakh annual income for the EWS category is a matter of policy based on the National Cost of Living Index.
- On the question of applicability of Rs 8 lakh everywhere in the country, the Centre replied that even within a state, there will be different parameters. For example
  - In Maharashtra, different parameters will be there for Gadchiroli and Mumbai
  - For UP, different parameters will be there for Ghaziabad, or Western UP or Behraich

### Constitutionality of EWS

- The law was challenged primarily on two grounds.
- **Violating the Basic Structure of the Constitution:** This argument stems from the view that the special protections guaranteed to socially disadvantaged groups is part of the Basic Structure and that the 103rd Amendment departs from this by promising special protections on the sole basis of economic status.
- **Violating the fundamental right to practise a trade/profession:** Another challenge has been made on behalf of private, unaided educational institutions. They have argued that their fundamental right to practise a trade/profession is violated when the state compels them to implement its reservation policy and admit students on any criteria other than merit.

### How the Act treats unequals equally?

- The income limit of Rs. Eight lakhs and the asset limits prescribed for determining economic backwardness are the same as the limits fixed for determining the 'creamy layer' for OBC.
- This essentially means that the 103rd Amendment practically removes the difference between the OBC-NCL and the "EWS other than SC, ST and OBC-NCL".

## Lok Adalat has no Jurisdiction to decide a matter on Merits: Supreme Court

**Why in the news?**

- The Supreme Court noted that Lok Adalat has no jurisdiction over the matter once it has been determined that a compromise or settlement cannot be reached between the parties.

### *About Lok Adalats*

- Lok Adalat is one of the alternative dispute redressal mechanisms. Simply put, it is one way to resolve differences.
- It is a forum where disputes/cases pending in a court of law or pre-trial stage are resolved peacefully.
- Lok Adalats has been granted legal status under the **Legal Services Act, 1987.**
- Under the said Act, the award (decision) made by Lok Adalats is deemed to be a decision of a public court and is final and binding on all parties and there is no appeal against that award before any court of law.

### *What types of cases have been handled in Lok Adalats?*

- Mutation of land cases
- Compoundable criminal offences
- Family disputes
- Encroachment on forest lands
- Land acquisition disputes
- Motor accident claim
- Cases which are not sub-judice

### Key-points highlighted by SC

- The Supreme Court stated that the provisions of the Legal Services Authorities Act, 1987 make it clear that the power of Lok Adalat will be to clarify and reach an agreement or settle between the parties to a dispute.
- It said that if the payment or agreement failed, Lok Adalat should return the case to the court where the indictment was found.

## National Green Tribunal

**Why in the news?**

- In a latest development, Supreme Court declared the National Green Tribunal's (NGT) position as a "unique" forum endowed with suo motu (on its own motion) powers to take up environmental issues across the country.

### About National Green National Council

- It is a special body established under the **National Green Tribunal Act (2010).**
- **Aim:** To effectively and expeditiously deal with cases related to environmental protection and conservation of forests and other natural resources.
- NGT Act provides for special jurisdiction in court to deal with disputes arising under a set of **seven rules (mentioned in Schedule I of the Act) -**
  - Water Act
  - Wild Life (Protection) Act 1972
  - Forest (Conservation) Act 1980
  - Public Liability Insurance Act 1991
  - Biological Diversity Act 2002
  - National Green Tribunal Act 2010
- NGT has five residences, New Delhi is the principal place of sitting.
- Bhopal, Pune, Kolkata and Chennai are four others.

### *Composition*

- The Tribunal is headed by **the Chairperson** who sits in the Principal Bench and has at least ten but **not more than twenty judicial members** and at least ten **but not more than twenty expert members.**
- NGT is authorized to file a dismissal of applications or complaints within six months of filing the same.
- The decisions of the Tribunal are binding.
- The Tribunal has the power to review its decisions. If this fails, the decision may be challenged in the High Court within 90 days.

### Special environmental court
- With the establishment of the NGT, **India became the third country** in the world to establish a special environmental court, only after **Australia and New Zealand,** with the first developing country to do so.

### Key-Highlights of the Judgment
- **Not Limit to role reduction:** The Tribunal must play equally important roles for prevention, recreational or natural remediation.
  - The functional capacity of the NGT is intended to leverage wide powers to do full justice in its environmental mandate.
  - **Article 21** rights cannot stand on a small translation campus.
  - Article 21 of the Constitution protects the right to life and personal freedom.
- **Multidisciplinary Role:** NGT, as a forum of recommendation, competent, and
- specialized, to address all environmental issues such as the original and as an appeal authority.
- **International Commitment:** NGT contains an international obligation that India owes to the environment.
- NGT has been recognized as one of the **most progressive tribunals** in the world.
  - This jurisprudential leap has allowed India to enter a rather exclusive group of nations which have set up such institutions with broad powers.

## PM 60-Point Action Plan | Polity & Governance

### Why in the news?
- **The centre has prepared a comprehensive 60-point action plan following the Prime Minister's meeting with secretaries of all departments and ministries.**

### Details of Action Plan
**Using IT and Technology for Governance:**
- The **Ministry of Electronics and Information Technology** has various concrete ideas, ranging from expediting scholarship disbursement to bridging the **digital divide for impoverished students by developing indigenous tablets and laptops.**
- By 2023, all land records will be digitised and stored in a central database known as **'Matribhumi.'** Integration with the e-Courts system will bring transparency to title and possession issues.
- Through technology, **citizenship might be connected to birth certificates and mainstreamed.**

### Improving the Business Environment:
- It involves **eliminating certain permissions entirely**, lowering the cost of starting a firm in 10 industries to match that of Vietnam and Indonesia, automatic clearance notification, and single-point access to all government services.
- States are rewarded for timely land purchase and forest clearances, and there is a single comprehensive **Environment Management Act** that encompasses all of the sector's rules.
- Mentoring platform for **start-ups and emerging industry skilling programmes.**
- Increasing the country's GDP **(Gross Domestic Product)** through using **Geographic Information System (GIS) mapping for decision-making.**
- While negotiating trade agreements, pushing for jobs.

### Civil Service Improvements:
- **Capacity building** (**Mission Karamyogi**) entails training of officers in many sectors of infrastructure in both the Centre and the states, as well as the infusion of expertise and exposure to cutting-edge technology for higher civil services.
- Performance-based working, clear and specific targets for ministries and departments, just as they are for public sector undertakings, institutional mechanisms for addressing issues of states with limited resources, and department restructuring every ten years through **Government Process Re-engineering (GPR).**
- **GPR** is used to solve the organization's or customers' 'issues' or 'needs,' with the goal of improving the overall quality of services.
- More **Chief Information Officers (CIOs) and Chief Technology Officers (CTOs)** are to be appointed because data is not being used effectively. Every ministry should have access to all government data.

### Other agendas
- **Eradication of poverty:** NITI Aayog must target the eradication of poverty in the next five years.
- **Prevent formation of slums:** Ministry of Housing and Urban Affairs must plan for the residential facilities for people engaged in construction to prevent the formation of slums.

- **Use of Aadhaar for bringing together beneficiary oriented schemes:** It will not only help in scrutinising the penetration of the concerned welfare scheme but will also save government efforts from getting duplicated.
- **Promotion of "Family database design":** It has been developed by the ministry of social justice and empowerment that **"maybe promoted like Aadhaar."**
- The action plan for the Ministry of External Affairs talks about **Institutionalising inter-ministerial groups** on the **"Neighbourhood First Policy".**

## Global Hunger Index                                                          Polity & Governance

### Why in the news?
- India has slipped to 101ˢᵗ position in the Global Hunger Index (GHI) 2021 of 116 countries, from its 2020 position of 94ᵗʰ.

### About Global Hunger Index
- The **Global Hunger Index** aims to track hunger at the world, regional, and country-level. It is an annual report (peer-reviewed) published by **Concern Worldwide of Ireland and Welthungerhilfe (a German non-profit organization).**
- It was **first produced in 2006.**
- High-income countries are not included in the GHI.
- **Calculation:** The **GHI scores** are calculated each year to assess progress and setbacks in combating hunger. It is calculated on the basis of **four indicators:**
  - **Undernourishment:** Share of the population with **insufficient caloric intake.**
  - **Child Wasting:** Share of children under age five who have **low weight for their height,** reflecting acute undernutrition.
  - **Child Stunting:** Share of children under age five who have **low height for their age,** reflecting chronic undernutrition.
  - **Child Mortality:** The mortality rate of children **under the age of five.**
- **Scoring:**
  - Based on the values of the four indicators, the GHI determines hunger on a **100-point scale** where **0** is the **best possible score** (no hunger) and 100 is the worst.
  - Each country's GHI score is **classified by severity,** from low to extremely alarming.

### Reasons behind Prevailing hunger
- **Small and marginal land holding:** The agriculture output from small and marginal holdings are either stagnant or declining due to reasons such as reduced soil fertility, fragmented lands or fluctuating market price of farm produce. Almost 50 million households in India are dependent on these small and marginal holdings.
- **Lesser production for self-consumption:** Though the country has surplus food, most small and marginal farming households do not produce enough food grains for their year-round consumption.
- **Income on decline:** Relative income of one section of people has been on the decline. This has adverse effects on their capacity to buy adequate food, especially when food prices have been on the rise.
- **Less remunerative work:** The kind of work a section of people have been doing are less remunerative or there is less opportunity to get remunerative works.
- **Poor functioning of PDS**: The public distribution system (PDS) of the state is not functioning well or is not accessible to everyone.

### India score in Global Hunger Index 2021
- India ranks 101st out of 116 countries in the GHI 2021 rankings. With a score of 27.5, India has a level of hunger that is 'serious'.
- India has slipped 7 positions from its 2020 rank of 94.
- India is ranked behind most of its neighbouring countries. Their ranks are given below:
  - Pakistan – 92
  - Sri Lanka – 65
  - Nepal – 76
  - Bangladesh – 76
- There are only 15 countries that are ranked below India in the 2021 index.
- In the index, eighteen countries such as China, Brazil and Kuwait shared the top rank. They got a GHI score of less than five.
- According to the latest data, India has the highest rate of child wasting among all the countries in the index.
- However, India has shown improvement in other indicators such as the under-5 mortality rate, prevalence of stunting among children and prevalence of undernourishment owing to inadequate food.

### Global Hunger Index – India's rank
- In year 2021 GHI-101 out of 116
- In year 2020 GHI-94 out of 107
- In year 2019 GHI-102 out of 117
- In year 2018 GHI-103 out of 119

### Dealing with hunger
- **Multi-pronged strategy:** A multi-pronged approach is needed to deal with the crisis.
- **Renewed focus on small and marginal holdings**: More crops have to be grown, especially by small and marginal farmers with support from the Union government.
- **Focus on food security of the vulnerable section:** The government may create provisions to supply cooked nutritious food to the vulnerable section of the society.
- **Boost to employment schemes:** Rural employment schemes such as MGNREGA should be given a boost to increase employment and wages.
- **Streamlining and universalizing PDS:** Access to food grains under the PDS needs to be streamlined by simplifying technical processes and reducing Adhaar-related glitches.
- **One Nation One Ration card scheme:** The Union government must also ensure that the 'One Nation One Ration card' scheme, if brought into effect, is operationalised through proper preparations.

### Government initiative to tackle hunger
- Eat Right India Movement
- POSHAN Abhiyan
- POSHAN 2.0
- Pradhan Mantri Matru Vandana Yojana
- National Food Security Act, 2013
- Mission Indradhanush
- Integrated Child Development Services (ICDS) Scheme

**Food Fortification:** Food Fortification or Food Enrichment is the addition of key vitamins and minerals such as iron, iodine, zinc, Vitamin A & D to staple foods such as rice, milk and salt to improve their nutritional content.

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**Constitutional Provisions and Food Security**
- The 'right to food' or in general the economic, social, and cultural rights are defined in **Part IV** of the Constitution as **Directive Principles of State Policy.**
- The Right to Food in Indian Constitution is **not recognized as a "Fundamental Right"**
- **Article 21** and **47** of the constitution obliges the Government of India to take appropriate measures to ensure a dignified life with adequate food for all citizens.
- **Article 47:** Article 47 of the Indian Constitution provides that it is the "duty of the State to raise the level of nutrition and the standard of living and to improve public health".
- **Article 21:** Protection of life and personal liberty – No person shall be deprived of his life or personal liberty.

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## Registration of Births and Deaths Act, 1969      Polity & Governance

### Why in the news?
- Centre has **proposed** amendments to **Registration of Births and Deaths Act**, 1969 law that will enable it to "maintain the database of registered birth and deaths at the national level". Presently, the registration of births and deaths is done by the **local registrar appointed by States**. Registration of Births and Deaths in India is **mandatory** and is done as per the place of occurrence of the event.

### About the Proposed Amendments
- Chief Registrar (appointed by the States) would maintain a unified database at the State level and integrate it with the data at the "national level," maintained by the Registrar General of India (RGI). The amendments will imply that the Centre will be a parallel repository of data.
- The appointment of "Special Sub-Registrars, in the event of disaster, with any or all of his powers and duties for on the spot registration of deaths and issuance of extract thereof, as may be prescribed."

## Significance

- The database can be used to update the National Population Register (Citizenship Act, 1955) and the electoral register, and Aadhaar, ration card, passport and driving licence databases.
- If the amendments are implemented, the Centre could use the data to update the National Population Register (NPR), first prepared in 2010 and revised through door-to-door enumeration in 2015. The NPR already has a database of 119 crore residents and under the Citizenship Rules, 2003, it is the first step towards the creation of the National Register of Citizens (NRC).

## NCRB report on Suicides | Polity & Governance

### Why in the news?

- **The Accidental Deaths and Suicides in India Report 2020 was recently released by the National Crime Records Bureau (NCRB).**

### About the report

- Suicide is classified into several categories
- The report classifies suicides into nine categories-housewives, daily wagers, people working in the farm sector, professionals/salaried persons, students, self-employed persons, retired persons, and others.
- Only in 2014, the NCRB began classifying daily wagersin its 'Accidental Deaths & Suicides' data.

### Suicides rate

- Suicides in India increased 10% from 2019 to 1,53,052 in the pandemic year of 2020 it wasan all-time high.
- Between 2014 and 2020, the number of daily wage earnerswho committed suicide doubled, followed by 'housewives,' self-employed people, farmers/cultivators, and retired people.
- Suicides among professionals/salaried peoplehave increased.
- The number of suicides among the unemployed increased somewhat in 2019 compared to the previous year.
- Accident-related deaths decreased in 2019 and are now at their lowest level since 2010.
- The proportion of students who commit suicide has been continuously increasing over the years, reaching its highest level since 1995.

### Statewise Evaluation

- Maharashtra continues to be the worst-affected state, with 4,006 suicides in the agricultural sector, including a 15% increase in farmworkerssuicides.
- Karnataka, Andhra Pradesh, and Madhya Pradesh are among the other states having a poor track record.

### Cause-wise Analysis

- The following are some of the suicide causes that account for at least a percentage of all suicide deaths:
- The most significant increases were in poverty and unemployment.
- Then there's drug or alcohol addiction, disease, and family issues.
- Although there has been a rise in student suicides, it is more likely that this is due to longer-term issues (such as incapacity to continue school) rather than tests.

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**Various initiatives to deal with Suicide**

- The Mental Healthcare Act of 2017 intends to provide mental healthcaretreatment to people who are mentally ill.
- KIRAN: The Ministry of Social Justice and Empowerment has inaugurated a toll-free helpline that is available 24/7for those suffering from anxiety, stress, depression, suicidal behaviour, and other mental health issues.
- The Ministry of Education's Manodarpan initiative is part of the Atmanirbhar Bharat Abhiyan. Its goal is to assist students, family members, & teachers with psychosocial support for their mental health and well-being during Covid-19.

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## MTP Rules Notified | Polity & Governance

### Why is in the news?

- Recently, the Delhi High Court has allowed the medical termination of pregnancy of a woman who had completed 22 weeks of gestation as the foetus was suffering from multiple abnormalities.

### Laws associated with abortions in India

- As per the Indian Penal Code, 1860 voluntarily terminating a pregnancy was considered a criminal offence.

- The Medical Termination of Pregnancy (MTP) Act 1971 in India stipulates a ceiling of 20 weeks for termination of pregnancy on certain grounds, beyond which abortion of a foetus is statutorily impermissible.
- The Medical Termination of Pregnancy (Amendment) Act, 2021 amended the Medical Termination of Pregnancy Act, 1971 (MTP Act) and follows the earlier MTP Bills of 2014, 2017 and 2018, all of which previously lapsed in Parliament.

## Key Provisions of the MTP (Amendment) Act 2021

- Extended length for termination of pregnancy: The Act increases the gestation period of women seeking abortion up from 20 weeks to 24 weeks.
- Cases of special categories of women: It allows abortion to be done on the advice of one doctor up to 20 weeks, and two doctors in the case of certain special categories of women between 20 and 24 weeks.
- The "special categories of women" include rape survivors, victims of incest, the differently-abled and minors.
- In case of the gestational period beyond 24 weeks, pregnancy may be terminated only in cases of substantial foetal abnormalities diagnosed by the Medical Board or if there is a threat to the life of the mother.
- Opinion of only one provider will be required up to 20 weeks of gestation and two providers for termination of pregnancy of 20-24 weeks of gestation.
- Failure of Contraceptive: It allows unmarried women also to terminate a pregnancy in case of failure of the contraceptive method or device.

The Medical Termination of Pregnancy (Amendment) Bill, 2021

**Salient features of amendment**

- Enhancing the upper gestation limit from 20 to 24 weeks for special categories of women
- Opinion of only one provider will be required up to 20 weeks of gestation & of two providers for termination of pregnancy of 20-24 weeks.
- Upper gestation limit not to apply in cases of substantial foetal abnormalities diagnosed by Medical Board.
- Name & other particulars of a woman whose pregnancy has been terminated shall not be revealed except to a person authorised in any law.
- Ground of failure of contraceptive extended to women & her partner.

- The ground of failure of contraceptives can now be used for abortion up to 20 weeks.
- Setup of Medical Boards: All state and union territory governments will constitute a Medical Board.
- The Board will decide if pregnancy may be terminated after 24 weeks due to substantial foetal abnormalities.
- Ensuring confidentiality/privacy of Pregnant Women: Name and other particulars of a woman whose pregnancy has been terminated shall not be disclosed other than to a person authorised in any law for the time being in force.
- Requirement of doctors: Opinion of only one doctor will be required up to 20 weeks of gestation and two doctors for termination of pregnancy of 20-24 weeks of gestation.

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- Under the new rules, **seven specific categories** will be eligible for termination of pregnancy up to 24 weeks:
  - **Survivors of sexual assault or rape or incest**
  - **Minors**
  - **Change of marital status during the ongoing pregnancy (widowhood and divorce)**
  - **Women with physical disabilities**
  - **Mentally ill women**
  - **Foetal malformation that has a substantial risk of being incompatible with life or if the child is born, he/ she may suffer from serious physical or mental abnormalities**
  - **Women with pregnancy in humanitarian settings or disaster or emergency situations**
1. Medical Board will decide if a pregnancy may be terminated **after 24 weeks** due to **substantial foetal abnormalities**. All state and UT's will constitute a Medical Board consisting of a gynaecologist, paediatrician, radiologist/sonologist, and other members notified by the state government.
2. New Rules Regarding Medical board
   - The medical boards are to either accept or reject the proposal for medical termination of pregnancy within three days of receiving the request.
   - The abortion procedure has to be done with five days of the board receiving the request for the same.

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## Significance of MTP (Amendment) Act 2021

- Despite a sustained government push over years, contraceptive use in India is not very popular. Data from the National Family Health Survey 4 show that just 47.8% of couples in the country use modern contraceptive methods and only 53% use any method at all.
- According to a 2018 study by the Guttmacher Institute, 50% of pregnancies in six of the larger Indian states
  - Assam, Bihar, Gujarat, Madhya Pradesh, Tamil Nadu and Uttar Pradesh — are unintended.
- Estimation of unintended pregnancies is important because many of them result in abortions and the availability of cheap and safe abortion services is one of the indicators of a robust health system.

- Several petitions have been filed in the Courts seeking permission for aborting pregnancies at a gestational age beyond the present permissible limit on grounds of foetal abnormalities or pregnancies due to sexual violence faced by women.
- Current changes are a step towards safety & well-being of women who will be benefited by comprehensive abortion care, under strict conditions, without compromising service & quality of safe abortion.
- The amendments will increase the ambit and access of women to safe abortion services and will ensure dignity, autonomy, confidentiality and justice for women who need to terminate pregnancy.

**Issues remain unaddressed**
- Formation of a state medical board raises additional concerns of their access, particularly to women from rural areas.
- The Act requires abortion to be performed only by doctors with specialisation in gynaecology or obstetrics. There is a 75% shortage of such doctors in community health centres in rural areas.
- National Health and Family Survey (2015-16): Only 53% of abortions are performed by a **registered medical doctor** and the balance are conducted by a nurse, auxiliary nurse midwife, family member, or self.
- No clarity regarding transgender persons whether they will be covered or not.

|  | MTP ACT 1971 | MTP Amendment ACT 2021 |
|---|---|---|
| Failure of contraceptive (Methods/Device) | Upto 20 weeks only by a married woman | Unmarried women also covered |
| Upto 12 weeks | Advice of 1 registered medical practitioner (RMP) | Advice of 1 RMP |
| 12 to 20 weeks | Advice of 2 RMP | Advice of 1 RMP |
| 20 to 24 weeks | Not allowed | 2 doctors for some categories of pregnant women |
| **More than 24 weeks** | Not allowed | **State Level Medical Board In Case Of Substantial Foetal Abnormality** |
| **Breach of confidentiality** | Fine upto 1000 Rs | Imprisonment up to a year, or fine, or both |
| **Any time** | 1 RMP, if immediately necessary to save pregnant woman's life, opinion formed in good faith. | |

**Why in the news?**

- Minister for Labour and Employment launched **DigiSaksham** - a digital skills programme to enhance the employability of youth by imparting digital skills that are required in an increasingly technology driven era. This joint initiative with Microsoft India is an extension of the Government's ongoing programs to support the youth from rural and semi-urban areas.

**About DigiSaksham**

- It will be implemented on ground by **Aga Khan Rural Support Programme India (AKRSP-I)**. AKRSP-I is a non-denominational, non-government development organization which works as a catalyst for betterment of rural communities by providing direct support to local communities.
- Free of cost training in digital skills, including basic skills as well as advance computing, will be provided to more than 3 lakh youths in the first year.
- The Jobseekers can access training through **National Career Service (NCS) Portal**. NCS Project is a Mission Mode Project for transformation of National Employment Service to provide a variety of employment related services like job matching, career counselling, vocational guidance, information on skill development courses, apprenticeship, internships etc.
- The initiative gives priority to the job-seekers of semi urban areas belonging to disadvantaged communities (socially and economically backward communities, marginalized communities), including those who have lost their jobs due to Covid-19 pandemic.
- Under DigiSaksham initiative, there will be basically 3 types of training
  - Self paced learning,
  - VILT mode training (Virtual Instructor led) and
  - ILT mode training (Instructor led) at the Model Career Centres (MCCs) and National Career Service Centres (NCSC) for SCs/STs
- Implementation - DigiSaksham will be implemented in the field by Aga Khan Rural Support Programme India (AKRSP-I).

**Benefits**

- It will equip youth with industry-recognized skills that
- increase access to employment opportunities and promote skills-based hiring.
- It will ensure equal opportunity and access to digital skills, which will facilitate long-term economic and social value creation for India.
- It will place the country on the path to inclusive economic recovery, and help to realize the vision of Digital India.

**Why in the news?**

- Senior Able Citizens for Re Employment in Dignity (SACRED) Portal will support India's elderly.

About the Portal

Aim: Devise ways to ensure Senior Citizens live healthy, happy, empowered, dignified & self-reliant life.

- Aim: The aim is to devise ways to ensure Senior Citizens live healthy, happy, empowered, dignified and self-reliant life
- Funding: Rs. 10 Cr would be provided for funding for the platform development along with maintenance grant of Rs. 2 Cr per year for 5 years
- LASI Report:More than 50% senior citizens are found active as per the LASI report 2020

**Scope of the Portal:**

- **One Platform:** An IT portal to bring the employment seeker, senior citizens and employment providers on one platform will be developed and maintained by an agency identified through a transparent process.
- **Job seeker Registration at portal:** An individual senior citizen will get himself registered on the portal with his relevant education, past experience, skills and the areas of interest.

- **Job provider registration:** Any job provider – individual / firm/ company/ partnership/ Voluntary Organisation etc. can also register on the portal. The job provider will specify the task involved and the number of senior citizens that are required to complete it.
- **Voluntary Organizations:**
  - They will help the senior citizens in applying for these jobs.
  - No user charges will be taken from any of the senior citizens by any Voluntary Organizations.
  - Therefore, the Employment Portal will serve not only the senior citizens seeking employment, but also the employers, the SHGs, the senior citizens gaining skills, and other agencies/individuals.
- **A facilitating platform:**
  - The Employment Exchange Portal will not be a guarantee for getting a job/ employment or selling of the products of the SHGs, or for any other activity.
  - It will act as an interactive platform where stakeholders meet each other virtually and decide on the course of action with mutual respect, consent and understanding.
- **Weighing experience and new recruitment:**
  - Any individual/ firm/ company/ agency will seek the services of the senior citizens in respect of those tasks where experience can naturally outweigh hiring new personnel and providing them training, etc.
  - Examples can be short term employment, contract for a project, teaching, counselling jobs.

### Modalities:
- Web portal will be developed through NIC.
- There will be adequate publicity both among elders and enterprises to enroll on the portal.

## Swachh Bharat Mission-Urban 2.0 & AMRUT 2.0      Social Issues

### Why in the news?
- Prime Minister launched Swachh Bharat Mission-Urban 2.0 and Atal Mission for Rejuvenation and Urban Transformation 2.0. Both of them will be implemented by the Ministry of Housing and Urban Affairs (MoHUA).

### About the Swachh Bharat Mission-Urban 2.0
- The mission would be implemented over five years — from 2021 to 2026. The focus of SBM-U 2.0 will be on sustaining the sanitation and solid waste management outcomes achieved and accelerate the momentum generated, thus taking Urban India to the next level of **'Swachhata'.** The aim of 'Swachh Bharat Mission-Urban 2.0' is to **"make the cities completely free of garbage"**.

### Key components of SBM 2.0
- Ensuring **complete access to sanitation facilities** to serve additional populations migrating from rural to urban areas in search of employment and better opportunities.
- Complete **liquid waste management** in cities with less than 1 lakh population to ensure that all wastewater is safely contained, collected, transported and treated.
- Under **Sustainable Solid Waste Management**, greater emphasis will be on source segregation.
- Special focus will be put on the well-being of sanitation and informal waste workers.
- Material Recovery Facilities, and waste processing facilities will be set up, with a focus on phasing out single-use plastic. Construction & demolition waste processing facilities will be set up.
- Mechanical sweepers deployed i**n National Clean Air Programme** cities and in cities with more than 5 lakh population.
- Remediation of all legacy dumpsites will also be done under the mission.

### Expected outcomes of SBM 2.0
- It is expected that under Swachh Bharat Mission-Urban 2.0, all statutory towns will become at least ODF+; and all cities with <1 lakh population ODF++.
- Systems and processes will be in place so that **all waste water is safely treated** and optimally reused and no untreated wastewater pollutes water bodies.
- Regarding Solid Waste Management, it is expected that all cities will achieve at least 3-star Garbage Free certification under SBM-U 2.0

### Why in the news?
- Union government has launched a scheme for 'Good Samaritan' under which anyone who saves life of a road accident victim by rushing them to a hospital within the "golden hour" will get cash reward of ₹5,000 along with certificate of appreciation. It will be implemented from 15ᵗʰ October.

### About the scheme
- It aims to motivate the general public to help the road accident victims in an emergency situation.
- Under the Scheme, anyone who saves the life of a fatal road accident victim by rushing them to a hospital within the "golden hour" will get a cash reward of 5,000.
- 'Golden hour' refers to the 1-hour time period following a traumatic injury during which there is the highest likelihood of preventing death by providing prompt medical care.
  - Each Good Samaritan would also receive a certificate of appreciation.
  - An individual could be awarded a maximum of five times in a year.
  - If more than one Good Samaritan saves the life of more than one victim, the amount of award would be 5,000 per victim saved, subject to a maximum of 5,000 per Good Samaritan.

### National Level Awards
- Besides award in each case, ministry would also be giving 10 national level awards for the "worthiest Good Samaritans".
- Most Worthy Good Samaritans will be selected from those who have been awarded during the entire year.
- They will be given an award of Rs 1,00,000 each.
- MoRTH will provide Rs 5 lakh of initial grant to the transport department of states and UTs for awarding the cash prize.

### Why in the news?
- On the Occasion of the World Teachers' Day, UNESCO launched its 2021 State of the Education Report (SOER) for India: "No Teacher, No Class"

### About State of the Education Report (SOER) for India
- It is the annual flagship report of UNESCO and it is based on extensive research.
- This third edition focused on the theme of teachers, teaching and teacher education, underscores that the work of teaching is complex.
- It is largely based on analysis of Periodic Labour Force Survey (PLFS) and the Unified District Information System for Education (UDISE) data.
- It attempts to provide an understanding of key aspects of the teaching profession, provides a profile of the 9.6 million teaching workforce, as well the challenges of their intricate teaching routine and their professional development.
- The report aims to serve as a reference for enhancing the implementation of the NEP and towards the realization of the SDG.4 target 4c on teachers.

### Key Highlights of the report
- Single-teacher schools in the country: There are nearly 1.2 lakh single-teacher schools in the country, of which an overwhelming 89 per cent are in rural areas.
  - States with a high percentage of single-teacher schools include Arunachal Pradesh (18.22 per cent), Goa (16.08 per cent), Telangana (15.71 per cent), Andhra Pradesh (14.4 per cent), Jharkhand (13.81 per cent), Uttarakhand (13.64 per cent),
- The gender ratio in professions is "overall balanced", with women teachers accounting for 50 per cent of the total.
  - However, there are inter-state, urban-rural imbalances.
  - The proportion of women teachers in rural locations is less than that in urban locations.

- In rural areas, 28 per cent of primary school teachers are women versus 63 per cent in urban areas.
- However, early childhood education teachers are predominantly women, and 88 per cent of them are in rural areas. At the secondary school level, 24 per cent of teachers in rural areas are women, versus 53 per cent in urban locations."
- **Average salary:** Based on PLFS data, the researchers also calculated that the average salary of private school teachers in the country (primary and secondary) is Rs 13,564, with rural private school teachers earning less at Rs 11,584. Women teachers in rural private schools earn an average of Rs 8212 per month.
- **Pandemic impact:** The ongoing pandemic has drawn attention to the centrality of the profession and the importance of the quality of teaching.
- During this unprecedented health crisis, most teachers were found to have positive attitudes and beliefs about integrating technology in education, even though they perceived a lack of professional skills.

## Recommendations
- Improve the terms of employment of teachers in both public and private schools
- Increase the number of teachers and improve working conditions in North-Eastern states, rural areas and 'aspirational districts
- Recognize teachers as frontline workers
- Increase the number of physical education, music, art, vocational education, early childhood and special education teachers.
- Value the professional autonomy of teachers
- Build teachers' career pathways
- Restructure pre-service professional development and strengthen curricular and pedagogical reform
- Provide teachers with meaningful ICT training
- Develop teaching governance through consultative processes, based on mutual accountability

## Global Food Security Index 2021                                              Social Issues

### Why in the news
- India is ranked at 71st position in Global Food Security (GFS) Index 2021 of 113 countries.

### About The Index
- It was designed and constructed by London-based Economist Impact and is sponsored by Corteva Agriscience.
- It measures the underlying drivers of food security, based on the factors of:

    **Affordability -> Availability -> Quality and safety -> Natural resources and resilience**
- It considers 58 unique food security indicators including income and economic inequality – calling attention to systemic gaps and actions needed to accelerate progress toward UN Sustainable Development Goal of Zero Hunger by 2030.
- It looks beyond hunger to identify the underlying factors affecting food insecurity around the world.

### For the 2021 Global Hunger Index (GHI), the four key indicators are:
- Undernourishment: the share of the population with insufficient caloric intake (data are from the UN Food and Agriculture Organization)
- Child stunting: the share of children under age five who have low height for their age (data are from UNICEF, the World Health Organization, the World Bank, and the Demographic and Health Surveys Program)
- Child wasting: the share of children under age five who have low weight for their height (data are from UNICEF, the World Health Organization, the World Bank, and the Demographic and Health Surveys Program)
- Child mortality: the mortality rate of children under age five (data are from the United Nations Inter-agency Group for Child Mortality Estimation)

### FINDINGS OF THE REPORTS (INDIA AND WORLD)
### Top ranking countries-
- Ireland, Australia, the UK, Finland, Switzerland, the Netherlands, Canada, Japan, France and the US shared the top rank with the overall GFS score in the range of 77.8 and 80 points on the index.

**Bottom five countries are-**
- Malawi(109th), Sudan(110), Mozambique(111), Yemen(112) and Burundi(113).

**India and its neighbours-**
- India held 71st position with an overall score of 57.2 points on the GFS Index 2021 of 113 countries, fared better than Pakistan (75th position), Sri Lanka (77th Position), Nepal (79th position) and Bangladesh (84th position).
- But the country is way behind China (34th position).
- However, Pakistan (with 52.6 points) scored better than India (50.2 points) in the category of food affordability and Sri Lanka was even better with 62.9 points in this category.
- In case of availability of food, quality and safety as well as protecting natural resources for food production, India scored better than Pakistan, Nepal, Bangladesh and Sri Lanka.
- However, over the past 10 years, India's incremental gains in overall food security score were lagging behind that of Pakistan, Nepal and Bangladesh.

| World Mental Health Day 2021 | Social Issues |
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**Why in the news?**
- World Mental Health Day is observed on 10 October each year, with the full aim of raising awareness on mental health issues and program support for programs related to mental health and well-being.

**About the Day**
- The **World Federation for Mental Health launched the World Mental Health Day**
- on **October 10, 1992.**
- **Objective:** To raise awareness of mental health issues around the world and to mobilize efforts in support of mental health.
- The **motto of the WHO World Health Day 2021 campaign** is "**Mental health care for all: let's make it reality**".
- The theme for World Mental Health Day 2021 is 'Mental Health in an Unequal World'.

**Data**
- 970 million people worldwide have a mental illness or substance abuse problem. (Data, 2018)
- Anxiety is the world's most common mental illness, affecting 284 million people. (Data, 2018)
- Globally, mental illness affects more women (11.9%) than men (9.3%). ( Data, 2018)

**India's scenario**
- With the current closure and radical lifestyle changes, a recent mental health survey of 43% of Indians is currently suffering from depression and is learning to deal with it.
- 26 percent of Indians suffer from mild depression, and 17 percent suffer from severe depression.
- It is about noting that 6% of Indians are very depressed.

**Government initiatives for mental health**
- National Mental Health Programme (NMHP), 1982
- Mental Health Care Act, 2017

## Why in the news?

- Recently, two significant documents relating to the Indian agriculture sector were released.The first is a consultation paper on the Indian Digital Ecosystem of Agriculture (IDEA) and second on Indian agriculture: Ripe for Disruption from a private organisation, Bain and Company.

## IDEA report

- The IDEA-consulting paper is based on the Task force and Working Group Report. It is constituted by the MoA & FW to design the blue print of "digital agriculture".

## Aim of the report

- The farmer and the improvement of farmer's livelihood which can be achieved through tight integration of agri-tech innovation and the agriculture industry ecosystem to farming and food systems. The principles of IDEA explicitly talk about openness of data, which means open to businesses and farmers, indicating the kind of integration it aims at. Value-added innovative services by agri-tech industries and start-ups are an integral part of the IDEA architecture.

## Bain report

- The Bain report is a data-based prediction on agri-business scenario-anchored to the agricultural set up and predicting its future trajectories in another 20 years. It includes targeting the production of alternative proteins, and food cell based ingredients/food and initiating ocean farming etc. The report has a 'today forward-future back approach' and it predicts a drastic investment opportunity development by 2025.The agriculture sector (currently worth $370 billion), is estimated to receive an additional $35 billion investment. The two enabling conditions for investment opportunities are:
- First, the changes in the regulatory framework especially recent changes in farm acts and Second, Digital Disruption.
- As per the report, there are benefits from the huge investments into the agri-ecosystem. It can help to achieve the target of doubling farmer's income in near future.
- The report has also demonstrated the business opportunity available in supply chains between farm to Agricultural Produce Market Committee (APMC) mandi and mandi to the customer, which can be realised with the support of digital disruption and the latest agriculture reforms.

## Challenges associated with these report

1. The IT industry has opposition to IDEA mainly due to the ethics of creating a Unique Farmer ID based on one's Aadhaar number and also the potential for data misuse.
2. These reports heavily rely on digital disruption to improve farmer's livelihoods, without discussing how much farmer's will be prepared to benefit from the newly emerging business environments.
3. The majority of small and marginal farmer's are not technology-savvy. They are not having practical knowledge of technology. Most of them are under-educated for capacity building.
4. The emission, energy, and other resource foot prints and sustainability issues around these techniques must be carefully studied to confirm the projected trajectory (which is not a part of the report).
5. These reports ignored the protest of farmers against the reforms without considering it as a barrier or risk factor resulting in a repealing of these new farm laws.

### Internet penetration in India

- India has over 1 billion mobile phone connections and over 500 million smartphone users.
- Backed by the lowest mobile data rates in the world, India is more than ready for digitisation.
- Rapid proliferation of mobile technologies in rural populations could let farmers in these areas to improve productivity based on decision made backed by better information grounded on Big Data.

### Data Revolution in India

- Data enabled digital tools offered by startups like Agribazaar, Crofarm and DeHaat are providing market access, price information.

- They are being used to buy and sell agricultural produce, therefore managing food supply and averting possible scarcity.
- Recent progress in Big Data and advanced analytics capabilities and agri-robotics such as aerial imagery, sensors, and sophisticated local weather forecasts can truly transform the agri- scape and thus holds promise for increasing global agricultural productivity over the next few decades.

**Application of big data in Agriculture**

1. Seed Selection – Big-data businesses can analyse varieties of seeds across numerous fields, soil types, and climates and select the best.
2. Development of new seed traits – Access to the plant genome with new ways to measure, map and drive information better products.
3. Crop disease – Similar to the way in which Google can identify flu outbreaks based on where web searches are originating, analysing crops across farms helps identify diseases that could ruin a potential harvest.
4.Irrigation – Precision agriculture aids farmers in tailored and effective water management, helping in production, improving economic efficiency and minimising waste and environmental impact.
5.Weather – Advanced analytics capabilities and agri-robotics such as aerial imagery, sensors help provide sophisticated local weather forecasts can help increasing global agricultural productivity over the next few decades.
6. Climate change –  Since, climate change and extreme weather events will demand proactive measures to adapt or develop resiliency, Big Data can bring in the right information to take informed decisions.
7.Food tracking – Use of sensors and analytics to prevent spoilage and food-borne illnesses.
8.Effect on supply chains – Seismic shifts in the supply chain of seed, crop inputs and food driven by the democratisation of technology and information
9. Food processing- They help in streamlining food processing value chains by finding the core determinants of process performance, and taking action to continually improve the accuracy, quality and yield of production. They also optimise production schedules based on supplier, customer, machine availability and cost constraints.
- Precision Farming: Big data takes advantage of information derived through precision farming in aggregate over many farms. The resulting analytics, insights and better decisions can then be deployed through precision farming techniques.
- Loss control:  In India, every year 21 million tons of wheat is lost, primarily due to scare cold-storage centres and refrigerated vehicles, poor transportation facilities and unreliable electricity supply. Big Data has the potential of systematisation of demand forecasting thus reducing such losses.
- Pricing: A trading platform for agricultural commodities can link small-scale producers to retailers and bulk purchasers via mobile phone.Messaging can help send up-to-date market prices via an app or SMS and connect farmers with buyers, offering collective bargaining opportunities for small and marginal farmers.

## PM Gati Shakti National Master Plan                                    Economy

**Why in the news?**
- Prime Minister Narendra Modi has launched the ambitious Rs 100 lakh crore Gati Shakti Master Plan to provide multi-modal connectivity to more than 1,200 industrial clusters.

**About Gati Shakti**
- The national master plan is aimed at
  - breaking inter-ministerial silos and integrating the planning and designing of projects with a common and holistic vision
  - enhance India's global competitiveness through next-generation infrastructure and seamless multi-modal connectivity
  - ensure seamless movement of goods and people
  - enhance the ease of living as well as the ease of doing business in the country
- It aims to lend more speed (Gati) and power (Shakti) to projects by connecting all concerned departments on one platform.

- Under the programme, a digital platform has also been created which will bring 16 ministries including rail and roadways together for integrated planning and coordinated implementation of infrastructure connectivity projects. The platform will provide high resolution satellite images, infrastructure, utilities, administrative boundaries, land and logistics.

### Implementation of the initiative
- There will be an Integrated Multimodal Network Planning Group (NPG) which will be entrusted with unified planning and integration of proposals as well as connectivity projects which are not part of the current master plan with an estimated cost of over Rs 500 crore.
- The National Networking Group will consist of experts or officials from all the stakeholder departments.
- The Department of Promotion of Industry and Internal Trade will be the nodal agency.

### Targets to be achieved under Gati Shakti
- 11 industrial corridors and two new defence corridors in Tamil Nadu and Uttar Pradesh
- 4G connectivity in all villages
- Increasing renewable energy capacity to 225 GW from 87.7 GW
- Expanding the national highway network to 2 lakh km
- Increasing length of transmission network to 4,54,200 circuit km
- Creation of 220 new airports, heliports and water aerodromes
- Increasing cargo handling capacity of railways to 1,600 million tons from 1210 million tons
- Adding 17,000 km to gas pipeline network

### Benefits of the Gati Shakti plan
- The plan aims to build Next Generation Infrastructure which will improve Ease of Living as well as Ease of Doing Business.
- It will facilitate the last mile connectivity of infrastructure and also reduce travel time for people.
- It will provide the public and business community information regarding the upcoming connectivity projects, other business hubs, industrial areas and surrounding environment
- The plan enables the investors to plan their businesses at suitable locations leading to enhanced synergies.
- It will create multiple employment opportunities and give a boost to the economy.
- It will improve the efficiency of port operations and cargo handling capacity and cut the vessel turnaround time.

## Kushinagar International Airport | Economy

### Why in the news?
- Recently, the Prime Minister of India inaugurated the Kushinagar International Airport.

### About the Kushinagar Airport
- The inauguration of Kushinagar International airport is set to be a landmark in India-Sri Lanka relations.
- Expected outcomes:
  - It will facilitate pilgrims from across different parts of the world by providing seamless connectivity to various Buddhist sites in the region.
    - The airport is expected to provide seamless connectivity to tourists from Sri Lanka, Japan, Taiwan, South Korea, China, Thailand, Vietnam, Singapore, etc.
  - It will have a multiplier effect on the hospitality industry by promoting hotel business, tourism agencies, restaurants etc.
  - It will create employment for local people by opening an immense amount of opportunities in feeder transport services, local guide jobs etc.
  - This will also boost the opportunities for the export of horticultural products like bananas, strawberries and mushrooms.

**Why in the news?**

• The Government recently approved the establishment of seven PM Mega Integrated Textile Region and Apparel (PM MITRA) Parks on Greenfield/Brownfield sites at a cost of Rs. 4445 crore over a seven-year period ending in 2027-28.

### About PM Mega Integrated Textile Region And Apparel (PM MITRA) Parks?

• It will be developed through a Special Purpose Vehicle (SPV) that will be jointly controlled by the Central and State Governments and through a public-private partnership (PPP).

• Each Park will contain an incubator, a shared processing facility, a shared effluent treatment plant, as well as other textile-related amenities such as design and testing centres.

• Incubation centres support entrepreneurs in growing their businesses and resolving associated challenges, particularly in the early stages, by providing a range of business and technical services, initial seed funding, lab space, consulting services, and network and linkages.

• Not only will the Master Developer create the Industrial Park, but will also maintain it during the concession period.

**Funding:** The centre would grant development capital support of up to Rs 500 crore for each greenfield MITRA park and up to Rs 200 crore for each brownfield park for the development of common infrastructure.

### Significance

• It will lower logistical costs and strengthen the textile sector's value chain, enhancing its worldwide competitiveness. High logistics costs are viewed as a significant impediment to India's goal of boosting textile exports.

• Each Park is estimated to generate 1 lakh direct jobs and another 2 lakh indirect jobs.

• Foreign Direct Investment parks are crucial for attracting foreign direct investment (FDI).

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**Other Initiatives**

• The Production-Linked Incentive Scheme for man-made fibre segment (MMF) garments, MMF fabrics, and 10 technological textile products has been approved for a five-year period.

• A National Technical Textiles Mission has been established to advance research and development in that sector.

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**Why in the news?**

• Recently, the Union Minister for MSMEs inaugurated the India Export Initiative and IndiaXports 2021 Portal of India in New Delhi.

### About IndiaXports 2021 Portal

• This initiative serves as a knowledge base for exports by Indian MSMEs with the required information related to export potential for all the 456 tariff lines along with the potential markets as well as trends in exports, export procedures and lots more.

• Apart from an export help desk, Instructor-led orientation will also be provided to MSMEs through a series of sessions for specific sectors highlighting the opportunities in specific products in international markets.

• The initiative targets 1 lakh+ MSMEs desirous of knowing more about exports and hand-holding 30,000+ MSMEs to start exporting, doubling the base of active exporters

• It aims to orient MSMEs free of cost, with the objective of focussing on the untapped export potential in existing tariff lines and supporting MSMEs in order to grow the number of exporting MSMEs and increase MSME exports by 50% in 2022.

**Data**
- 63 million+MSMEs spread across India
- contributing nearly 40% of overall India's exports
- 6.11% of country's manufacturing GDP
- 24.63% of GDP from services sector
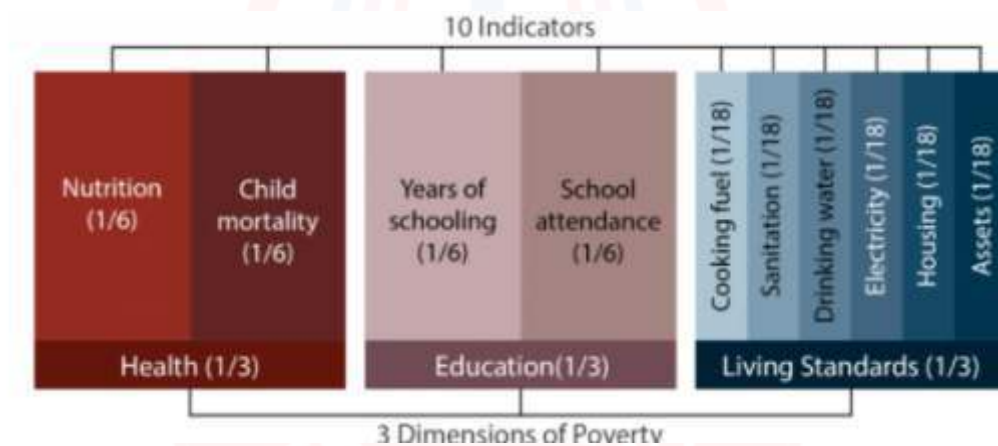
## The United Nations Development Programme (UNDP)

### Why in the news?
- The United Nations Development Programme (UNDP) and the Oxford Poverty & Human Development Initiative recently released the Global Multidimensional Poverty Index 2021. The Index takes into account statistics from 109 countries with a population of 5.9 billion people.

### About the index
- First developed in 2010, it measures poverty across three equally weighted dimensions: health, education and standard of living, comprising 10 indicators. The MPI value ranges from 0 to 1. A higher value means higher multidimensional poverty.
- If a person is deprived in at least 1/3$^{rd}$ of the indicators, they are identified as 'MPI poor'.
- It also measures the extent (or intensity) of their poverty through the percentage of deprivations they are experiencing.



**United Nations Development Programme**
- It is a United Nations organization with the mandate to help countries eliminate poverty and achieve sustainable economic growth and human development.
- Formed in 1965, it is headquartered in **New York City** and is the largest UN development aid agency.

### Key Findings
- Worldwide, more than **one in five (1.3 billion)** people live in multidimensional poverty (MDP). About half (644 million) are children under age 18.
- **Top five countries** with the largest number of people living in MDP are:
    - **India (381 million)**
    - **Nigeria (93 million)**
    - **Pakistan (83 million)**
    - **Ethiopia (77 million)**
    - **Democratic Republic of Congo (56 million)**
- Nearly 85% of MDP live in Sub-Saharan Africa (556 million) or South Asia (532 million). More than 67% in middle-income countries.
- Disparities in MDP across **ethnic and racial groups** are greater than disparities across geographical subnational regions. Within a country, multidimensional poverty among different ethnic groups can vary immensely. Therefore, different policy actions are needed to reduce multidimensional poverty.

### Disabilities Faced

- **1 billion are exposed to solid cooking fuels, another billion live with inadequate sanitation and another billion have substandard housing.**
- **788 million live in a household with at least one undernourished person.**
- **568 million lack improved drinking water within a 30-minute roundtrip walk.**

### Gender Disparities In Education

- Among the 1.3 billion, almost two-thirds- 836 million- live in households in which **no female member has completed at least six years of schooling**.
- One-sixth of all MDP (215 million) live in households in which at least one boy or man has completed six or more years of schooling but no girl or woman has.
- This exclusion of women from education has significant impacts on societies around the world. Also, women and girls living in multidimensional poverty are at higher risk of intimate partner violence.

### Findings from India

- **Five out of six MDP people are from lower tribes or castes**
- **More than half (50.6%)—65 million of 129 million people—live in MDP. 9.4% of Scheduled Tribe group live in MDP and is the poorest.**
- **33.3% of Scheduled Caste group--94 million of 283 million people—living in MDP.**
- **27.2% of Other Backward Class group—160 million of 588 million —lives in MDP.**

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## 2021 Nobel Prize in Economic Sciences | Economy

### Why in the news?

- The *2021 Nobel Prize in Economic Sciences* has been awarded in *one half to Canadian-born David Card* and the other half jointly to *Israeli-American Joshua D Angrist and Dutch-American Guido W Imbens*.

### David Card's Contributions

- One half of the prize was given to David Card, for his "**contributions to labour economics**".
- Using natural experiments, Card analysed how minimum wage, immigration and education affect the labour market.
- Contrary to previous studies, he found that increasing minimum wage doesn't necessarily lead to fewer jobs.
- Card's work also challenged another commonly held idea that immigrants lead to lower wages for native-born workers. He found that incomes of the native-born can benefit from new immigration, while it is earlier immigrants who are at risk of being negatively affected.
- He also showed that resources in schools are far more important for students' future labour market success than was previously thought.

### Angrist and Imbens' Contribution

- The other half of the prize was shared by **Joshua Angrist and Guido Imbens** for their contributions to the **analysis of causal relationships** (relationship between cause and effect). They helped to make sense of the data from natural
- experiments. This is crucial because unlike a clinical trial or randomised control trial, in a natural experiment a researcher is not in control of the experiment, which makes it difficult to draw precise conclusions and develop causal links.
- For example, extending compulsory education by a year for one group of students (but not another) may or may not affect everyone in the groups in the same way.
- Some students would have kept studying anyway and, for them, value of education is often not representative of the entire group. This makes it difficult to draw precise conclusions.
- The duo solved this methodological problem, demonstrating how precise conclusions about cause and effect can be drawn from natural experiments.

### Significance

- 3 economists have shown that natural experiments are a rich source of knowledge.
- Their approach has spread to other fields and revolutionized empirical research, contributing greatly to the society.
- For instance, their studies provided a justification for raising minimum wages in US. It can also be used in India and other developing economies to raise wages, leading to an equitable society.

## Maharatna Status for Power Finance Corporation

### Why in the news?
- Department of Public Enterprises, under Ministry of Finance issued **Maharatna Status** to state-owned Power Finance Corporation (PFC).

### About PFC
- PFC is the largest infrastructure finance company dedicated to the power sector under the administrative control of **Ministry of Power**.
- PFC has become 11th public sector enterprise to get 'Maharatna' status
- PFC has received this Status due to exceptional financial performance during the last 3 years and it reflects the confidence of the government on PFC's strategic role in the overall development of Indian power sector.

### Impact of Maharatna Status
- This new status will enable PFC to offer competitive financing for the power sector, which will go a long way in making available affordable & reliable 'Power For All 24×7'.
- This will also impart enhanced powers to the PFC Board while taking financial decisions.
- It can make equity investments to undertake financial joint ventures and wholly-owned subsidiaries and undertake mergers and acquisitions in India and abroad.
- It can also structure and implement schemes relating to personnel and Human Resource Management and Training.
- It can also enter into technology Joint Ventures or other strategic alliances among others.

### Criteria for Ratna Status
**Eligibility Criteria**
- **Maharatna**
  - Having Navratna status.
  - Listed on Indian stock exchange with minimum prescribed public shareholding under SEBI regulations.
  - Average **annual turnover** of more than **Rs. 25,000 crore**, during the last 3 years.
  - Average **annual net worth** of more than **Rs. 15,000 crore**, during the last 3 years.
  - Average **annual net profit** after tax of more than **Rs. 5,000 crore**, during the last 3 years.
  - Should have significant global presence/international operations.
- **Navaratna**
  - A CPSE which falls under the Miniratna (Category – I and Schedule 'A' CPSEs), has obtained rating of '**very good**' or '**excellent**' in **3 of the last 5 years**.
  - A CPSE which has composite score of **60 or above** in the 6 selected performance parameters, namely;
    - Net profit to net worth
    - Earnings per share
    - Profit before interest and taxes to turnover
    - Profit before depreciation, interest and taxes to capital employed
    - Manpower cost to total cost of production/services
    - Inter-Sectoral performance
- **Miniratna**
  - Those CPSEs which fulfill these **two criteria** are eligible to be considered for grant of Miniratna status.
  - The CPSEs which have made profits in the **last 3 years** continuously
  - The CPSEs which have positive net worth.

## Why in the news

- **IMF** recently released the latest World Economic Outlook (WEO). The WEO is released **twice every year** — April and October.

## About the recent report and its observations

- India's economy, which contracted by 7.3% due to Covid-19, is expected to grow by:
  - **9.5% in 2021**
  - **8.5% in 2022**
- World is expected to grow at 5.9% (2021) & 4.9% (2022). Aggregate output for advanced economy group is expected to regain its pre-pandemic trend in 2022 & exceed it by 0.9% (2024).
- By contrast, **aggregate** output for the **emerging market and developing economy** group (excluding China) is expected to remain 5.5% below the pre-pandemic forecast in 2024.
- This difference in economic prospects across countries remains a major concern.
- The two key reasons for economic gaps are large differences in vaccine access and differences in policy support.

## Slow Growth In Employment

- Employment around the world remains below its pre-pandemic levels, due to negative output gaps, worker fears of on-the-job infection, childcare constraints, labor demand changes as automation picks up in some sectors etc.
- As per the WEO, employment growth is likely to lag the recovery in GDP growth. Moreover, this gap between
- recovery in output and employment is likely to be larger in emerging markets and developing economies than in advanced economies.
- Further, young and low-skilled workers are likely to be worse off than prime-age and high-skilled workers, respectively.

## Impact on India

- Bulk of India's employment is in the **informal or unorganised sectors**. At the same time, India is witnessing a
- **K-shaped recovery**, which means different sectors are recovering at significantly different rates.
- If the informal/unorganised sector recovers at a slower pace than the formal sector, then the recovery in employment (relative to the recovery in output) will be even slower in India.
- This matters a lot, as large sections of the population will be excluded from the GDP growth and its benefits.

### International Monetary Fund

- The International Monetary Fund (IMF) is an international financial institution,
- Headquartered in Washington, D.C.
- Consists of 200 countries working:
  - to foster global monetary cooperation,
  - secure financial stability,
  - facilitate international trade,
  - promote high employment and sustainable economic growth, and
  - reduce poverty around the world while periodically depending on the World Bank for its resources.
  - It was formed in 1944, started in 27 December 1945

### Reports are released by IMF:

- World Economic Outlook (WEO),
- Global Financial Stability Report (GFSR), and
- Fiscal Monitor (FM).

## SAMBHAV Programme

**Why in the news?**

- The Ministry of Micro, Small, and Medium Enterprises (MSME) recently started the SAMBHAV e-National Level Awareness Program.

**About SAMBHAV program**

- It is a Ministry of MSME mass outreach campaign in which students from various colleges/ITIs from all across the country would be encouraged to pursue entrepreneurship via 130 Ministry field offices.
- Through audio/video film presentations, college students would be informed about the different programmes introduced by the Ministry of MSME during the campaign.
- **Objective:**
  - To encourage youth participation in entrepreneurship and to improve local manufacturing in order to boost economic growth.
- **Need:**
  - The government is working to improve MSME's contribution to GDP and exports.
  - The importance of increasing GDP contribution from 30% to 50% and increasing employment generation in the MSME sector from 11 million to 15 million has been emphasised.

## Economic Advisory Council to the Prime Minister Reconstituted

**Why in the news?**

- **Recently, the Government has reconstituted the seven-member Economic Advisory Council to the Prime Minister (EAC-PM) by inducting three new members . It will continue to be chaired by economist Bibek Debroy.**

**About EAC-PM**

- It is an independent body to advise the government, especially the Prime Minister, on economic and policy-related matters.
- Set up in September 2017 with a term of two years, replacing the erstwhile PMEAC, which was headed by former Reserve Bank of India governor C Rangarajan during the terms of former prime minister Manmohan Singh.
- Function & Mandate:  Analysing any issue, economic or otherwise, referred to it by the Prime Minister and advising him thereon.
  - Addressing issues of macroeconomic importance and presenting views thereon to the Prime Minister", either on its own or upon reference.
  - Presenting to the PM from time to time reports on "macroeconomic developments and issues with implications for economic policy".

## Global Agricultural Productivity Report

**Why in the news ?**

- Global Agricultural Productivity Report (GAP Report), 2021 was released in conjunction with the **World Food Prize Foundation's** annual conference.

**Key findings**

- Global agricultural productivity is not growing as fast as the demand for food. **Globally, Total Factor Productivity (TFP) grew by an average of 1.36% annually (2010 to 2019).** This is **below** the Global Agricultural Productivity Index **target of 1.73%,** to sustainably meet the needs of consumers for food and bioenergy in 2050.
- TFP tracks changes in how efficiently agricultural inputs (land, labour, fertilizer, feed, machinery, and livestock) are transformed into outputs (crops, livestock, and aquaculture products.)
- TFP growth is **influenced by** climate change, weather events, change in fiscal policy, market conditions, investments in infrastructure and agricultural research & development.

### Difference between TFP and Yield

**Yield:**
- Yield measures output per unit of a single input, for example, the amount of crops harvested on a hectare of land.
- Yields can increase through productivity growth, but they can also increase by applying more inputs, called input intensification. Therefore, an increase in yield may or may not represent improvements in sustainability.

**TFP:**
- Total factor productivity captures the interaction between multiple agricultural inputs and outputs.
- TFP growth indicates that more farmers generate more crops, livestock, and aquaculture products with the same amount or less land, labor, fertilizer, feed, machinery, and livestock. As a result, TFP is a powerful metric for evaluating and monitoring the sustainability of agricultural systems.

### Regional Status
- Human-caused climate change has slowed global agricultural productivity growth by 21% since 1961.
- In **drier regions** (Africa & Latin America), climate change has slowed productivity growth by as much as 34%.
- **Low-income countries**, home to many small-scale farmers, have a negative TFP growth rate of -0.31% annually.
- **Middle-income countries**, including India, China, Brazil and the countries of the former USSR, continue to have strong TFP growth rates.
- **India** had an average annual TFP growth rate of 2.81% and output growth of 3.17% (2010–2019).

### Recommendations
- Report identifies **6 strategies** & policies to create sustainable agricultural growth at all scales of production:
- **Invest in agricultural research and development**
- **Adopt science-and-information-based technologies**
- **Improve infrastructure for transportation, information and finance**
- **Cultivate partnerships for sustainable agriculture, economic growth & improved nutrition.**
- **Expand and improve local, regional and global trade.**
- **Reduce post-harvest loss and food waste**

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**Global Agricultural Productivity (GAP) Initiative**
- GAP Initiative is central to the mission of CALS Global in the Virginia Tech College of Agriculture and Life Sciences (CALS).
- It brings together experts from the private sector, NGOs, conservation and nutrition organizations, universities, and global research institutions.
- Consultative partners contribute their knowledge of agricultural R&D and extension, natural resource conservation, human nutrition, international development, gender equity, and the needs of small-scale farmers.

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## Krishi UDAN 2.0 Scheme                                           Economy

### Why in the news?
- Ministry of Civil Aviation (MoCA) recently launched Krishi UDAN 2.0 scheme to facilitate movement of agricultural produce by air.

### About the scheme
- Krishi UDAN scheme was launched in August 2020 to assist farmers in transporting agricultural products on
- **international and national routes** so that it improves their value realisation.
- Krishi UDAN 2.0, too, will focus on this convergence between agriculture and aviation sectors (**A2A: Agriculture to Aviation**). This convergence is possible because of 3 primary reasons:
- Evolutionary possible use of biofuel for aircraft in future;
- Use of drones in agriculture sector; and
- Greater integration and value realisation of agricultural products through schemes like Krishi UDAN.

### Key Features
- 53 airports have been selected for the first phase mainly focusing on hilly areas, north-eastern States and tribal regions and are likely to benefit farmer, freight forwarders and airlines. Along with this seven-focus domestic and international trade routes will also be started.

- It will strengthen cargo-related infrastructure by facilitating the development of a **hub-and-spoke model**
- and a **freight grid**.
- It will provide full waiver of landing, parking, Terminal Navigation and Landing Charges and Route Navigation Facilities Charges for domestic airlines.
- The ministry has asked states to reduce sales tax on Aviation Turbine Fuel (ATF) to 1% for airlines under the scheme.

## E-KUSHAL
- The ministry will also develop an online portal **E-KUSHAL** (KrishiUdaan for Sustainable Holistic Agri-Logistics), to **facilitate information** regarding the transportation of agricultural produce.
- E-Kushal will also assist in coordinating, monitoring and evaluating the scheme.
- MoCA has also proposed a convergence of E-Kushal with the National Agriculture Market (e-NAM) platform.

## Benefits
- It will increase incomes of farmers by removing barriers in supply chain, logistics and transportation of farm produce.
- Reduce transport time of perishable goods & help to establish new markets for such produce.
- This will also go a long way to reduce agricultural food wastes in the country.

## Air India Sale | Economy

### Why in the news?
- After several failed attempts, Tata Sons subsidiary Talace Pvt. Ltd., recently won the bid for national carrier Air India. This marks the first major outright privatisation of a public sector company in almost two decades.

### Failure of Air India
- As part of its broader privatisation and disinvestment push, in 2000-01 the government tried to sell a minority stake or 40% stake in Air India. It was unsuccessful due to opposition from Trade unions. Air India started suffering losses every year since its **merger with Indian Airlines in 2007-08**.
- In **June 2017**, the Cabinet Committee on Economic Affairs (CCEA) gave in-principle approval to the consideration for strategic disinvestment of Air India and its five subsidiaries.
- **In March 2018,** the government invited expression of interest from investors wherein the buyer was required to take ₹33,392 crore or close to 70% of the carrier's debt on its books. **No bids were recieved.**
- **October 2020:** Government now gave flexibility to investors to decide on the amount of Air India debt they wanted to absorb.
- **October 2021:** Government announces Tata group makes winning bid of ₹18,000 crore for Air India.

### Reasons for privatization
- Air India has been in loss since its merger with Indian Airlines in 2007. It has raked in a cumulative debt of around Rs 60,000 Crore till now. Excessive debt in the airline's balance sheet had also pushed equity value to negative at (-) ₹32,000 crore. Moreover, the government had been incurring per day expenditure of ₹20 crore to keep Air India afloat.
- In a developing country like India, this arrangement was highly inefficient, given the other high priority demands on government resources.
- In fact, the NITI Aayog, in its recommendations on strategic disinvestment of CPSEs in May 2017, while referring to the fragile finances of Air India, had stated that further financial support in a mature and competitive aviation market would not be the best use of scarce financial resources of the government.
- Also, Air India's presence in the civil aviation sector had severely distorted the market, since government subsidies allowed it to run at a loss and undercut private sector airlines.
- And lastly, the pandemic's impact on public finances and the carrier's operations especially given the devastating impact on air travel both domestic and international, also contributed to government's decision to privatise Air India.
- **As of August 2021, AI's debt was Rs 61,562 crore. Moreover, every additional day that AI remains operational, the government suffers a loss of Rs 20 crore — or Rs 7,300 crore per year.**

### Push for Privatization
### CAG and Privatization
- It pointed that Air India is generating l**ess revenue over passengers compared to other airlines.**
- There has been a mismatch in demand and availability of airline (i.e., **non-availability of proper aircraft**)

- It also pointed out that **mismanagement in granting bilateral agreements with foreign countries** (i.e., granting more than required number of bilateral seats to carriers of foreign countries) has been hurting Air India's prospects.
- **Mismanagement of manpower:** Disguised unemployment is more prevalent in Air India.

## 14th Finance Commission
- It has elaborated to consider the opportunity cost while investing in PSU's and suggested that the *government should not be in the business of providing goods and services where the private sector has a vibrant presence*. In Air India case, the cost is much higher as it is making losses consistently and is dependent on the government for its survival.
- Divesting the loss-making Air India will send *a strong signal to investors that India is serious about reforms* and is no longer willing to throw good money after bad and also set an example and pave the way for disinvestment of other loss-making companies, such as Bharat Sanchar Nigam Ltd (BSNL) and Mahanagar Telephone Nigam Ltd (MTNL).

## Hurdles In The Earlier Attempts
- In the previous two attempts (2001 and 2018), the Government *tried to retain a partial stake*, due to which private investors were not interested. The idea of government ownership, even if it was as little as 24%, might have reduced the operational freedom of the buyers.
- To address it, this time the **government put 100% of its stake on sale.** The NITI Aayog has suggested complete privatization.
- In the current attempt, the Government also announced that bids for Air India would be accepted on the basis of the *carrier's enterprise value instead of equity value* of a firm.

**Enterprise value :** Includes the **equity value, debt as well as cash.**

**Equity value :** Measures the value of a **company's shares**. Under equity route, the government expected the bidders to pick up a **certain amount of the debt**, which may end up being understated or overstated depending on market conditions. This could have made the entire **process unviable**.Under the **enterprise value** route, the government let the bidders decide the amount of debt they wanted to pick up. These factors made the difference this time.

## Credit Ratings
### Economy

### Why in the news?
- **The outlook for India's sovereign rating has been changed to "Stable" by rating agency Moody's "from "Negative" confirming the country's rating to Baa3.**
- **'Baa3' the lowest investment grade, barely a notch above junk, is a rating (Speculative).**

### About SCR (Sovereign Credit Rating)
- **SCR is an independent assessment of a country's or sovereign entity's creditworthiness.**
- **It can provide investors with information on the level of risk involved with investing in a country's debt, including any political risk.**
- **Apart from issuing bonds in external debt markets, attracting Foreign Direct Investment is another major reason for countries to earn a sovereign credit rating.**
- **A credit rating agency will examine the country's economic and political situation at the country's request in order to award it a rating.**
- **A Baa3 or higher rating is considered investment grade, whereas a Ba1 or below rating is considered speculative by Moody's.**
- **Countries with a BBB- or higher rating are considered investment grades, whereas those with a BB+ or lower rating are considered speculative or "junk" grades.**

### India's Engagement with CRAs
- In the run-up to India's **balance-of-payments crisis in 1991**, agencies downgraded India's sovereign rating. This reduced the country's ability to raise money abroad through public sector oil companies or banks for short periods to buy oil or to pay for imports.
- In 1998, when India announced that it had carried out **nuclear tests in Pokhran**, the agencies were quick to react again, impacting borrowings.
- For a long time, the Indian government **did not engage much with CRAs to change perceptions** and has complained that *countries with higher levels of debt and a weak fiscal have managed to get better ratings.*
- CRAs were also **criticized globally after the global financial crisis of 2008**, when they were exposed after the collapse of highly rated banks and other institutions.

- They also had to **face a probe by central investigating agencies** after they had assigned top ratings to borrowings by firms that were part of the *IL&FS group* in India.

### Economic Survey's and SCR

- **During the years 2000-20, India's performance on numerous factors has constantly been ranked below expectations.**
- **On various metrics, such as GDP growth rate, inflation, general government debt, political stability, rule of law, corruption control, investor protection, ease of doing business, and sovereign default history, India has remained a clear outlier.**
- **India's ability to pay is measured not just by the sovereign's extremely low foreign currency-denominated debt, but also by the level of its foreign exchange reserves, which can cover both short-term private-sector debt and India's entire portfolio of sovereign and non-sovereign external debt.**
- **Instead of being constrained by "biased and subjective" sovereign credit ratings, India's fiscal policy should be directed by considerations of growth and development.**
- **To avoid future crises, it was proposed that developing economies work together to overcome the prejudice and subjectivity inherent in the sovereign credit rating system.**

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**Credit Rating Agencies (CRA)**

- A CRA is a company that assigns credit ratings, which rate a debtor's ability to pay back debt. Credit rating is a highly concentrated industry, with the Big Three credit rating agencies controlling approximately 95% of the ratings business. The Big Three include Moody's Investors Service, Standard & Poor's (S&P) and Fitch Ratings.
- In India, there are 6 credit rating agencies registered under Securities and Exchange Board of India (SEBI) namely, CRISIL, ICRA, CARE, SMERA, Fitch India and Brickwork.

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## Digital Safety Principles of G7

**Why in the news?**

• G7 nations recently agreed on a joint set of principles to govern cross-border data use and digital trade.

**Key provisions of the G7 Digital Trade Principles-**

• Open Digital Markets: Digital and telecommunications markets should be competitive, transparent, fair, and accessible to international trade and investment.

• Cross Border Data Flows: To harness the opportunities of the digital economy, data should be able to flow freely across borders with trust, including the trust of individuals and businesses.

• Safeguards for Workers, Consumers and Businesses: Labour protections must be in place for workers who are directly engaged in or support digital trade. They have to be provided decent conditions of work.

• Digital Trading Systems: To cut red tape and enable more businesses to trade, governments and industries should drive forward the digitisation of trade-related documents.

• Fair and Inclusive Global Governance: Common rules for digital trade should be agreed upon and upheld at the World Trade Organization (WTO).

• Data Encryption: Businesses should not be required or coerced to transfer technology or provide access to source code or encryption keys as a condition of market access. The governments must retain sufficient flexibility to pursue legitimate regulatory goals, including health and safety.

**About G7-**

• G7 stands for "Group of Seven" industrialized nations.

• It used to be known as the G8 (Group of Eight) until 2014 when Russia was excluded because of its annexation of Crimea from Ukraine.

• France, Italy, Japan, the United Kingdom, the United States and West Germany formed the Group of Six in 1975 so that the noncommunist powers could come together to discuss important economic issues, global security etc…

• Canada joined the group in 1976.

• Russia joined in 1998 and signaled a cooperation between East and West after the Soviet Union's collapse in 1991.

• At present, the group includes the United States, the United Kingdom, Germany, Canada, Japan, France and Italy.

• It is an informal bloc and takes no mandatory decisions, so the leaders' declarations at the end of the summit are not binding.

• The European Union has been involved in G7 work since 1977, and is represented at the summit by the President of the European Commission and the President of the European Council.

• The member country holding the G7 presidency is responsible for organizing and hosting the year's summit and generally every member country hosts the summit once every 7 years.

## IEA invites India to become Full-time Member

**Why in the news?**

• International Energy Agency (IEA) has invited India, the world's third-largest energy consumer, to become its full-time member.

**About the International Energy Agency**

• The International Energy Agency is an autonomous Intergovernmental Organisation.

• The IEA was established in 1974 by developed countries - under the auspices of the Organization for Economic Co-operation and Development (OECD) - in response to the oil embargo.

• IEA is made up of 30 member countries and eight associate nations. Four countries are seeking accession to full membership - Chile, Colombia, Israel and Lithuania.

• India became an Associate member of IEA in March 2017 but it was in engagement with IEA long before its association with the organization.

• The World Energy Outlook report is released by the IEA annually.

- Its purpose is guided by four main areas of focus:
  - Energy security
  - Economic development
  - Environmental awareness
  - Global engagement

### Roles and responsibilities
- It was founded in the wake of the 1973-1974 oil crisis to help its members respond to the massive disruption of the oil supply, a role that continues to be fulfilled today.
- The IEA mandate has expanded over time to include monitoring and analyzing global energy trends, promoting sound energy policy, and promoting international technology cooperation.

### Significance
- Countries that want to become members of the IEA must also be members of the OECD and hold 90 days of oil importation as commercial stocks.
- The proposal, if approved, will require India to increase oil shares within 90 days.
- Current strategic oil reserves equal to 9.5 days of its need.

## Improving Ties with Sri Lanka — International Relations

### Why in the news?
- The state-owned Sri Lanka Ports Authority inked a deal with India's Adani Group to develop and run the strategic Colombo Port's West Container Terminal.

### Significance of West Container Terminal Deal
- **East Container Terminal (ECT) Controversy**
  - In February 2021, Sri Lanka reneged on 2019 deal with India and Japan to operate the East Container Terminal.
  - Many experts believed that the China had played a role in instigating port union's protest against India's interest which ultimately led to cancellation of the project.
  - Hence, current deal to develop West Container Terminal assumes significance.
- **Greater Indian Stake**
  - Indian side will have 85% stake in the West Container Terminal.
  - In East Container Terminal deal, India and Japan together held 49% stake.
  - This would give India a much-needed strategic presence at Colombo port, where almost 70% of operations involve shipments bound for India.

### Significance Of The Visit Of Foreign Secretary
- This visit is being seen as an opportunity to get bilateral ties back on track after recent problems such as the scrapping of the MoU on the East Container Terminal.
- It was also aimed at assessing Sri Lanka's development assistance requirements.
- Foreign secretary dedicated 1,235 houses as part of the Indian Housing Project in the central hill country.
- He also inaugurated a
  - 'Model Housing Village' in the northern Vavuniya district,
  - School building at Vadamarachchi in Jaffna, and
  - Saraswathy Central College building in Pussellawa in Kandy.
- These projects employ local companies and invariably use Sri Lankan material and labour in their execution.

**Why in the news?**

- External Affairs Minister of India addressed the 6th Ministerial meeting of Conference on Interaction and Confidence-Building Measures 2021 in Kazakhstan recently.

**About Conference on Interaction and Confidence-Building Measures(CICA)**

- Established in 1999, CICA is a forum aimed at enhancing cooperation through elaborating multilateral approaches towards promoting peace, security and stability in Asia.
- The idea of convening CICA was first proposed by the First President of the Republic of Kazakhstan – Elbasy H.E. Mr. Nursultan Nazarbayev, on 5 October 1992, at the 47th Session of the United Nations General Assembly.
- It is a forum based on the recognition that there is a close link between peace, security and stability in Asia and in the rest of the world
- Presently CICA has 27 Member States accounting for nearly ninety percent of the territory and population of Asia. Nine countries and five multinational organizations, including the United Nations, have observer status.
- India has been a member of CICA since its inception in 1999.
- CICA pursues its policy based on the principles of sovereign equality, non-interference in internal affairs of the Member States and economic, social and cultural cooperation to achieve its main objective of enhancing cooperation through elaborating multilateral approaches towards promoting peace, security and stability in Asia.
- All decisions within CICA framework are taken by consensus

## India Re-elected to UNHRC

**International Relations**

**Why in the news?**

- India was re-elected to the UN Human Rights Council (UNHRC) for the 2022-24 term with an overwhelming majority in the General Assembly. India's current term was set to end on December 31 2021.

**About the election**

- The 76th UN General Assembly held elections for 18 new members of the U.N. Human Rights Council who will serve for a period of three years, starting in January 2022.
- India got 184 votes in the 193-member assembly, while the required majority was 97.
- India's current term was set to end on December 31 2021.
  - For election for the term 2022-2024, there were five vacant seats in the Asia-Pacific States category - India, Kazakhstan, Malaysia, Qatar and the United Arab Emirates.

**About UN Human Rights Council**

- It is an inter-governmental body within the United Nations system responsible for strengthening the promotion and protection of human rights around the globe and for addressing situations of human rights violations and making recommendations on them.
- It replaced the former United Nations Commission on Human Rights.
- It has the ability to discuss all thematic human rights issues and situations that require its attention throughout the year.
- It was created by the United Nations General Assembly in 2006.
- It meets at the UN Office in Geneva.
- **Membership**
  - The Council is made up of 47 United Nations Member States which are elected by the UN General Assembly.
  - The membership is based on equitable geographical distribution, and seats are distributed among regional groups
  - Group of African States (13)
  - Group of Asia-Pacific States (13)
  - Group of Eastern European States (6)

- Group of Latin American and the Caribbean States
- Group of Western European and other States (7).
- **Term:**
  - The members of the Council shall serve for a period of three years and shall not be eligible for immediate re-election after two consecutive terms.
- **Funding:**
  - Almost two-thirds of UN Human Rights income comes from voluntary contributions from the Member States and other donors.
    - The remainder is covered by the UN regular budget.
  - The UN regular budget, approved by the General Assembly, is funded by "assessed contributions" from each Member State.
  - These are determined according to a formula that takes into account the size and strength of their respective national economies.

## Bangladesh signs UN Deal to Help Refugees on Island — International Relations

### Why in the news?
- UN and Bangladesh have signed a memorandum of understanding to work together in aiding protection and management of Rohingya refugees.

### Key Highlights of the Agreement
- The agreement allows for Close cooperation on services and activities to the benefit of the increasing numbers of Rohingya refugees living on the island.
- It covers key areas of protection, education, skills-training, livelihoods and health. This will help support the refugees to lead decent lives on the island and better prepare them for sustainable return to Myanmar in the future.
- Refugees will also have a chance to earn a living through odd jobs that will be accessible once aid organizations set up on the island. The memorandum states that Movement of refugees back and forth from the island to the main camps in Southern Bangladesh will be permitted on a conditional basis. However, they have freedom of movement around on the Char Island.

> **Bhasan Char**
> - It is located near the mouth of the river Meghna where it flows into the Bay of Bengal.
> - It surfaced only in 2006 from the sediment deposited by the river.
> - Located close to the much larger Sandwip, Bhasan Char spans 40 sq km.

## China adopts New Border Law — International Relations

### Why in the news?
- China's legislature has adopted a new border law on the protection and exploitation of the country's land border areas.

### About the new law passed by China
- The law stipulates that the sovereignty and territorial integrity of the People's Republic of China are sacred and inviolable. State shall take measures to safeguard territorial integrity and land boundaries and guard against and combat any act that undermines it territorial sovereignty and land boundaries.
- China has unresolved border disputes with India and Bhutan. Against this backdrop, the new law would formalise some of China's recent actions in disputed territories with both India and Bhutan, including
  - PLA's massing of troops in forward areas along the India border
  - Multiple transgressions across the LAC
  - Construction of new "frontier villages" along the border with Bhutan
- It also calls on the state to:
  - Take measures to strengthen border defence as well as opening-up in border areas

- improve public services and infrastructure in such areas
- encourage and support people's life and work there
- Promote coordination between border defence & social, economic development in border areas
- It designates various responsibilities of the military, State Council or Cabinet and provincial governments in managing the security &economic issues in border area.
- It says the PLA shall carry out border duties including organising drills and resolutely prevent, stop and combat invasion, encroachment, provocation and other acts.
- It also says China will handle land border-related affairs with neighbouring countries through negotiations to properly resolve disputes and long-standing border issues.



## Prime Minister of Denmark in India — International Relations

- Prime Minister of Denmark paid an official visit to India.

### Key Highlights of the visit
- The focus of bilateral talk was on expanding cooperation in a range of key areas such as health, agriculture, water management, climate change and renewable energy.

### List of MoUs Exchanged
- MoU on Mapping of ground water resources and aquifers
- MoU to establish a Centre of Excellence towards natural refrigerants for tropical climates with potential applications.
- MoU on the development of the Hydrogen Electrolyzer and the subsequent manufacturing and deployment of the Hydrogen Electrolyzer in India.
- MoU to establish a 'Center of Excellence for Sustainability Solutions' based in Denmark.
- MoU on strategic cooperation to promote knowledge-sharing on solutions and facilitate research on the green transition of the economy.

Agreements: Traditional Knowledge Digital Library Access Agreement

Five-year Action Plan (2021-26) for the Green Strategic Partnership
- Both sides reviewed the progress made under India-Denmark Green Strategic Partnership.
- During the Virtual Summit held in September 2020, India and Denmark had established a 'Green Strategic Partnership'. It aims to create a framework for significant expansion of cooperation in areas of renewable energy, environment, economy, climate change and science and technology.

### Cooperation In Agriculture Sector
- Both sides decided to cooperate in areas like
  - Efficient supply chain
  - Smart water resources management
  - Technologies to increase agricultural productivity in India

- Seychelles' Tax Inspectors Without Borders (TIWB) programme has been launched in partnership with India.

### About the Programme
- This programme is expected to be of 12 months duration.
- In this duration, India will collaborate with the TIWB Secretariat and the UNDP Country Office in Mauritius and Seychelles.
  - The aim is to aid Seychelles in strengthening its tax administration by
    - transferring technical know-how and skills to its tax auditors through sharing of best audit practices.
- The focus of the programme will be on Transfer Pricing cases of tourism and financial services sectors
- This programme is the 6th TIWB programme which has been supported by India by providing Tax Expert.
  - In the past, India has also extended its support to Bhutan under the same program.
  - It depicts Indian commitment to South-South Cooperation, SAGAR initiative and elder brother approach to the Indian Ocean Nations.

### Tax Inspectors Without Borders (TIWB)
- It is a joint initiative of
  - the United Nations Development Programme (UNDP) and
  - the Organisation for Economic Cooperation and Development (OECD).
- It was launched in July 2015.
- Aim: To strengthen developing countries' auditing capacity and multinationals' compliance worldwide.
  - It is a capacity-building programme.
- Modus Operandi
  - It deploys qualified experts in developing countries across Africa, Asia, Eastern Europe, Latin America and the Caribbean.
  - They train the local countries' personnel in fields of
    - tax capacity and audits,
    - criminal tax investigations and
    - the effective use of automatically exchanged information.
- TIWB assistance has led to increased domestic resource mobilisation in some of the least developed countries in the world.

## India Hands Over Jaynagar-Kurtha Rail Link to Nepal | International Relations

### Why in the news?
- India has handed over the 34.9km-long cross-border rail link connecting Jaynagar in Bihar to Kurtha in Nepal to the Nepal government.

### About India-Nepal Rail Link
- In 1937, the British had built a narrow-gauge line to ferry cargo, mainly logs, from Nepal to India.
  - However, over time it became a popular passenger service before it was stopped in 2014 for conversion to broad gauge.
- India decided to carry out the entire gauge conversion work, including trains to operate on the link in 3 phases.
  - The first stretch is a 34-km line between Bihar's Jayanagar and Nepal's Kurtha.
    - In between these two lies the Hindu pilgrimage city of Janakpur Dham.
  - The second stretch of 17 km from Kurtha to Bijalpura is also getting the finishing touches.
  - For the remaining portion up to Bardibas, the land is being handed over to IRCON.
- The construction cost of Rs 784 crore for the entire stretch is being borne by India in the form of a grant to Nepal.
- The Konkan Railway Corporation Limited has got the contract for operations and maintenance of the line.
  - It will train and develop manpower provided by Nepal, as per the bilateral understanding.
- Nepal has been asked to start operations preferably by this year.
  - It has been stressed by us that early operations will avoid the deterioration of assets.

## PM releases first Non-GM Herbicide-Tolerant Rice Varieties | Science & Technology

### Why in the news?
- To counter the twin challenges of climate change and malnutrition, PM Narendra Modi launched 35 new indigenously-developed crop varieties developed by ICAR.

### About New Varieties of Rice
- It is the country's first-ever non-GM (genetically modified) herbicide-tolerant rice varieties (Pusa Basmati 1979 and Pusa Basmati 1985) that have been developed by the Indian Agricultural Research Institute (IARI).
- These varieties have been developed by crossing over Pusa 1121&Pusa 1509 with Robin (It is a drought-tolerant, heat-tolerant and deep-rooted variety derived from Nagina 22.)
- Instead of going GM techniques, ICMR has developed it through mutation breeding. This ensures that no foreign genes are in the new varieties.
- Both the newly developed varieties contain a mutated acetolactate synthase (ALS) gene, which enables farmers to spray Imazethapyr, which is a cheaper and broad-spectrum herbicide, to control weeds.

## Centre releases India's Airspace Map for Drone Operations | Science & Technology

### Why in the news?
- Ministry of Civil Aviation released India's airspace map for drone operations.

### About the Airspace map
- The drone airspace map is an interactive map of India that demarcates the yellow and red zones across the country.
- The airspace map may be modified by authorized entities from time to time.
- Anyone planning to operate a drone should mandatorily check the latest airspace map for any changes in zone boundaries.
- The drone airspace map is freely available on the digital sky platform to all without any login requirements.

### About Drone Rules, 2021
- The Rules are intended to build a "digital sky platform" ("the Platform"), which is a business-friendly single-window online system with little human intervention and self-generated authorisation.
- The Rules have decreased the amount of red tape involved in obtaining compliance:
- The cost has been cut to minimal levels and is no longer tied to the drone's size.
- The digital sky platform has a simplified method for transferring and deregistering drones.
- Type certification is not required for nano and model drones that are used for study or pleasure.
- The weight limit for drones covered by the Drone Rules, 2021, has been raised from 300 to 500 kg. This will also apply to drone taxis.
- Only when a drone is to be used in India does a Type Certificate become necessary. Drones imported and manufactured solely for export are not subject to type certification or a unique identification number.
- For freight delivery, drone routes will be created.

> ### Green Zone
> - Green zone is the airspace upto 400 feet that has not been designated as a red or yellow zone; and upto 200 feet above the area located between 8-12 km from the perimeter of an operational airport.
> - In green zones, no permission whatsoever is required for operating drones with an all-up weight upto500 kg.
>
> ### Yellow Zone
> - Yellow zone is the airspace above 400 feet in a designated green zone; above 200 feet in the area located between 8-12 km from the perimeter of an operational airport and above ground in the area located between 5-8 km from the perimeter of an operational airport.
> - Drone operations in yellow zone require permission from the concerned air traffic control authority – AAI, IAF, Navy, HAL etc. as the case may be.
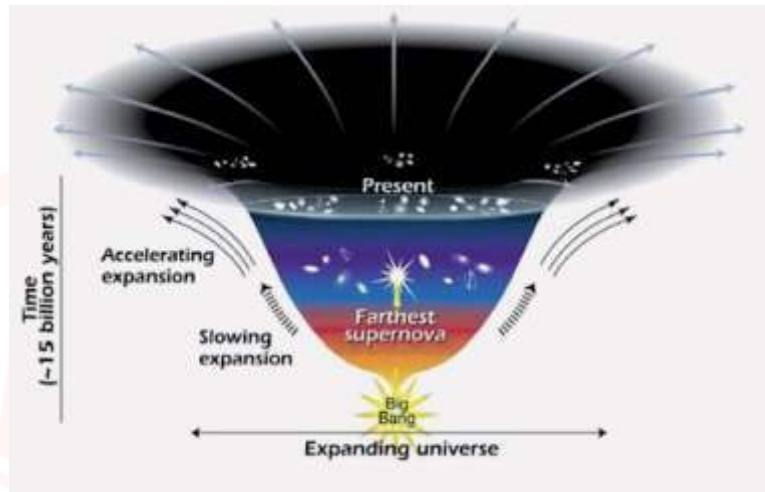> - Yellow zone has been reduced from 45 km earlier to 12 km from the airport perimeter.

## Dark Energy

**Why in the news ?**

- Recently an international team of researchers made the first putative direct detection of dark energy.
- Dark energy is the name given to the mysterious force that's causing the rate of expansion of our universe to accelerate over time, rather than to slow down.
- That's contrary to what one might expect from a universe that began in a Big Bang.

**About the Experiment (XENON1T)**

- The experiment named XENON1T, is the world's most sensitive dark matter experiment.
- It was operated deep underground at the INFN Laboratori Nazionali del Gran Sasso in Italy.
- XENON1T, which is designed to detect dark matter, could also be used to detect dark energy.
- Large-scale experiments like XENON1T have been designed to directly detect dark matter, by searching for signs of dark matter 'hitting' ordinary matter, but dark energy is even more elusive."

**Dark matter & Dark energy**

- While dark matter attracts and holds galaxies together, dark energy repels and causes the expansion of our universe.
- Despite both components being invisible, a lot more is known about dark matter, since its existence was suggested as early as the 1920s, while dark energy wasn't discovered until 1998.

## NASA Successfully launches Landsat 9

**Why in the news?**

- NASA has successfully launched an earth monitoring satellite Landsat 9 from Vandenberg Space Force Base in California.

**About LANDSAT 9**

- LANDSAT 9 program is a partnership between NASA and Earth Resources Observation and Science Center, north of Sioux Falls.
- The Landsat 9 joins Landsat 8 and these satellites will together collect images of Earth's surface.
- It will take 8 days to capture the whole Earth.
- The main focus is repeating global observations for monitoring, understanding and managing Earth's natural resources.
- Landsat 9 aboard the two instruments- the Operational Land Imager 2 (OLI-2) and the Thermal Infrared Sensor 2 (TIRS-2).
- **OLI-2**
  - OLI-2 is a push broom sensor that can see the light that we can't see.
  - It captures sunlight reflected off Earth's surface and studies the visible, near- infrared, and short wave infrared portions of the spectrum.

- **TIRS-2**
  - It is an instrument that has a four-element refractive telescope and photosensitive detectors that capture thermal radiation and help study the Earth's surface temperature.

## Aerial Seeding Campaign

**Why in the news?**
- Recently, "Hara Bhara", India's first aerial seeding campaign in Telangana using the
- Seedcopter drone was launched.

**About Hara Bhara Campaign**
- This Hara Bhara campaign is started to accelerate the mission of reforestation by planting one billion trees using drones by 2030.
- Drones are used to disperse seed balls over thin, barren, and empty forest lands to turn them into lush green abodes of trees in this project.



Hara Bhara: Aerial Seeding Campaign — EnviroVigyan

On 1st October 2022, Telangana Government launched the first national aerial seed campaign using a drone.

- The idea of the campaign is to accelerate the mission of reforestation by planting one billion trees using drones by 2030 in the country.
- The project uses drones to disperse seed balls over thin, barren, and empty forest lands to turn them into lush green abodes of trees.
- The 'seedcopter' which is a drone developed by Marut Drones is an aerial seeding solution for rapid and scalable reforestation.

**Aerial Seeding technique**
- Aerial seeding refers to a technique of plantation wherein seed balls are sprayed on the ground.
- Seed balls are seeds covered with a mixture of clay, compost, char and other components.
- Under this aerial devices are used, including planes, helicopters or drones.
- The 'seedcopter' which is a drone developed by Marut Drones is an aerial seeding solution for rapid and scalable reforestation.

## Drone based Drug Delivery Model: I-Drone

**Why in the news?**
- Recently, the Department of Health and Family Welfare introduced the Drone vaccine delivery model (Drone Response and Outreach in the Northeast).

**About the Drone vaccine delivery model**
- Developed by: **the Indian Council of Medical Research (ICMR)**. It ensure that it ensures that life-saving drugs reach everyone even in hard and inaccessible areas of India.
- The Drone is designed to overcome challenges by moving Unmanned Aerial vehicles (UAV) or drones to remote and hard-to-reach areas.
- This is the first time the "**Make in India** 'drone has been used in South Asia to deliver the COVID vaccine over a distance of more than 15 kilometers.
- Currently, a drone-based delivery project has been licensed to operate in Manipur and Nagaland, as well as in the Andaman and Nicobar Island unions.
- Permission was granted to ICMR for research into the feasibility of delivering the Covid- 19 vaccine using drones, in collaboration with IIT-Kanpur.

**Significance**
- It will help to fill the gaps in existing vaccination methods and can be used to deliver important life-saving drugs, collect blood samples etc.
- This technology can be used in critical situations. It can be a game changer in addressing challenges in health delivery, especially in the provision of health care in difficult areas.

**Why in the news?**

- World's first Malaria Vaccine has been endorsed recently by the World health Organization.

**About the Vaccine**

- RTS, S/AS01, often known as Mosquirix, is an injectable malaria vaccine that targets P. falciparum, the most common strain in Africa. It is the first and only vaccination to provide partial protection in children under the age of five.
- GlaxoSmithKline, a British pharmaceutical company, created it in 1987.
- Mosquirix's active ingredient is a protein discovered on the surface of Plasmodium falciparum parasites (PFP).
- When the PFP enters the human host's circulation from a mosquito bite and infects liver cells, RTS, S tries to activate the immune system to protect against the earliest stages of malaria.
- It also aids in the prevention of Hepatitis B virus infection of the liver.
- Potency: Although the vaccine's efficacy in preventing severe instances of malaria in children is only approximately 30%, it is the only one that has been authorised.
- It was authorised by the European Union's medicines agency in 2015, with the benefits outweighing the dangers.
- It has a few adverse effects, including a fever that might lead to brief convulsions.

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**The Status Of The Burden Of Malaria**
- **Global:**
- In 2019, there were an estimated 229 million cases of malaria globally, with 4,094,000 malaria fatalities.
- In 2019, children under the age of five were the most vulnerable group to malaria, accounting for 67 per cent (2,74,000) of all malaria fatalities globally.
- **India:**
- According to WHO, India had an anticipated 5.6 million cases of malaria in 2019, compared to nearly 20 million cases in 2020.

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**Why in the news?**

- In a significant development, Bharat Biotech's COVID-19 vaccine, Covaxin, got
- **DGCI's approval for usage on kids aged 2-18.**

**About Covaxin**

- Covaxin, India's indigenous COVID-19 vaccine by **Bharat Biotech** is developed in collaboration with the **Indian Council of Medical Research (ICMR) - National Institute of Virology (NIV).**
- The indigenous, inactivated vaccine is developed and manufactured in **Bharat Biotech's BSL-3 (Bio-Safety Level 3)** high containment facility.
- The vaccine is developed using **Whole-Virion Inactivated Vero Cell** derived platform technology.
- Inactivated vaccines do not replicate and are therefore unlikely to revert and cause pathological effects.
  - They contain dead virus, incapable of infecting people but still able to instruct the immune system to mount a defensive reaction against an infection.
- The **World Health Organization (WHO)** is yet to grant emergency use authorisation to Covaxin.

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**What is Vaccine?**
- A vaccine works by mimicking a natural infection.
- A vaccine not only induces **immune response** to protect people from any future COVID-19 infection, but also helps quickly build herd immunity to put an end to the pandemic.
- **Herd immunity** occurs when a sufficient percentage of a population becomes immune to a disease, making the spread of disease from person to person unlikely.

### Types of Vaccine
- There are broadly four types of vaccine —
  - **Whole virus vaccine:** A vaccine based on the whole virus (this could be either inactivated, or an attenuated [weakened] virus vaccine)
  - **Non-replicating viral vector vaccine:** A non-replicating viral vector vaccine that uses a benign virus as vector that carries the antigen of SARS-CoV
  - Nucleic-acid vaccines: Nucleic-acid vaccines that have genetic material like DNA and RNA of antigens like spike protein given to a person, helping human cells decode genetic material and produce the vaccine;
  - Protein subunit vaccine: Protein subunit vaccine wherein the recombinant proteins of SARS-COV-2 along with an adjuvant (booster) is given as a vaccine.

## C-Dot to Start 6G Technology          Science & Technology

### Why in the news?
- Recently, the government asked the Center for the Development of Telematics (C-DOT) to start developing 6G and other future technologies to capture the global market in time.

### About 6G technology
- 6G (sixth-generation wireless) is the successor to 5G cellular technology.
- 6G networks will be able to **use higher frequencies** than 5G networks and **provide substantially higher capacity and much lower latency**.
- One of the goals of 6G internet will be to support **one microsecond-latency communication**.
- The 6G technology market is expected to facilitate large improvements in imaging, presence technology and location awareness.
- 6G is expected to support data rates of 1 terabyte per second.
- Working in conjunction with artificial intelligence (AI), the computational infrastructure of 6G will autonomously determine the best location for computing to occur; this includes decisions about data storage, processing and sharing.
- It is expected to be commercially launched between 2028-2030.

### Test satellites
- On November 6, 2020, China successfully launched an experimental test satellite with candidates for 6G technology into orbit, using a Long March 6 launch vehicle rocket.
- The satellite is intended to "verify the terahertz (THz) communication technology in space

### 6G vs 5G vs 4G
- Both 5G and 6G take advantage of higher frequencies on the wireless spectrum to transmit more data, faster.
- However, 5G occupies broadband frequencies at **sub-6 gigahertz (GHz)** and **above 24.25 GHz – called low band and high band frequencies respectively.**
- 6G will operate at **95 GHz to 3 terahertz (THz).**
- As per theoretical calculations, peak data **download speed of 5G is pegged at 20 gigabit per second (Gbps)**.
- 5G technology is expected to deliver ten times better download speed than that of 4G and up to three times greater spectrum efficiency.

### Current status of India's telecom sector
- The Department of Communications has embarked on the process of launching 5G commercials in India.
  - It has sought TRAI's views on the base price of spectrum to be allocated for 5G services.
- 5G technology is expected to deliver downloads ten times faster than 4G and up to three times the efficiency of spectrum.
  - 5G high data download speeds are set at 20 gigabit per second (Gbps).
- The Telecom Regulatory Authority of India (Trai) has recorded high-speed 4G speeds of about 20 megabit per second (Mbps) on the Reliance Jio network in the country.

## Intermediate-Mass Black Hole                    Science & Technology

### Why in the news?

- Scientists from the **Chennai Mathematical Institute and Ors**. analyzed data from LIGO- VIRGO viewing centers and rated the fraction of Black Hole binary integration found so far demonstrating the potential for **Intermediate-Mass Black Holes.**

### About Black Hole Merger

- It is the practice of merging two or more black holes.
  - Indian scientists have already identified the combination of three large black holes.
- The combination of two or more black holes results in different types of black holes. For eg, **Intermediate-Mass Black Holes and Binary Black Holes.**
  - The **Intermediate-Mass black hole (IMBH)** is a section of black hole weighing in the range 102-105 of the solar masses: much larger than the black holes but under the higher black holes.
  - One of the theories of intermediate mass black hole formation has to do with 'hierarchical growth'.
  - That is, if the black holes exist among a dense cluster of stars, the remnant (black hole) of a merger can pair up with another black hole close by to form a binary. This can eventually merge to form a second remnant which is more massive. This process, happening in a hierarchical manner, can explain intermediate mass black hole formation.
- **Gravitational Waves (GW)** are created when two black holes rotate and merge.

**Black hole**

- Dark holes occur when a giant star is attacked by a supernova towards the end of its lifetime. A black hole builds from the remains of the explosion..
- A point is made in the space where the matter is pressed to create a field of gravity where light does not escape.
- The concept was taught by Albert Einstein in 1915 & the term 'black hole' was coined by John Archibald Wheeler.

**The black holes are usually in two categories**

- One section of the Stellar black holes is between a few solar cells and dozens of solar cells. This is thought to have been formed by the death of giant stars.
- One section has very large black holes. This ranges from hundreds of thousands to millions of times the Sun from our Solar system. These are thought to be formed when two or more black holes meet.
  - ➤ In April 2019, scientists at the Event Horizon Telescope Project released the first image of the Black Hole.

## Hypersonic Technology                    Science & Technology

### Why in the news?

- Recently, it has been reported that China tested a nuclear-capable hypersonic glide vehicle that circled the globe before speeding towards its target.

### What is Hypersonic missile?

- A hypersonic missile is a vehicle that achieves a speed five times faster than the speed of sound, crossing Mach 5.
- These missiles travel at a speed of around 6,115 km per hour, with a combination of technology and manoeuvrability of ballistic missiles and cruise missiles.

- Technology Used: Most hypersonic vehicles primarily use scramjet technology, which is a type of Air Breathing propulsion System.
- This is an extremely complex technology, which also needs to be able to handle high temperatures, making the hypersonic systems extremely costly.

### Types of Hypersonic missile
- **There are two types of Hypersonic missiles:**
- **Hypersonic cruise missiles:** These are the ones that use rocket or jet propellant through their flight and are regarded as being just faster versions of existing cruise missiles.
- **Hypersonic Glide Vehicle (HGV):** These missiles first go up into the atmosphere on a conventional rocket before being launched towards their target.

### Significance of Hypersonic missiles (over subsonic and supersonic weapons)
- It will provide a nation with significantly enhanced strike capabilities.
- It can overcome the defences of a heavily defended target such as that of an aircraft carrier.

### Development of hypersonic missiles and implication for India
- Several countries, including the **US, Russia and China**, are developing hypersonic missiles.
- Hypersonic technology developments, in the backdrop of growing US-China rivalry and a year-long standoff with Indian forces in eastern Ladakh, is certainly a threat for India's space assets along with the surface assets.
- The offence system operating at these speeds would mean a requirement to develop defence systems at these speeds.

## GIS-based Geospatial Energy Map of India     Science & Technology

### Why in the news?
- NITI Aayog launched a Geographic Information System (GIS)-based Energy Map of India.

### About GIS-based Energy Map of India
- The GIS map provides a holistic picture of all energy resources of the country which enables visualisation of energy installations such as
    - conventional power plants
    - oil and gas wells, petroleum refineries
    - coal fields and coal blocks
    - district-wise data on renewable energy power plants
    - renewable energy resource potential through 27 thematic layers
- The map attempts to identify and locate all primary and secondary sources of energy and their transportation/transmission networks to provide a comprehensive view of energy production and distribution in a country.
- It is developed by NITI Aayog in collaboration with Indian Space Research Organisation (ISRO) with the support of Energy Ministries of Government of India.

### Significance of identification of energy sources
- Effective organization of scattered data
- Interactive and user-friendly
- Better policy formulation and decision making
- Better management of disasters

## Indian Astronomical Observatory (IAO)

### Why in the news?

- Researchers from India and their collaborators carried out a detailed study of the night time cloud cover fraction over 8 high altitude observatories, including three in India.

### About the study

- The study classified the quality of observable nights for different astronomical usages like photometry and spectroscopy on a daily basis.
- They analysed datasets for the Indian Astronomical Observatory (IAO) in Hanle, Merak Observatory (Ladakh), and Devasthal (Nainital) in India, Ali Observatory in the Tibet Autonomous Region in China, South African Large Telescope in South Africa, University of Tokyo Atacama Observatory and Paranal in Chile, and the National Astronomical Observatory in Mexico.
- Paranal, located in a high-altitude desert in Chile, to be the best site in terms of clear skies.

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**About IAO**

- IAO has one of the world's highest sites for optical, infrared and gamma-ray telescopes
- The team found that the Hanle site which is as dry as Atacama Desert in Chile and much drier than Devasthal and has around 270 clear nights in a year and is also one of the emerging sites for infrared and sub-mm optical astronomy. This is because –
    **Water vapour absorbs electromagnetic signals and reduces their strength.**
- It has advantages of more clear nights, minimal light pollution, background aerosol concentration, extremely dry atmospheric conditions, and uninterrupted monsoon

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## Plastic Eating Algae

### Why in the news?

- In earlier studies, species of bacteria that degrade plastic have been studied. In the present study, this role is played by the **microalga Uronemaafricanum Borge**. This is a species of microalgae that is commonly found in Africa, Asia and Europe.

### About the algae

- The alga identified is **microalga Uronema africanum Borge**. This is a **species of microalgae** that is commonly found in Africa, Asia and Europe.
- The isolated algae Uronema africanum produced enzymes, hormones, and some polysaccharides which slowly degraded (the sheets), and the structural integrity of the polymer (breaks down) and disintegrates into monomers.
- Abrasions were seen on the surface of the polyethylene sheet at different magnifications.
    - Low-density polyethylene is highly resistant to degradation.
- The study concluded that the microalga has initiated degradation of the polyethylene sheet within 30 days of incubation.

### Significance:

- The identified algae could be used as an agent of biodegradation of plastic sheets and thus it offers asolution to Plastic pollution in India.

## James Webb Space Telescope (JWST)

### Why in the news?

- Recently Engineers have unboxed the James Webb Space Telescope in French Guiana and will now prepare it for launch. The telescope set to be launched in 2021.

### About James Webb Space Telescope

- It is a joint venture between the US (NASA), European space agency (ESA) and Canadian space agency (CSA).
- It is an orbiting infrared observatory with longer wavelength coverage.
- It was formerly known as the "Next Generation Space Telescope" and it was renamed in 2002 after a former NASA administrator, James Webb.
- Webb will not actually orbit the Earth; instead it will sit at the Earth-Sun L2 Lagrange point.
  - Lagrange points are positions in space where objects sent there tend to stay put. At Lagrange points, gravitational pull of two large masses precisely equals the centripetal force required for a small object to move with them. These points in space can be used by spacecraft to reduce fuel consumption needed to remain in position.

### Purpose of James Webb Space Telescope (JWST)

- It will study every phase in the history of our Universe, ranging from the first luminous glows after the Big Bang, to the formation of solar systems.
- It will be the premier space observatory for astronomers worldwide, extending the tantalizing discoveries of the Hubble Space Telescope.

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## Future Tech 2021      Science & Technology

### Why in the news?

- Recently, Union Minister of State for Electronics & Information Technology and Skill Development & Entrepreneurship inaugurated the "Future Tech 2021" conference in a virtual way.

### About Future Tech 2021

- It is an international conference and exhibition on digital technologies being organized by CII (The Confederation of Indian Industry).
- There will be talks between entrepreneurs, industry personalities and government officials. In the conversation, there will be a discussion on how digital technology can be best used in the economy.
- Theme: "Key carrier technology to build the future we can all rely on". The theme focuses on 5 key points – Strategy, Growth, Resilience, Inclusiveness, and Trust.
- The International conference serves as an ideal platform for Indian industry and entrepreneurs to understand the nuances of technologies and identify the right approach and technologies for their business.

> **Confederation of Indian Industry**
> - It was founded in 1895 & headquartered in New Delhi. It is a non-government, not-for-profit, industry-led and industry-managed organization.
> - CCI works to create and sustain an environment conducive to the development of India, partnering industry, Government and civil society, through advisory and consultative processes
> - It will highlight the initiatives taken by the Indian government towards enhancing India's competitiveness in the global economy and achieving self-reliance by enhancing the use of emerging technologies.

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## Mission LUCY      Science & Technology

### Why in the news?

- Recently NASA has launched the Lucy Mission.

### About Mission LUCY

- Lucy space probe will explore the asteroids (known as **Jupiter Trojans or Trojan Asteroids**) that share Jupiter's orbit along with the Sun.
- The **solar-powered mission** is estimated to be over 12 years long, during the course of which the spacecraft will **visit eight asteroids** covering a distance of about 6.3 billion km.
- The mission is named after 'Lucy', a 3.2-million-year-old ancestor who belonged to a **species of hominins** (which include humans and their ancestors).

**Aim of this Mission**

- It is designed to understand the composition of the diverse asteroids that are a part of the Trojan asteroid swarms, to determine the mass and densities of the materials and to look for and study the satellites and rings that may orbit the Trojan asteroids.

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**Missions to Jupiter**

- **Pioneer 10** - First spacecraft to explore Jupiter was Pioneer 10, which is launched by the NASA.
- **Voyager 1** - Launched by NASA to study the outer Solar System and interstellar space beyond the Sun's heliosphere.
- **Juno -** It is a space probe by NASA that is currently orbiting the planet Jupiter.
- **Galileo -** The first spacecraft to orbit Jupiter was the Galileo orbiter, sent by the NASA.
- **Jupiter Icy Moon Explorer (JUICE) –** It will be launch by the European Space Agency's in 2022.

### Why in the news?
- Recently, 5th edition of the bilateral maritime exercise JIMEX, between Japan and India, was conducted in the Arabian Sea from 6 – 8 October 2021.

### Key Highlights
- The exercise included ships and aircraft of Japan Maritime Self Defence Force (JMSDF) and Indian Navy.
- Both countries performed operations focused on air, surface, and sub-surface dimensions of maritime operations, and air domain.
- The units have used Indian Army and P8I aircraft (IN) aircraft that provide maritime support for both navies.
- Exercise involves more intensive exercise and the release of guns in addition to the target that can be used.
- There was also Anti-submarine and anti-aircraft firing exercises as a part of air domain operations.

## Extension in Jurisdiction of the BSF

### Why in the news?
- Recently, the Ministry of Home Affairs has issued a notification to widen the jurisdiction of Border Security Force (BSF) for seizure, search and arrest up to 50km from the international border in Assam, West Bengal and Punjab.

### About the recent order
- This notification replaces a 2014 order under the **Border Security Force Act of 1968**, which also covered the States of **Manipur, Mizoram, Tripura, Nagaland and Meghalaya**. It also specifically mentions the two newly created Union Territories- **J&K and Ladakh**.
- The 2021 notification amends the 2014 notification and extends the jurisdiction of the BSF up to 50 km inside the international borders in Punjab, West Bengal and Assam. Earlier, the BSF's powers were limited to up to 15 km in these states.
- The jurisdictional limit with respect to the state of Gujarat has been reduced from 80kms to 50 kms.
- The violations for which the BSF carries out search and seizure include smuggling of narcotics, other prohibited items, illegal entry of foreigners and offences punishable under any other Central Act among others.
- After a suspect has been detained or a consignment seized within the specified area, the BSF can only conduct "preliminary questioning" and has to hand over the suspect to the local police within 24 hours.
  - The BSF does not have the powers to prosecute crime suspects.

### Legal aspects
- As per the new notification, BSF officers will be able to conduct arrests and searches in West Bengal, Punjab, and Assam.
  - BSF has got the right to take this action under:
    - The Code of Criminal Procedure (CrPC),
    - The Passport Act 1967, and
    - The Passport (Entry to India) Act 1920.
- The BSF will have the powers of search, seizure, and arrest under Acts like the Passport Act, NDPS Act, and Customs Act.
  - Its jurisdiction under these laws has not been changed, meaning its powers under these will continue to be only up to 15 km inside the border in Punjab, Assam and West Bengal, and will remain as far as 80 km in Gujarat.
- The new notification also empowers an officer of the rank corresponding to that of the lowest ranking member of the BSF, under the CrPC, to exercise and discharge the powers and duties without an order from a Magistrate, and without a warrant.
- The officer is now empowered to arrest any person who has been concerned in any cognisable offense, or against whom a reasonable complaint has been made, or credible information has been received.
- A BSF officer has now been given the power to conduct a search of a place entered by a person sought to be arrested in its new area of jurisdiction.

### Reasons behind the extension

- **Uniformity & Efficiency:** The move is to bring in uniformity and also to increase operational efficiency.
- **Quick Response:** BSF often gets information relating to crime scenes that may be out of their jurisdiction. It is done to make the response swift and effective in such cases.
- **Increasing Incidents on Borders:** The move was also necessitated due to increasing instances of drones dropping weapons and drugs in Jammu and Kashmir and Punjab.
- **Providing More Powers:** BSF's jurisdiction has not been increased under the Arms Act, Customs Act and NDPS Act, which cover most of the smuggling offences on the border and deal with far greater offences. Separate arrangements are made to make BSF independent in its action.

### Challenges associated with the order

- **Public Order vs Security of State:** Public order, which connotes public peace, safety and tranquility, is primarily the responsibility of a State Government (Entry 1, State list).However, when there is a serious public disorder which threatens the security or defence of the State or of the country itself (entry 1 of Union list), the situation becomes a matter of concern for the Union Government also.
- **Federalism:** Without obtaining the concurrence of the state government, the notification amounts to encroachment on the powers of the states. The Punjab Government has asserted that this notification is Centre's encroachment under the guise of security or development.
- **Affecting Functioning of BSF :** Policing in the hinterland is not the role of a border guard- ing force, rather it would weaken the capacity of the Border Security Force in discharging its primary duty of guarding the international border.

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**Constitutional Viewpoint on Deployment of Armed forces in States**

- **Under Article 355**, the Centre can deploy its forces to protect a state against "**external aggression and internal disturbance**," even when the state concerned does not requisition the Centre's assistance and is reluctant to receive central forces.
- In the case of a state's opposition to the deployment of armed forces of the Union, the right course for the Centre is to first issue directives under **Article 355** to the state concerned.
- In the event of the state not complying with the directive of the Central government, the Centre can **take further action under Article 356 (President's Rule)**.

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**About Border Security Force (BSF)**

- The **Border Security Force (BSF)** was raised in the wake of the **1965 War on 1 December 1965** for ensuring the security of the borders of India and for matters connected therewith.
- The **BSF is India's border guarding organization on its border** with Pakistan and Bangladesh.
- It is one of the seven Central Armed Police Forces of the Union of India u**nder the administrative control of the Ministry of Home Affairs (MHA).**
    - Other Central Armed Police Forces are:
        - Assam Rifles (AR)
        - Indo-Tibetan Border Police (ITBP)
        - Central Industrial Security Force (CISF)
        - Central Reserve Police Force (CRPF)
        - National Security Guards (NSG)
        - Sashastra Seema Bal (SSB)
- **Deployment:** The **2.65-lakh force** is deployed along the Pakistan and Bangladesh borders.
    - It is deployed on Indo-Pakistan International Border, Indo-Bangladesh International Border, Line of Control (LoC) along with Indian Army and in Anti-Naxal Operations.
    - Units: It has an air wing, marine wing, an artillery regiment, and commando units.
        - BSF has been defending Sir Creek in Arabian Sea and Sundarban delta in the Bay of Bengal with its state of art fleet of Water Crafts.
        - BSF has an instrumental role in helping state administration in maintaining Law and Order and conducting peaceful elections.
        - BSF has been crusading against natural calamity to save precious human lives as and when warranted.

- It contributes dedicated services to the UN peacekeeping Mission by sending a large contingent of its trained manpower every year.
- It has been termed as the First Line of Defence of Indian Territories.
- The BSF has its own cadre of officers but its head, designated as a Director-General (DG), since its raising has been an officer from the Indian Police Service (IPS).

**Jurisdictional Limitation under the Border Security Force Act, 1968**
- A notification issued in 2014 had outlined BSF's jurisdiction as the whole of the area comprised in the States of Manipur, Mizoram, Tripura, Nagaland and Meghalaya and so much of the area comprised within a belt of:
    - 80 kilometres in the State of Gujarat
    - 50 kilometres in the State of Rajasthan
    - 15 kilometres in the States of Punjab, West Bengal and Assam, running along the borders of India

## Indo-us Joint Military Exercise "Ex Yudh Abhyas 2021" | Security & Defence

**Why in the news?**
- The **17**[th] **edition of the exercise "Yudh Abhyas"** is to be conducted at **Joint Base Elmendorf Richardson in Alaska, USA** from October 15 to 29.

**About the Exercise**
- Exercise **Yudh Abhyas** is the **largest military training and defense cooperation between India and the USA.**
- It was **started in 2004** under the US Army Pacific Partnership Program. This work is being carried out in rotation between the two countries.
- **Aim:** To increase understanding, cooperation and interoperability between the two armies.
- The previous version of the exercise was held at the Mahajan Field Firing Ranges in Bikaner, Rajasthan in February 2021.

**Exercises between India and the US**
- **Exercise Tiger Triumph:** It is a tri-service military exercise between India and the US.
- **Exercise Vajra Prahar:** It is a Special Forces joint military training exercise. It has been conducted alternately in India and the US since 2010.
- **Exercise Cope India:** It is a series of bilateral Air Force exercises between India and the United States.
- **Exercise Malabar:** It is a multilateral naval exercise that includes simulated war games and combat manoeuvres. It was started in 1992 as an act of cooperation between Indian and American navies. Japan joined in 2015. In 2020, the Australian Navy will participate in this work for the first time since 2007.

## OPV Sarthak | Security & Defence

**Why in the news?**
- Indian Coast Guard's (ICG) new **offshore patrol vessel (OPV) Sarthak** was commissioned into service in Goa.

**About OPV SARTHAK**
- **It is fourth in a series of five OPVs** built under '**Make in India' policy.**
- It functions as a command platform and undertake mandated ICG charter of duties including search and rescue, combating maritime crimes and preserving and protecting the marine environment.
- The ship is also capable of carrying limited pollution response equipment to undertake oil spill pollution response at sea.

**Indigenous Off Shore Patrol Vessel Project**
- The Project was launched in 2016. Under this project, five Indian Coast Guard Ships are to be launched. These OPVs are to be deployed in protecting the Exclusive Economic Zone of the territorial waters.
- Two Offshore Patrol Vessels have already been commissioned namely Indian Coast Guard Ship (ICGS) SACHET and ICGS Sujeet and the third in the series called ICGS SAJAG was commissioned in May 2021.

- In August 2020, ICGS SARTHAK was launched. It was fourth in the series and commissioned in October 2021.
- The 5th and the last Vessel, will launched on 14th Dec 2020 at Goa Shipyard Limited. The vessel was named as ICGS 'SAKSHAM'.

## AGNI - V

**Why in the news?**
- Recently, India successfully test-fires Agni-V, from the APJ Abdul Kalam Island off the Odisha coast.

**About Agni-V**
- It is the most advanced intercontinental surface-to-surface nuclear capable ballistic missile, indigenously developed by DRDO.
- The missile uses a three-stage solid-fuelled engine and has a range of over 5,000 km and can carry about a 1500-kg warhead.
- It is a fire and forget missile, which once fired cannot be stopped, except by an interceptor missile.
- It has been developed under the Integrated Guided Missile Development Programme (IGMDP).

Range of Agni Missiles
- Agni I- 700-800 km.
- Agni II- more than 2000 km.
- Agni III- more than 2,500 Km.
- Agni IV- more than 3,500 km.
- Agni-V- over 5,000 km.

**Integrated Guided Missile Development Programme (IGMDP)**
- It was launched in 1982-83 by the Indian Government. It was conceived by Dr. A.P.J. Abdul Kalam to enable India attain self-sufficiency in the field of missile technology.
- The programme was managed by the DRDO and Ordinance Factory Board in partnership with other Indian government political organisations.
- The 5 missiles developed under this program
  - Prithvi: Short range surface to surface ballistic missile.
  - Agni: Ballistic missiles with different ranges, Agni (1,2,3,4,5).
  - Trishul: Short-range low-level surface to air missile.
  - Akash: Medium range surface to air missile.
  - Nag: India's third generation fire and forget anti-tank missile.

## Abhyas

**Why in the news?**
- Recently DRDO successfully flight-tested **Abhyas - High-speed Expendable Aerial Target (HEAT)** from the Integrated Test Range, Chandipur off the coast of Bay of Bengal in Odisha.

**About Abhyas-HEAT**
- **Abhyas HEAT is a drone (UAV)** that will be used as a target for various missile systems.
- It is designed & developed by **DRDO's Aeronautical Development Establishment (ADE), Bengaluru.**
- It is powered by a gas turbine engine to sustain a long endurance flight at subsonic speed.
- The target aircraft is equipped with **Micro-electromechanical systems (MEMS) based Inertial Navigation System (INS) for navigation along with the Flight Control Computer (FCC) for guidance and control.**
- The vehicle is programmed for fully autonomous flight.
- **It can also function as a decoy**.
- It is very lightweight, reliable, consumes less power and is cost-effective.

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